DOE/EIS-0228

Dual Axis Radiographic Hydrodynamic Test Facility

Final Environmental Impact Statement

Volume 2: Public Comments and Responses

Department of Energy
Albuquerque Operations Office
Los Alamos Area Office
Albuquerque, New Mexico

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Summary

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SUMMARY

INTRODUCTION TO VOLUME 2

On May 12, 1995, the U.S. Department of Energy (DOE) issued the draft *Dual Axis Radiographic Hydrodynamic Test Facility Environmental Impact Statement* (DARHT EIS) for review by the State of New Mexico, Indian Tribes, local governments, other Federal agencies, and the general public. DOE invited comments on the accuracy and adequacy of the draft EIS and any other matters pertaining to their environmental reviews. The formal comment period ran for 45 days, to June 26, 1995, although DOE indicated that late comments would be considered to the extent possible.

As part of the public comment process, DOE held two public hearings in Los Alamos and Santa Fe, New Mexico, on May 31 and June 1, 1995. In addition, DOE made the draft classified supplement to the DARHT EIS available for review by appropriately cleared individuals with a need to know the classified information. Reviewers of the classified material included the State of New Mexico, the U.S. Environmental Protection Agency, the Department of Defense, and certain Indian Tribes.

Volume 2 of the final DARHT EIS contains three chapters. Chapter 1 includes a collective summary of the comments received and DOE's response. Chapter 2 contains the full text of the public comments on the draft DARHT EIS received by DOE. Chapter 3 contains DOE's responses to the public comments and an indication as to how the comments were considered in the final EIS.

METHODOLOGY

DOE considered all comments to evaluate the accuracy and adequacy of the draft EIS and to determine when EIS text needed to be corrected, clarified, or otherwise revised. DOE gave equal weight to spoken and written comments, to comments received at the public hearings, and to comments received in other ways. The comment period was not intended to solicit "votes" or "endorsements" regarding the proposed action or any alternative analyzed. Rather, comments were reviewed for content and relevance to the environmental analysis contained in the EIS.

Spoken comments presented at the public hearings were recorded by a court reporter and a verbatim transcript produced (see transcripts 1 through 4 in chapter 2 of this volume). The written comments and transcripts were reviewed and separate topics were identified. Most comment letters and transcript statements contained several topics. Each topic raised in a comment letter is addressed in chapter 3 of this volume. If a given topic was mentioned by several individuals, DOE's response to the topic is presented with the first comment that raised the subject and subsequent comments are cross-referenced back to that response. Accordingly, each comment topic is considered once, regardless of the number of times it was mentioned by different commentors. The responses also indicate whether or not the text of the EIS was corrected or revised because of the comment and, if so, which section of the EIS was revised.

Some commenters raised topics that are not pertinent to this environmental review. In those cases, DOE has attempted to answer the questions or address the concerns, but no change to the text of the EIS was

made. Some commenters indicated simply that they either agreed or disagreed with DOE's proposed action or certain aspects of the analysis; DOE acknowledged these comments but, as a rule, these did no lead to changes to the EIS text.

The DARHT EIS includes a classified supplement. The full response to some comments raised by the public may include information that has been classified as Secret Restricted Data or otherwise is not releasable to the public. The DARHT EIS classified supplement includes additional information that is pertinent to some responses and augments the unclassified responses to some comments. The classified supplement is available to appropriately cleared individuals with a need to know the classified informati

Chapter 1
Major Issues on the DARHT Draft EIS

CHAPTER 1
MAJOR ISSUES ON THE DARHT DRAFT EIS

The major issues associated with the comments received on the draft DARHT EIS are presented collectively in this section. This categorization of major issues represents significant topics directly related to the environmental consequences associated with the DARHT EIS. Each major topic raised through the comment process is summarized and followed by a generalized response to the comment. The major issues of the comments received involved the following topics:

- Containment of tests
- Hydrology issues
- Endangered species
- Health impacts
- Relationship of DARHT EIS to other DOE NEPA reviews
- Nuclear weapons policy issues

1.1 CONTAINMENT OF TESTS

A significant number of commenters focused on a concern that all or most tests should be conducted in containment to minimize the impact on the environment. The draft EIS states that open air testing would result in uranium discharges to surface water that would exceed maximum contamination levels. Considering this and potentially other impacts the commenters recommended that the enhanced containment option be adopted.

DOE has prepared a revised preferred alternative, which is the Phased Containment Option of the Enhanced Containment Alternative to address the concerns raised in this comment (section 3.7.2.3). Under the Phased Containment Option, containment for experiments at DARHT would be provided according to an incremental, phased plan. The containment would begin with containment of 5 percent of the material over the first 5-year period; 40 percent containment in the second 5-year period; and 75 percent containment over the subsequent 20-year period. Additionally, if justified by the development effort and operating experience, a vessel may be developed to contain a greater percentage of material. This approach has the advantage of allowing lessons learned in each phase to be incorporated in the next phase and provides for a lower overall cost as well as a lower initial expenditure for design and capital cost.

Although concentrations of depleted uranium released under the DARHT Baseline Alternative would be slightly above the proposed maximum containment level (MCL), the quality of the surface water entering the Rio Grande is forecast to remain well below the drinking water standards (section 5.2.4.1). Additional environmental protection would be provided by the Phased Containment Option.

1.2 HYDROLOGY

Commenters were concerned that the extent to which LANL operations have contributed to the contamination of the main aquifer is unknown. LANL and the State of New Mexico are working to determine any effects on the main aquifer underlying LANL. Commenters recommended that computer modeling be conducted to determine the potential for surface water and ground water contamination. The results for each alternative should be included in the final EIS.

Since 1991, advanced LANL techniques have been used to detect tritium at ultra-low levels and to determine whether recent water (a few decades old) has recharged the main (i.e., deep) aquifer in sever locations at LANL. In all instances, main aquifer contamination is associated with a high tritium sourc concentration in a canyon bottom alluvial aquifer and with older wells into the main aquifer constructe with cable-tool drilling techniques and having questionable seals between well-bore and well-casing. In contrast, mesa top migration is relatively slow, and all indicators are that mesa-top facility locations off significant, if not complete, isolation from the main aquifer.

LANL and the State of New Mexico are currently engaged in development of a ground water protectio plan for LANL. As part of this plan, DOE has suggested that sitewide monitoring of the main aquifer expanded and improved with the development of 23 new main aquifer wells and with the initiation of process-related research focused on developing a greater understanding of the existing examples of mai aquifer contamination. Environmental surveillance data and long-term consequence modeling have sho that no significant soil contamination or water resource problem should arise from the development of of the proposed options. Water resources and monitoring is discussed in section 4.4.

Computer modeling has been used in the DARHT EIS to determine the potential surface water and gro water contamination. Appendix D of the DARHT EIS describes the methods used to model impacts to water resources.

1.3 THREATENED AND ENDANGERED SPECIES

Commenters raised concerns that, prior to issuing the draft EIS, DOE had not received Section 7 Endangered Species Act concurrence from the U.S. Fish and Wildlife Service (USFWS) regarding DARHT's impact on threatened or endangered species. They were concerned that there was no information specifying the impact of each alternative on any threatened or endangered species. In particular, the presence of the Mexican spotted owl is of concern in the immediate vicinity of DARHT.

The draft EIS provided information related to potential impacts to known habitat for threatened or endangered species. The DARHT final EIS has been updated to reflect the recently discovered prese of the Mexican spotted owl (a federally listed threatened species) in the vicinity of the DARHT site, was based on LANL field surveys completed after publication of the draft EIS (section 4.5.4). The D has conducted Section 7 consultation with the USFWS based on these new findings. Appropriate mitigative measures and operating restrictions will be implemented to mitigate any impacts to the Me spotted owl or the habitat. Appendix K of the DARHT final EIS describes the consultation process

The draft DARHT EIS was approved on May 1, 1995, and the EPA Notice of Availability was publishe on May 12, 1995 [60 FR 25717]. On June 14, 1995, DOE published its Notice of Intent to prepare a *Stockpile Stewardship and Management Programmatic EIS* [60 FR 31291]. The SS&M program is bein developed to meet the future challenges involved in ensuring the safety and reliability of the stockpile. Three particular challenges must be met:

- Full support of the Nation's nuclear deterrent with safe and reliable nuclear weapons while transitioning to a more appropriate nuclear weapons complex
- Preservation of the core intellectual and technical competencies of the weapons laboratories
- Assurance that the activities needed to maintain the Nation's nuclear deterrent are consistent with its arms-control and nonproliferation objectives

The SS&M PEIS will assess the environmental impacts of alternatives for conducting the Stockpile Stewardship and Management Program. The ROD following the SS&M PEIS is expected to identify capabilities and facilities for the SS&M program and to determine the configuration (sites for future facilities) to implement the SS&M program. The transition to the future nuclear weapons complex is expected to include proposals for new experimental and computational facilities to perform the stockpile stewardship and management mission. However, as expressly noted in the Notice of Intent for the SS& PEIS, DOE will continue with its ongoing hydrodynamic testing program and has proposed to provide a enhanced hydrodynamic test capability in the near term regardless of the decisions to be made following the SS&M PEIS.

Under NEPA regulations, while work on a required program environmental impact statement is in progress, a Federal agency may not undertake in the interim any major action covered by the program unless the action:

- Is justified independently of the program
- Is itself accompanied by an EIS
- Will not prejudice the ultimate decision on the program, including determining subsequent development of the program or limiting programmatic alternatives [40 CFR 1506.1 (c)]

DOE believes that any course of action selected after completion of the DARHT EIS would meet this standard. Chapter 2 of the EIS provides the technical justification for providing enhanced hydrodynami testing capability. This conclusion has been supported by the President and Congress who have directe DOE to rely on hydrodynamic testing to ensure the safety, performance, and reliability of the stockpile the absence of underground nuclear testing. This determination is unrelated to, and would not depend c any other stockpile stewardship actions which may be proposed as part of the SS&M program. Under a course of action to be analyzed in the SS&M PEIS, DOE would still need to continue hydrodynamic testing and would still need to acquire enhanced radiographic capability.

Similarly, because enhanced hydrodynamic capability is needed in the near term regardless of the alternatives to be analyzed in the SS&M PEIS or the decisions that will result from the SS&M ROD, D believes that a decision to implement any of the alternatives analyzed in this DARHT EIS would not prejudice any ultimate decisions regarding the SS&M program. Hydrodynamic testing and dynamic experiments at LANL as an ongoing mission will continue in support of stockpile stewardship, and this

fact will be one of the baseline assumptions for the SS&M PEIS. The proposal contained in the DARHT EIS would not render more or less reasonable any of the alternative courses of action to be considered in the SS&M PEIS, nor would it affect any decisions expected from the SS&M ROD. DOE believes that the DARHT EIS adequately identifies and analyzes the proposed action and the reasonable alternative means to achieve it. Therefore, DOE believes that its proposal to acquire enhanced radiographic capability meets the regulatory requirements for interim actions, and that any actions decided upon in the DARHT ROD would not be limited pending completion of the SS&M PEIS.

The DARHT project is likewise a permissible interim action pending completion of the LANL Sitewide EIS. DOE's need for enhanced radiographic capability to conduct science-based stockpile stewardship as directed by the President and Congress provides the independent justification for the project. That capability can be provided by implementing any of the alternatives analyzed in the DARHT EIS without requiring additional new facilities or changes in operation for existing facilities at LANL, since radiographic hydrotesting is an ongoing mission for LANL. Thus, deciding whether and how to provide enhanced radiographic capability will not prejudice any decisions resulting from the LANL Sitewide EIS.

1.6 NUCLEAR WEAPONS POLICY ISSUES

Comments were received concerning the proliferation impacts of the DARHT Facility. The commenters expressed concerns that DARHT may adversely impact nonproliferation agreements and DARHT's use for counterproliferation purposes was not clearly defined.

DOE has revised the discussion in the DARHT EIS of nonproliferation and counterproliferation applications for enhanced radiographic hydrodynamic test capability (section 2.3.4 and 2.5). The Treaty on the Nonproliferation of Nuclear Weapons (1968) went into effect in March 1970 and was indefinitely extended in May 1995. The treaty is aimed at the cessation of the nuclear arms race and limiting the proliferation of nuclear weapons to nonnuclear states. The parties agree not to transfer nuclear weapons, other devices, or control over them, and to not assist, encourage, or induce nonnuclear states to acquire them. However, the treaty does not invoke stockpile reductions by nuclear states, and it does not address actions of nuclear states in maintaining their stockpiles. The concepts and capabilities of hydrodynamic testing have been well known to negotiating parties for the Nonproliferation Treaty, and the capability exists with several of the nuclear states. Thus, by developing an enhanced radiographic hydrodynamic test capability, the DARHT project does not introduce any new elements for the treaty parties. DARHT can be used to assess threats of foreign systems well in advance of an emergency.

Chapter 2
Public Comments

CHAPTER 2
PUBLIC COMMENTS

The Dual Axis Radiographic Hydrodynamic Test Facility Draft Environmental Impact Statement was published in May 1995 and the Notice of Availability was published on May 12, 1995, initiating the 45-day public comment period that ended on June 26, 1995. On May 31 and June 1, 1995, public hearings were held in Los Alamos and Santa Fe, New Mexico, and transcripts of these hearings were produced. Comments were received throughout the public comment period and, to accommodate as many respondents as possible, comments were accepted after the close of the comment period. The last comment was received on August 8, 1995.

COMMENT CATEGORIES

The comments are presented by category in the following order and are printed two original letter sheets per page.

- Federal Agencies
- Tribal Government
- State Government
- Municipal & Local Government
- Companies
- Organizations
- Private Citizens

The complete transcripts of the public hearings and their attachments are presented at the end of the individual comment letters.

COMMENT CODING SYSTEM

Comments are coded with a numeric code to indicate individual respondents and comment number. Written comments received through the comment period are coded **1** through **39** and **55**. Codes **40** through **54** indicate transcripts and transcript attachments (documents or letters of comment handed in as part of the transcript record). Numbers following a hyphen indicate the individual comments contained within each written comment, transcript, or transcript attachment. Examples of codes are:

- **1-2** refers to the 2nd comment from the letter coded **1**
- **40-17** refers to the 17th comment in the transcript coded "comment **40**"

Side bars in correspondence, transcripts, and attachments indicate the specific lines on which the numbered comments appeared. An index to the public comments as they appear in this document is presented on the following pages.

Comment Category/Code	Commenter	Pa
Federal Agencies		
1	U.S. Department of Defense	PC-[illegible]
2	U.S. Department of the Interior	PC-[illegible]
3	U.S. Environmental Protection Agency	PC-[illegible]
Tribal Government		
4	Pueblo of San Ildefonso	PC-[illegible]
5	Pueblo of San Ildefonso	PC-[illegible]
State Government		
6	New Mexico Energy, Minerals, and Natural Resources	PC-[illegible]
7	New Mexico Environment Department	PC-[illegible]
8	New Mexico Environment Dept, DOE Oversight Bureau	PC-[illegible]
Municipal & Local Government		
9	Los Alamos County Council	PC-[illegible]
Companies		
10	Technadyne Engineering Consultants, Inc.	PC-[illegible]
Organizations		
11	Carson Forest Watch	PC-[illegible]
12	Citizens for Alternatives to Radioactive Dumping	PC-[illegible]
13	Concerned Citizens for Nuclear Safety	PC-[illegible]
14	Concerned Citizens for Nuclear Safety	PC-[illegible]
15	Laboratory Retirees Group, Inc.	PC-[illegible]
16	Los Alamos County Chamber of Commerce	PC-[illegible]
17	Los Alamos Study Group	PC-[illegible]
18	Natural Resources Defense Council	PC-[illegible]
19	Republican Party of Los Alamos County	PC-[illegible]
20	Responsible Environmental Action League	PC-[illegible]
21	Responsible Environmental Action League	PC-[illegible]
22	Retired Public Employee Association of California, Chapter 97	PC-[illegible]
23	Western States Legal Foundation	PC-[illegible]
Private Citizens		
24	Anonymous	PC-[illegible]
25	Beery, Jerry	PC-[illegible]
26	Bonneau, Bonnie	PC-[illegible]
27	Chandler, Christine	PC-[illegible]

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29	Hedges, Robert	PC-103
30	Lockhart, Milton	PC-103
31	Mechels, Chris	PC-105
32	Morgan, Marion	PC-105
33	Pendergrass, Ann	PC-106
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35	Riseley, Mary	PC-108
36	Sander, Robert	PC-108
37	Switlik, Clement	PC-109
38	Weinstein, Bernie	PC-110
39	Wikstrom, Chrysa	PC-110
55*	Davis, John	PC-111

Hearing Transcripts and Attachments

40	Hearing Transcript – Los Alamos Afternoon Session	Part 1 Divider
41	Transcript attachment – Sidney Singer	TA1-1
42	Transcript attachment – M.G. Lockhart	TA1-2
43	Transcript attachment – Louis Rosen	TA1-2
44	Hearing Transcript – Los Alamos Evening Session	Part 2 Divider
45	Hearing Transcript – Santa Fe Afternoon Session	Part 3 Divider
46	Transcript attachment – Pat Wolff	TA3-1
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49	Transcript attachment – Maurice Weisberg	TA3-4
50	Transcript attachment – Greg Mello	TA3-5
51	Transcript attachment – Greg Mello	TA3-12
52	Transcript attachment – Greg Mello	TA3-21
53	Hearing Transcript – Santa Fe Evening Session	Part 4 Divider
54	Transcript attachment – Greg Cunningham	TA4-1

* This number appears out of sequence because the comment letter was received on August 8, after the comment number sequence was finalized.

The follwing people provided oral comments at the public hearings.

Los Alamos Afternoon Session

Jerry Beery
Ed Grothus
Milton Lockhart
Jas Mercer-Smith
Marion Morgan, Democratic Party of Los Alamos County
Morrie Pongrantz, Los Alamos County Council
Louie Rosen
Steven Shankland, Los Alamos Monitor
Sidney Singer, REAL (written comment submitted by Milton Lockhart)
Barb Stine
Tom Switlik
Doug Venable
Scott Watson
Diana Webb
Ginger Welch
Don Wolkerstorfer

Los Alamos Evening Session

Mike Barr
Richard Browning
Mike Burns
Christine Chandler
George Chandler
Anita McCorkle
Melvin McCorkle
Jas Mercer-Smith
Linda Mulka
Morrie Pongrantz
Barb Stine
Tom Switlik
Dave Thompson
John Ussery
Harry Watanabe
Scott Watson
Diana Webb

Santa Fe Afternoon Session

Helen Corneli
Bob Day
Richard Deyo
Marilyn Huff
Milton Lockhart
Greg Mello, Los Alamos Study Group
Jas Mercer-Smith
Peggy Prince
John Stroud, Los Alamos Study Group (?)
Archie Velarde
Diana Webb
Maurice Weisberg
Pat Wolff, Quiet room transcipts

Santa Fe Evening Session

Ken Bower
Christine Chandler
George Chandler
Jay Coghlan, Concerned Citizens for Nuclear Safe
Kip Corneli
Greg Cunningham
Bob Day
Susan Hirshberg, Concerned Citizens for Nuclear Safety
Daniel Kerlinsky, New Mexico Physicians for Social Responsibility
Milton Lockhart
John Lyles
Melvin McCorkle
Chris Mechels
Jas Mercer-Smith
Mary Riseley, Los Alamos Study Group
T.J. Trapp
Scott Watson
Diana Webb
Elizabeth West

Comment 1, page 1

ASSISTANT TO THE SECRETARY OF DEFENSE
3050 DEFENSE PENTAGON
WASHINGTON, DC 20301-3050

ATOMIC ENERGY

JUL 6 1995

Ms Carol M. Borgstrom
Director
Office of NEPA Policy and Assistance
Department of Energy
Washington D.C 20585

Dear Ms Borgstrom:

Thank you for the opportunity to review the Department of Energy's Draft "Dual Axis Radiographic Hydrodynamic Test (DARHT) Facility Environmental Impact Statement (EIS)" (DOE/EIS-0228D). The Department of Defense considers DARHT to be a critically important facility for DOE's Science-Based Stockpile Stewardship (SBSS) Program and is on record supporting the DARHT facility. I have no comments on the Draft EIS at this time, but I would like to commend your efforts to complete the EIS process and to proceed with DARHT. 1

Harold P. Smith, Jr.

JUL 17 1995
EH-25, received on

Comment 2, page 1

United States Department of the Interior

OFFICE OF THE SECRETARY
Washington, D.C. 20240

JUL 28 1995

In Reply To:
ER 95/368

Ms. Carol M. Borgstorm, Director
Office of NEPA Policy and Assistance (EH-42)
U.S. Department of Energy
1000 Independence Avenue, S.W.
Washington, D.C. 20585

Dear Ms. Borgstorm:

The Department of the Interior has reviewed the draft environmental impact statement for the Dual Axis Radiological Hydrodynamic Test Facility (DARHT), Los Alamos National Laboratory, Los Alamos County, New Mexico. Our comments on the draft statement are enclosed with this letter.

We note in our comments that a significant amount of information concerning project description, impacts and mitigation cannot be found in the draft statement. While it would be best to prepare a revised draft statement containing the missing information, an extension of time beyond thirty days to review the final statement and resolve outstanding issues in meetings appears to be in order.

The opportunity to review the document is appreciated.

Sincerely,

for Willie R. Taylor
Director, Office of Environmental Policy and Compliance

Enclosure

AUG 01 1995
EH-25, received on

Comment 2, page 2

Enclosure
ER 95/368

General

The draft statement indicates a series of environmental reviews were conducted for the DARHT project between 1982 and 1989, and construction of the DARHT project was completed in 1990. This Department has no record of receipt of any environmental documents prepared for this facility during the period 1982-1989. It is unclear why this Department was not given the opportunity to review and provide comments on these documents. Copies of these documents should be provided to our U.S. Fish and Wildlife Service (Service) at 2105 Osuna Road NE, Albuquerque, New Mexico 87113. Further, construction of the facility should have been delayed until compliance with provisions of the National Environmental Policy Act (NEPA) had been completed. 1

The draft statement does not adequately discuss or analyze the overall impacts of this project on fish and wildlife resources. We believe it fails to inform decision-makers of potential impacts associated with the construction and operation of the proposed facility. The final statement should provide this information.

Specific Comments

Chapter 2.3.2, Purpose and Need, Need for Enhanced Radiographic Capability, Evaluating Aging Weapons, pages 2-6 through 2-8. The Department of Energy (DOE) estimates that it will take several years to "baseline" each weapons system expected to remain in the nuclear weapons stockpile. The final statement should indicate whether this baseline research will be conducted entirely at DARHT, the number and descriptions of systems tests, and how long this research is expected to continue. 2

Chapter 3.3, Proposed Action and Alternatives, Considerations Common to All Alternatives, pages 3-2 through 3-13. This section discusses aspects of the program that would not change, regardless of which alternative is implemented. Table 3-1 within this section provides a list of technology, facilities, and structures necessary to support the tests. No information is provided to indicate whether the structures and facilities referenced are existing or proposed; nor, is there information regarding the provision of utilities and communication facilities to the structures. While the draft statement discusses an exclusion fence (page 5-26), there is no mention of the fence in the paragraphs discussing project infrastructure. The final statement should provide information regarding all structures and facilities proposed for construction, and discuss the requirements for power, water, safety and communication facilities. 3

Comment 2, page 3

Pager 2

Chapter 3.3.5, Radiographic Support Laboratory (RSL), page 3-9. Construction of the RSL was completed in 1990. It is inclear whether records of consultation and/or NEPA compliance is available for this facility. The final statement should include discussions of significant impacts as a result of the construction and operation of this facility and the methods used to mitigate those impacts. 4

Chapter 3.3.7, Development of Operating Procedures, page 3-11. Operating procedures, including emergency response, may have specific impacts to species of concern to our Service. The final statement should either be modified to fully discuss such procedures and their potential for impacts on federally-protected species, or a commitment should be made in the text to discuss such procedures with our Service. 5

Chapter 3.5, Preferred Alternative, pages 3-15 through 3-21. Under the preferred alternative, DOE would complete both axes of the DARHT and use the facility to conduct tests on the safety, performance, and reliability of existing weapons. Detonations of high explosive charges, between 150 and 500 pounds (lbs), would be conducted in the vicinity of the dual axis firing point. On page 3-20 the draft statement indicates for higher charges (up to 500 lbs) a ". . .temporary expendable blast shield would be constructed to mitigate blast effects." While Section 3.7 of the draft statement (pages 3-25 through 3-28), regarding the Enhanced Containment Alternative, discusses use of single-walled vessels and a separate recycling facility to recycle containment vessels after each use, the Preferred Alternative section contains no such discussion of blast containment. In addition, page 3-20 indicates a sharply focused x-ray beam having a "much stronger x-ray dose" than used in other facilities would be used in tests. Also discussed on page 3-20, is an "electron beam" that could be used during a second mode of operation for the DARHT facility. While use of shields during high level testing and beam-tuning operations prior to actual tests are discussed (page 3-21), very little discussion is provided regarding protection of adjacent areas during tests. It is assumed that unless blasts are high level (up to 500 lbs.), they will be conducted in an open space scenario with no blast shield, and blast debris will not be collected for disposal.

Resources of critical environmental concern are located in the immediate vicinity of the DARHT facility. The final statement should be modified to include discussions of potential for impacts from escaped beams or flying fragments of bombs or test materials. Methods to avoid, minimize, and mitigate significant impacts should be proposed for review. 6

[illegible]

[illegible]

[illegible]

Comment 3, page 1

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 6
1445 ROSS AVENUE, SUITE 1200
DALLAS, TX 75202-2733

JUN 14 1995

Ms. M. Diana Webb
DARHT EIS Manager
Department of Energy
Los Alamos Area Office
528 35th Street
Los Alamos, NM 87544

Dear Ms. Webb:

In accordance with our responsibilities under Section 309 of the Clean Air Act, the National Environmental Policy Act (NEPA), and the Council on Environmental Quality Regulations for Implementing NEPA, the U.S. Environmental Protection Agency (EPA) Region 6 office in Dallas, Texas has completed its review of the U.S. Department of Energy's (DOE) Draft Environmental Impact Statement (DEIS) for the Dual Axis Radiographic Hydrodynamic Test (DARHT) facility at the Los Alamos National Laboratory (LANL) in New Mexico.

DOE is responsible for ensuring that the United States nuclear weapons remain safe, secure, and reliable. The DOE program that responds to the President's challenge to ensure confidence in the nuclear weapons stockpile in the absence of nuclear testing is a science-based stockpile stewardship program. For the Nation's nuclear weapons, DOE proposes to provide enhanced high-resolution radiographic capability for hydrodynamic tests and dynamic experiments to meet its mission. Hydrodynamic tests and dynamic experiments are essential elements of the evaluation process of weapon performance under the program. These tests are performed on mock-ups of nuclear weapons and do not result in nuclear detonation or nuclear yield. DOE has determined that no other currently available advanced techniques exist which can provide the level of detail and information comparable to that which can be obtained from enhanced radiographic hydrodynamic testing.

The DARHT facility would include two electron accelerators to produce x-ray beams that intersect at a firing point. The Draft EIS evaluates the potential impact of six alternatives including the no action alternative. The DOE's preferred alternative is to complete the DARHT Facility at its LANL facility. Analysis within the Draft EIS assesses very little

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Comment 3, page 2

2

difference in the environmental impacts among the alternatives. The DEIS indicates that the preferred alternative will cause no significant impact to the environment or to public health.

The following comments are offered for your consideration in preparation of the Final EIS.

1 1. Unless there are significant and needed test results that cannot be obtained from a contained test, or significant cost or safety reasons for performing uncontained tests, EPA suggests that all dynamic tests be contained. This operating philosophy seems to be consistent with the alternative described in Section 3.7, "Enhanced Containment Alternative (ECA)." ECA is similar to the preferred alternative, but with the addition of containment to prevent the release of most airborne emissions, metal fragments, and other debris resulting from firing site operations. DOE currently uses steel containment vessels at LANL for some dynamic experiments. Discussion on this operating feature should be included in the Final EIS.

2 2. In Section 4.9 of the DEIS, a statement is made that there have been, "... no *reported* accidents associated with the detonation of explosives (at PHERMEX) ..." The modifier "reported" should be deleted in the Final EIS, or the possibility and implications that unreported accidental detonations may have occurred, should be discussed.

3 3. Under Section H.3.2, "Aerosolization", small fragments are described as having cross sections of 0.08 to 1.1 m^2 but it appears that the units should be "in^2". This should be corrected in the Final EIS.

4 EPA classifies your DEIS as "LO", i.e., EPA has "Lack of Objections." Our classification will be published in the Federal Register according to our responsibility under Section 309 of the Clean Air Act, to inform the public of our views on proposed Federal actions.

We appreciate the opportunity to review the DEIS. We request that you send our office two (2) copies of the Final EIS at the same time that it is sent to the Office of Federal Activities, EPA, 401 M Street S.W., Washington, D.C. 20460.

Sincerely yours,

W.B. Hathaway
for Jane N. Saginaw
Regional Administrator

Comment 4, page 1

Office of Governor

Telephone
(505)455-2273
FAX (505)455-7351

Route 5, Box 315-A
Santa Fe, New Mexico 87501

SI-GC95-161

May 23, 1995

Carol Borgstrom, Director
Office of NEPA Oversight (EH-25)
U.S. Department of Energy
1000 Independence Avenue, S.W.
Washington, D.C. 20585

M.Diana Webb, DART EIS
Document Manager
U.S. Department of Energy
Los Alamos Area Office
528 35th Street
Los Alamos, N.M. 87544

Re: Draft environmental impact statement for the dual axis radiographic hydrotest (DARHT) facility

Dear Ms. Borgstrom and Ms. Webb:

In reviewing of the draft environmental Impact Statement for the DARHT Facility, the Pueblo of San Ildefonso objects to the descriptions and identification of the locations of cultural sites as stated in the following sections.

1 Section 4.6 of chapter four of the draft environmental impact statement (DEIS) contains three items that present serious problems for the Pueblo of San Ildefonso and that are not consistent with applicable law. First, Tables 4-14 and 4-15 list the archeological sites within 2,500 foot radii of the DARHT and Phermex facilities, and Figures 4-19 and 4-20 identify the locations of those sites on maps. (DEIS pages 4-48 through 4-54) That information should not be included in a public document such as the DEIS. Archeological sites in this area are subject to extensive looting and damage by sightseers, and the publication of the descriptions of these sites and their locations puts them at substantial risk.

2 Section 4.6.1 of Chapter four also increases the risk of looting and other harm to four specific sites, LA 12655 (the Nake'muu site), and LA 71408 through 71410 by describing the sites and their locations in more detail. (DEIS, pages 4-55) The description of the Nake'muu site is particularly troubling because the DEIS states that it is one of the best preserved sites in the region and sets forth its locations in fairly specific terms.

Comment 4, page 2

Carol Borgstrom
M. Dianna Webb
May 23, 1995
Page 2

3 Third, the DEIS indicates in section 4.6.3 that if other "cultural resources of ceremonial importance or traditional cultural properties" are identified during consultation with Native Americans, those will be discussed in the final environmental impact statement. The Pueblo of San Ildefonso will not discuss cultural resources of ceremonial importance or traditional cultural properties with the Department of Energy or any other entity if that entity proposes to publish the results of that discussion in a document to be distributed to the public.

4 The publication of the information in the DEIS and the proposed publication of similar information in the final environmental impact statement is also inconsistent with the confidentiality requirements of the Archeological Resources Protection Act. Section 16 U.S.C. 47 of that Act mandates that information such as this not be disclosed unless the federal land management agency has determined that disclosure of the information would not create a risk of harm to the resources involved. The Pueblo is not aware that any such determination has been made with regard to these sites.

5 The Pueblo therefore requests an explanation for the disclosure of this information in the
6 DEIS. The Pueblo also requests that the Department not publish such information in the final environmental impact statement.

This is not our final comment on the Draft EIS for the DARHT facility, this will be forth coming once the entire document is thoroughly reviewed. I would appreciate hearing from you on this matter.

Sincerely,

Governor

1st. Lt. Governor

xc: San I-POEP
I. Tse-Pe, Tribal Administrator
File

Comment 5, page 1

Office of Governor

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Route 5, Box 315-A
Santa Fe, New Mexico 87501

SI-GC95-194

June 30, 1995

M. Diana Webb
DARHT EIS Project Manager
Los Alamos Area Office
U.S. Department of Energy
528 35th Street
Los Alamos, New Mexico 87544

By mail and facsimile
(505)665-1506

RE: Dual Axis Radiographic Hydrodynamic Test Facility (DARHT) Draft Environmental Impact Statement

Dear Ms. Webb:

I have enclosed the Pueblo of San Ildefonso's comment on the draft environmental impact statement for the dual axis radiographic hydrodynamic test facility. The Pueblo appreciates your extending the time for submission of this comment, and we hope that the delay has not caused your inconvenience.

The Pueblo would be grateful if the Department of Energy would respond to the Pueblo's concerns expressed in this comment.

Thank you for your cooperation. We look forward to hearing from you.

Sincerely yours,

Ethmer C. Torres

Ethmer C. Torres
Governor

xc: File

Comment 5, page2

The Pueblo of San Ildefonso's
Comments on the proposed Dual Axis
Radiographic Hydrodynamic Test Facility
Draft Environmental Impact Statement
June 30, 1995

1.0 Introduction

The Pueblo of San Ildefonso (Pueblo) has three principal concerns about the draft environmental impact statement (draft EIS) for the proposed dual axis radiographic hydrodynamic test facility (DARHT). First, the draft EIS does not analyze in detail all of the alternatives relevant to this proposed federal action, and in fact, a key alternative that could lead to substantial cost savings to the United States Department of Energy (DOE) and result in the use of improved technology in the long-term has not been evaluated. Second, the draft EIS does not properly describe the state of the environment at Los Alamos National Laboratory (LANL), and the environmental impacts of the proposed alternatives, and therefore cannot properly address the needed mitigation measures for these impacts. Third, the draft EIS does not adequately address impacts of the proposed alternatives on significant cultural resources. These inadequacies in the draft EIS should be corrected before a decision is made about whether to proceed with the proposed DARHT facility.

2.0 Proposed Alternatives

There is a key alternative to the proposed DARHT facility that has not been evaluated. On page 3-37, the draft EIS describes a multi-axis, multi-time Advanced Hydrotest Facility (AHF). This facility is described as conceptual and not having reached the stage of a firm DOE proposal, with needed design and development of the technology, siting studies, and construction design several years away. A multi-axis, multi-time facility would be far superior to a dual axis facility, for all of the reasons described in the draft EIS that justify building a dual axis facility to replace a single axis test facility. The draft EIS states that the DARHT facility would provide information useful for the design of the AHF. Accelerated development of the AHF and an upgrade of existing facilities is an alternative that needs to be evaluated. Moreover, that alternative needs to be evaluated in the context of
1 a National Environmental Policy Act review; it is not adequate to rely on the reviews conducted by various committees in other contexts that are outlined on page 3-37 of the draft EIS.

The DARHT facility will cost more than 100 million dollars to construct. If there is a possibility that more advanced technology could become available after several years that would be superior to DARHT, this alternative needs to be examined in greater detail. The possibility exists that after the expenditure of 100 million dollars, the proposed federal action might result in the creation

of a facility that will not represent the technological state-of-the-art. Therefore, a new alternative should be added to the list of alternatives analyzed in detail in the draft EIS. Such an alternative to the proposed action would entail upgrade of existing single axis facilities to match some of DARHT's projected capabilities (since DARHT will operate for some time as a single axis facility), creation of an accelerated program to design a multi-axis facility and use of experience from computer, laboratory, and pilot-scale tests instead of from a full-scale DARHT facility to guide the AHF Studies. It is likely that this alternative will cost significantly less over a long-term period than an alternative in which DARHT and a subsequent AHF are built. Such an alternative could also result in significant improvement in the testing capability of the DOE. Given that this new alternative has the potential for significant cost savings and enhanced technological and testing capabilities, it should be investigated in detail. 1

3.0 Inadequacies in the Description of the Affected Environment

Chapter 4 of the draft EIS relies on annual environmental surveillance reports for a description of the Affected Environment. This description is not adequate because there have been significant inadequacies, data gaps, and omissions in these reports. Despite this, the draft EIS uses these annual environmental surveillance reports to draw conclusions about the affected environment, and relies on them for much of the data quoted in Chapter 4 of the draft EIS. 2

For example, the report for 1992 (LANL, 1994) is referenced for a discussion of estimated doses from radiological exposures in Section 4.8.1.1 in the draft EIS. In Section 4.3, this same report (LANL, 1994) is referenced in regard to data for surface water and groundwater monitoring data. The annual environmental surveillance report for 1992 (LANL 1994) contains little data on surface soil contamination within the LANL's on-site soils, although some data on contaminated on-site sediments are presented. Because of its reliance on this report, the draft EIS does not address existing contamination in on-site soils. This is a very significant omission because the operation of the proposed DARHT facility is expected to result in surface soil contamination. If the affected environment is not adequately described, it is impossible to assess the impacts of the proposed action adequately. 2

3.1 Inadequacies in environmental surveillance reports pertaining to specific LANL locations

The draft EIS's reliance on annual environmental surveillance reports is also flawed because those reports do not present a complete picture of LANL's environment since they do not include data from all of the various groups at LANL involved in collecting environmental data. Data for certain select routine sampling 3

locations are presented in the environmental surveillance reports. Levels of contamination for other locations and various environmental media near the routine surveillance sampling sites may be higher than what is reported in the environmental surveillance documents, however. The next three subsections describe some of these errors in past environmental surveillance documents.

3.1.A Technical Area 33 area K

Technical Area 33 contains Area K, which has shown high levels of tritium within surface soils. Information in unpublished LANL reports indicates that levels of tritium in soils within Area K could be as high as 890 nCi/l. This value is on the order of 100,000 times the regional background levels. The environmental surveillance report for 1992 (LANL, 1994) does not address on-site surface soil radiological contamination in great detail. There is a brief discussion of elevated plutonium levels at eight on-site soil sampling locations. There is no table showing what these levels are or where they were found. There is also no mention of elevated tritium levels in on-site soils.

This report does address contamination at Technical Area 33, Area K indirectly in the section on radiological contamination in soils and sediments, however. The report mentions elevated levels of tritium in canyon sediments downgradient from Technical Area 33, Area K, and states that this area will be studied in greater detail as a part of a corrective action plan mandated by the Resource Conservation and Recovery Act. This fact illustrates the problem with the annual environmental surveillance reports; these reports do not present all the relevant data related to on-site waste sites within LANL. It therefore is impossible to assess radiological exposures from such waste sites without study of all the relevant documents. For that reason, the draft EIS cannot develop a complete picture of the affected environment by relying primarily on the environmental surveillance reports.

3.1.B Airborne radioactivity

The amounts of airborne radioactivity released by LANL have not been fully described in the annual environmental surveillance reports. For instance, in 1988, the amount of Pu 238 measured in ambient air concentrations at Technical Area 54, Area G, was reported in a LANL memorandum (Jacobsen, 1992b) as 3696.6 aCi/cu.m. The Environmental Surveillance report for 1988, however, does not report any values for Pu 238. (LANL, 1989) In this report (LANL, 1989), the Pu 239 and Pu 240 concentrations at on-site stations in Technical Area 54 are described as being a maximum of 53.4 aCi/cu.m. A LANL memorandum (Jacobsen, 1992b), describes the Pu 239 concentration at a location in Technical Area 54, Area G, as 191.1 aCi/cu.m.

Comment 5, page 5

Table 1 highlights some of the major discrepancies that exist between the values reported in past environmental surveillance reports and those reported in a LANL memorandum. A recent finding by the Defense Nuclear Facilities Safety Board concurs with these conclusions and identifies the lack of a proper explanation for the discrepancies.

TABLE 1: Maximum Ambient Air Concentrations of Selected Radionuclides at Technical Area 54 Reported in LANL Memoranda and Published Reports (Jacobsen, 1992b; LANL, 1986; LANL 1989; LANL 1990; LANL, 1992.)

	LANL Memorandum	Published Reports
1985		
	Am 241 -207.38 aCi/cu.m.	Am 241 -28.5 aCi/cu.m.
	U - 207.38 pg/cu.m.	U - 83.0 pg/cu.m.
	Pu 238 - 11.84 aCi/cu.m.	Not reported
	Pu 239 - 59.53 aCi/cu.m.	Pu 239 & 240 - 50.8 aCi/cu.m.
1988		
	U - 264.4 pg/cu.m.	U - 318.6 pg/cu.m.
	Pu 238 - 3696.6 aCi/cu.m.	Not reported
	Pu 239 - 191.2 aCi/cu.m.	Pu 239 & 240 - 53.4 aCi/cu.m.
1989		
	U - 434.36 pg/cu.m.	U - 186.5 pg/cu.m.
	Pu 238 - 1455.4 aCi/cu.m.	Not reported
	Pu 239 - 128.0 aCi/cu.m.	Pu 239 & 240 - 32.3 aCi/cu.m.
1990		
	U - 185.5 pg/cu.m.	U - 75.6 pg/cu.m.
	Pu 238 - 360.4 aCi/cu.m.	Pu 238 - 1.2 aCi/cu.m.
	Pu 239 - 15.0 aCi/cu.m.	Pu 239 & 240 - 9.3 aCi/cu.m.

A major problem with the modeling of air releases of radioactivity by LANL is that LANL's studies do not always include the release caused by the wind erosion of contaminated soils and sediments. Only the releases from stacks are routinely monitored and considered. However, large areas of canyon floors and the soils at material disposal areas are contaminated with plutonium, americium, cesium, tritium, and other radionuclides. When radioactive particles are picked up by the wind, they constitute a release of radioactivity into the air. This is particularly important because in 1992 the net dose from airborne radioactivity released from LANL was 7.9 mrem. (LANL 1994) This value is 79% of the maximum of 10 mrem allowed by the Environmental Protection Agency (EPA). Given the concentration of radionuclides in large areas of contaminated soil and sediments, and given the highly

Comment 5, page 6

erodible soils in Northern New Mexico, the net release by this process could be quite high. A similar diffuse release of tritium is also occurring at waste disposal areas, and from lagoons and effluent discharge areas. This release of tritium is also not adequately monitored at the present time.

A study conducted by LANL (LANL, 1981) of resuspension of plutonium dust in Pueblo canyon estimated the release in pueblo canyon to lead to a concentration of 3 aCi/cu.m. for Pu 239. One reading for Pueblo canyon in 1977 was as high as 166 aCi/cu.m. These numbers establish that there could be a significant airborne release of radioactivity from the resuspension of radioactive particles. The referenced study (LANL, 1981) only considered Pueblo canyon, and not the releases from other areas of surface contamination; and only considered plutonium 239, and not all the other radionuclides that could be released in this manner. Therefore, without considering the extent of radiological exposure from such diffuse sources, an accurate estimate of the dose from air releases cannot be made. Estimates of impacts and releases from the operation of DARHT cannot, therefore, be compared with the existing affected environment, as the understanding of air monitoring data and the air pathway for exposure is not presented in a complete fashion in the draft EIS.

LANL uses CAP-88 to estimate doses to humans from releases of airborne radioactivity. This model is best used for chronic releases of small amounts of radioactivity. At LANL, however, large amounts of radioactivity have been released in unplanned events. CAP-88 is not a good tool for estimating the doses from acute releases. CAP-88 uses averaged wind data. An accidental large release requires knowledge of wind data for the day of release. The effect of regional weather patterns on such days is also very important, and needs to be modelled to develop an adequate picture
4 of the effect of the release. However, LANL has not made available any studies on exposure from such unplanned large releases, nor are such releases adequately modelled in the draft EIS.

3.2 Waste management at Technical Area 54 Area G

Technical Area 54, Area G, is situated at the edge of Pueblo lands, and on the rim of a canyon, Canada del Buey. Highly radioactive wastes are disposed of at this area in pits and shafts, and transuranic wastes are stored there temporarily. The wastes buried at Technical Area 54 Area G are highly contaminated with tritium. Sediments in drainages leading off from this area have been found to have high levels of tritium, several times above background values (LANL, 1992). In a LANL memorandum (Jacobsen, 1992a) from tests conducted in 1985, the level of tritium in soils at a depth of 10-30 cm at a location within Technical Area 54 Area G was described as 160,000 nCi/l. The 1985 Environmental Surveillance report for 1985 (LANL 1986) describes the levels of tritium in on-site soils and sediments from effluent release areas

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6.0 References

Jacobson, K., 1992a, Environmental Surveillance at Area G, LANL Memorandum EM-8:92-1818.

Jacobson, K., 1992a, Environmental Surveillance at Area G, LANL Memorandum EM-8;2134.

Los Alamos National Laboratory, 1981, Formerly Utilized MED/AEC Sites Remedial Action Program, Final Report, LA-8890-ENV.

Los Alamos National Laboratory, 1986, Environmental Surveillance at Los Alamos During 1985, Environmental Protection Group, LA-10721-ENV.

Los Alamos National Laboratory, 1989, Environmental Surveillance at Los Alamos During 1988, Environmental Protection Group, LA-11628-ENV.

Los Alamos National Laboratory, 1990, Environmental Surveillance at Los Alamos During 1989, Environmental Protection Group, LA-11628-ENV.

Los Alamos National Laboratory, 1991, Environmental Assessment Expansion of Area G, EA-90-004L

Los Alamos National Laboratory, 1994, Environmental Surveillance at Los Alamos During 1992, Environmental Protection Group, LA-12764-ENV.

Los Alamos National Laboratory, 1992, Environmental Surveillance at Los Alamos During 1990, Environmental Protection Group, LA-12271-MS.

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New Mexico
ENERGY, MINERALS AND NATURAL RESOURCES DEPARTMENT

May 10, 1995

Ms. M. Diana Webb
U.S. Department of Energy
Los Alamos Area Office
528 35th Street
Los Alamos, New Mexico 87544

Dear Ms. Webb:

1 Thank you for the opportunity to comment on the Draft Environmental Impact Statement, Dual Axis Radiographic Hydrodynamic Test. Upon review of the materials you sent, we see no need for further comment from our office at this time.

If you have any questions, please do not hesitate to call Karen Lightfoot, Endangered Species Botanist for the State of New Mexico.

Sincerely,

Karen S. Lightfoot

KSL/ajc

RHT

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Containment) are summarized in the table below.

The air emissions exceedances calculated in the table are based upon an estimate of the weapons testing emissions averaged to an hourly basis. According to this calculation, the hourly emissions
6 of Uranium and Lithium Hydride would exceed the NMED permit requirements by one order of magnitude. It is important to note that this is a conservative estimate since the emission value(s) has been averaged. According to information presented in the DEIS, the schedule for testing would be 20 shots (individual weapons test) per year. In addition, the maximum test shot size was assumed to be 500 lbs with a potential for aerolization of depleted uranium at 50,000 grams (See Appendix C - C1.3.3 Hydrodynamic Testing).
6 Based on this information it would appear that individual test shots could significantly exceed the NMED permit requirements for Uranium and Lithium Hydride.

In Summary, our review of the DEIS indicates that an AQCR 702
6 permit would be required for the proposed DARHT Facility, No Action Alternative, and all other Alternatives (with the possible exception of the Enhanced Containment Alternative) with respect to Uranium and Lithium Hydride emissions. Under AQCR 702 Part Three C.2., LANL will have to receive an AQCR 702 Construction Permit
7 from the Department prior to construction. Under AQCR 702 Part Three F.3.d. the Department will deny the permit application "if the source will emit a toxic air pollutant in such quantities and duration as may with reasonable probability injure human health".

CONTAMINANT	ANNUAL EMISSION DARHT (1) AND ALTER.	HOURLY EMISSION DARHT (2) AND ALTER. (ESTIMATED)	NMED AQCR 702 PERMIT REQUIRE.
Depleted Uranium	700 Kg	79.9 g/hr	6 g/hr
Lithium Hydride	100 Kg	11.4 g/hr	0.76 g/hr

(1) Annual emission value from Table C1-7 from Appendix C, DEIS.
(2) Hourly average (8,760 hrs/yr) based on annual total emission value from Table C1-7, Appendix C, DEIS.

Air quality concerns would also be addressed in any operating

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permit issued under AQCR 770 - Operating Permits, for the entire LANL Facility. The DOE has indicated in the DEIS that they expect to submit an operating permit application to NMED in 1995. Permit conditions would be determined upon review of the permit application(s). Permit(s) would be subject to review and comment by the public and EPA.

RADIATION PROTECTION ISSUES

A number of observations related to radiation protection of the public may be made from the information provided in the DEIS:

* Projected depleted uranium use by Preferred Alternative is 700 kg as compared to present use at PHERMEX of 200 kg.

8 * Increased testing could lead to increased release of hazardous materials, and thereby to the possibility of having to classify the firing-site as a mixed-waste site.

* Tests conducted are "implosions" rather than "explosions", therefore most of the materials would be deposited at or near the firing point. Materials released during open-air tests at the PHERMEX facility have resulted in low but observable quantities of lead, beryllium, and mercury on or near the firing site. These materials were not observed beyond 460 ft. of firing site.

* Based on average amount of depleted uranium used per year at PHERMEX, the amount of depleted uranium of respirable size available for dispersal beyond the immediate vicinity of the firing site would amount to about 10 kg annually.

* Tests at four LANL locations have indicated tritium migration to the main aquifer from overlying contaminated perched aquifers. The method of communication between intermediate perched and deep aquifer formations is unknown.

9 * The solubility of uranium in LANL waters appears to be substantially above its proposed maximum contaminant level (MCL) value (National Primary Drinking Water Regulations: 40 CFR 141). Concentrations of depleted uranium in surface waters could be slightly above the proposed MCL immediately below PHERMEX.

10 * Radiological impacts may result from exposure to depleted uranium and tritium released to the atmosphere. Assume that 10% of all materials become respirable following a test.

* DOE estimates up to 25% of all tests might be "uncontained". Plutonium tests to be done in double-walled steel vessels.

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11. Page 4-27, Section 4.4.2, Sixth paragraph, Sixth sentence

13 Comment: No direct evidence exists to support this statement. The usage of the word "may" or "could" may be more appropriate.

12. Page 4-30, Section 4.4.3, First paragraph: "Important contaminant transport mechanisms associated with surface water include:
*Erosion and sedimentation (sediment and contaminant accumulation) of contaminated surface and near-surface materials
*Infiltration of surface water that may be contaminated, or movement of water through a contaminated deposit that in turn carries contamination deeper into the soil/rock profile
*Movement of contaminants in surface water as solutes, suspended sediments and bedload phases."

14 Comment: Though storm water monitoring stations at the PHERMEX site exist (station #'s SWO-15-184A, B, & C), no data is presented that characterizes the water quality resulting from storm water runoff resulting in the movement of contaminants as solutes, or suspended sediments from a facility with known contamination levels (approximately the same levels projected for the DARHT facility). PHERMEX storm water quality data, displaying the dissolved and suspended components, must be obtained and presented to verify that the model described in appendix E3 correctly simulates the transport of depleted uranium, beryllium and other heavy metals.

13. Page 4-30, Section 4.4.3, Fifth paragraph: "Surface water sampling station locations near TA-15 are presented in figure 4-14. The radiochemical, trace metals, and chemical quality analysis of samples taken at Pajarito Canyon, Water Canyon, and Ancho Canyon at the Rio Grande are listed in tables 4-6 and 4-7 (LANL 1994a)."

15 Comment: The surface water monitoring station for Water Canyon is located just below the junction of Water Canyon and Cañyon de Valle. The data presented in Table 4-6 and 4-7 is representative of springs, NPDES outfalls and snowmelt runoff from watersheds upstream from the potential effects of PHERMEX and the proposed DARHT facilities. The data presented in table 4-6 is for dissolved constituents (filtered prior to analysis) and therefore does not include the suspended sediment component. This data does not adequately characterize the water quality of Water Canyon and does not assess contaminant contribution from the PHERMEX facility.

14. Page 4-30, Section 4.4.3, Fifth paragraph, Second sentence

16 Comment: It should be noted that Ancho Canyon surface-water data may actually be from Ancho Spring. Ancho Spring water is ground water, not surface water.

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15. Page 4-33, Section 4.4.3, Tenth paragraph

17 Comment: It should be noted that isotopic data from LANL test wells are questionable due to the fact that the wells are not adequately grouted which could cause wellbore leakage. Hence, results may yield erroneous results. We question all analytical and aquifer data from these test wells.

16. Page 5-18, Section 5.1.11.1, First sentence: "Environmental monitoring currently performed at LANL would continue under the No Action Alternative. Existing stations for monitoring external penetrating radiation and radioactive and hazardous substances in air, water, soil, and sediment would be used to monitor the environmental impacts of the facility." This section is repeated for all alternatives.

18 *Comment: Existing surface water monitoring stations are inadequate to assess the impacts of the existing PHERMEX facility (see comment 13). The Water Canyon surface water monitoring station needs to be located further down stream in Water Canyon to adequately assess all runoff Water and Cañon de Valle from the existing PHERMEX and the proposed DARHT facilities. Storm water monitoring stations at the PHERMEX site need to be monitored to verify that the surface water model adequately predicts contaminant transport from the existing facility. The construction of a new facility on LANL property (DARHT) may require a modification of LANL's general storm water permit. Mitigation measures (i.e., the installation of catchment basins) should be addressed in the EIS in order to prevent the transport of contaminants to Water Canyon, Cañon de Valle, and Potrillo Canyon and to monitor storm water runoff from these facilities.

THREATENED AND ENDANGERED SPECIES

17. Page 4-43, Section 4.5.4, First paragraph, First sentence: "Surveys conducted at TA-15 in 1992 (Risberg 1995) did not locate any currently listed threatened or endangered species (Table 4-12), although suitable habitat may exist for many of these."

19 Comment: The statement that suitable habitat may exist for TES species does not adequately address the location of suitable habitats, what surveys were conducted and according to what protocol. Recent investigations have determined the presence of suitable Mexican Spotted Owl habitat within approximately 1/4 mile of the proposed DARHT site.

18. *Page 4, Section 3.1.2, Fourth paragraph in: Draft Biological and Floodplain/Wetland Assessment for the Dual Axis Radiographic Hydrodynamic Test Facility (DARHT), Debra Risberg, February 1995, LAUR 95-649: "Results from initial modeling indicate three areas within Laboratory boundaries that could have potential owl habitat, one of them being an area near the junction of Water Canyon and Cañon de Valle. Because the model is based on topographic features, the nature of the forest stand is unaccounted for;

Your Community Voice in the Carson

Re: Comments - DARHT Facility DEIS

Carson Forest Watch
Box 15 Llano, NM • 87543 • 505-607-2848

May 9,1995

Diana Webb
DOE, Los Alamos Area Office
528 35th St.
Los Alamos, NM 87544

Dear Ms. Webb.

On behalf of our citizens group in northern New Mexico, the following are some comments regarding the DEIS for the proposed DARHT facility:

1 1) The DEIS preferred alternative (construction of the dual facility) would violate the National Historic Preservation Act (NRHP) by impacting a site eligible for the National Register of Historice Places, and under this alternative, mitigation would not be sufficient to avoid impact to this site. The DEIS states that further consultation will be conducted with SPHO, however, this preferred alternative currently does not have concurrance from this office, and it is likely that the preferred alternative would not avoid damage to the site, even with mitigation measures. We cannot support any alternative

2 which damages any cultural resources, especially one with such importance as the Nake'muu site. The DOE should not have released this DEIS before final concurrance was reached or final consultation conducted with SHPO,

3 because it omits the possible effects to important cultural sites under this alternative, which is the preferred alternative. The public needs this information before determining the significanceof the impacts of each alternative - and the DEIS failed to do this. By merely stating that further consultation will be conducted with both the Pueblo of San Idelefonso and SHPO, the DEIS fails to adequately disclose the real impacts of the preferred alternative on important resources - which violates NEPA.

4 2) The DOE should choose a less environmentally damaging alternative - it is clear from the DEIS that several other action alternatives could accomplish nearly the same results as the preferred alternative - and would cause less damage to important cultural resources. NEPA requires that an action agency explain clearly all reasons it chose not to implement the most environmentally preferrable alternative. In this DEIS, the DOE failed to do so.

5 3) Once again - the purpose and need for this proposed action is not clear, nor not backed up by reasoned scientific analysis or fact. While the DOE did give discussion to bogus reasons involving national security - it failed to fully describe current world nuclear dis-armament treaties and peace efforts,

6 and give a comprehensive analysis of the need for LESS testing of nuclear materials, weapons reductions, etc. NEPA requires a greater discussion of other factors - including the cumulative impacts of continued hazardous and radioactive materials testing on the Pajarito Plateau. The DEIS fails to do this. We doubt the judge will buy the DOE arguement for purpose and need - especially since the DOE is continuing to propose this dual facility alternative, as the judge expected. The course of action was clearly pre-determined, and this DEIS merely is an effort to justify a decision already made by the DOE. Violation of NEPA.

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4) We question the ability of the DOE to prepare an adequate document for this facility in such a short amount of time. A Forest Service timber sale

7 takes a longer amount of time to prepare - and this DEIS was released only months after the judge ruled that the DOE prepare such a document to comply with NEPA. Again - it is clear that the DOE is hurrying preparation of its environmental review to justify a project it has already started.

5) The DOE has failed to receive Section 7 ESA concurrance from the US Fish and Wildlife Service regarding this projects impacts on T. and E. species. The DEIS should have disclosed the results of the Biological Opinion from the USFWS BEFORE releasing this DEIS, and each alternative should have been

8 rated regarding the USFWS position on their impacts to T. and E. species. We also did not see the Biological Evaluation or Assessment required by the DOE that determines effects, by alternatives, on each T. and E. species that may be affected by this project. Without disclosure of the results of the Section 7 Consultation (formal) with the US Fish and Wildlife Service - the public has no information whether any alternative or which alternative would be likely to adversely affect or even jeopardize any Threatend or Endangered species - or their habitat in this DEIS. Violation of NEPA.

9 6) What will be the effects of each alternative upon the Suitable habitat for the Mexican spotted owl? Again - the DEIS fails to disclose the presence of suitable habitat for this species near the project area, and fails to disclose the fact that Criticial Habitat for this species has been proposed by the US FWS, and much of this involves habitat in the Jemez Mountains. Without complete Section 7 concurrance for each alternative, or at least a disclosure of comments from the USFWS regarding impacts, by alternatives, to any T. and E. species that may occur within this project area - the public has no information regarding the impacts of this project upon many species of concern.

7) Mitigation is not the same as protection - and the DEIS is relying upon mitigation to insure protection for important cultural sites and forT: and E.

10 species. We disagree that mitigation can be sufficient to insure protection for these important resources - and the DEIS fails to rate the effectiveness of the mitigation measures. NEPA requires that mitigation measures not merely be listed - which the DEIS failed to do - but also be rated for the effectivenss and liklihood of actually aceiving these protection measures.
The DOE has a terrible past track record of protecting natural resources and cultural sites. Mititigation measures in the past have not been sufficient to protect groundwater pollution and contamination from LANL and DOE operations. There is continuing contamination from DOE facilities to groundwater and soils,

11 and air quality, and leaking waste facilities and discharge sites. The DEIS fails to acknowledge the ineffectiveness of current mitigation to keep radioactive and hazardous waste materials out of soil and groundwater resources throughout the LANL complex, and extending far outside of the boundaries of DOE lands, as far as the Rio Grande.

We appreciate the opportunity to comment on this DEIS, and would like a reply to our concerns both now, and in the Final EIS.

We hope that in the future, the DOE and LANL will not wait for a citizen group and a judge's order to comply with the law.

Sincerely, Joanie Berde for Carson Forest Watch and La Comunidad Citizens Groups

Copies to: Congressman Bill Richardson, Los Alamos Study Group

Comment 12, page 1

Citizens for Alternatives to Radioactive Dumping
144 Harvard SE
Albuquerque, New Mexico 87106
June 21, 1995

Ms. Diana Webb, DOE/LAAO
528 35th Street
Los Alamos, New Mexico 87544

Dear Diana:

The following are CARD's comments on the DARHT:

CARD opposes projects which continue to nuclear weapons work which has for fifty years produced contamination for which there are no acceptable environmental solutions.

1 The DARHT program is a "stockpile stewardship program" and should be examined along with all other such programs in that programmatic EIS. In his decision Judge Mechem ordered the DOE to place the DARHT in context, considering all related actions. That is best done in a programmatic EIS. The DARHT is also part of the site-wide EIS process and therefore should not receive any decision until that process is completed.

2 There are many complex environmental aspects to this project which are not addressed in the EIS. Among these are the geology of the site, the potential for migration of contaminants into groundwater and the dangers of transporting reprocessed plutonium to LANL.

3 The need for DARHT has not been established to our satisfaction. All the evidence we have read indicates that the stockpile does not age. There is not clear reason for this huge project given that

4 evidence. The environmental danger of a project which has no practical value to the citizens of New Mexico must be seriously questioned.

5 LANL is notoriously out of compliance with environmental laws. This situation must be rectified before any new facilities are constructed. The DARHT should receive the No Action alternative.

Sincerely,

Garland Harris

Garland Harris
Public Information/
Liaison Director

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US DOE/LAAO - IN

Comment 13, page 1

Comments to the

United States Department of Energy

on the

Dual Axis Radiographic Hydrotest Facility

Draft Environmental Impact Statement

June 29, 1995

Submitted by

Jay Coghlan, Research Analyst

for

Concerned Citizens for Nuclear Safety

to

Ms. Diana Webb
DARHT EIS Project Manager
Los Alamos Area Office
U.S. Department of Energy

DARHT's Purpose and Need

Until 1993, DOE and LANL budget requests described DARHT as a weapons design facility. LANL and DOE now argue that DARHT is critically needed to ensure the safety and reliability of an aging stockpile of nuclear weapons. Existing American nuclear weapons have already been demonstrated to be safe and reliable through more than a thousand full-scale tests. Because the great majority of defects (if any) 1 are found in the first few years of a weapon's life, confidence in a weapon actually increases with age. Furthermore, virtually all defects are mechanical and nonnuclear in nature and have nothing to do with the primaries that DARHT would study. Nevertheless, the Purpose and Need Section of the DARHT DEIS 2 carries a number of unsubstantiated and ominous warnings. *"The sooner that DOE can obtain better diagnostic information, the sooner the Nation can determine if its existing nuclear deterrent is sufficient."* Who is there that argues that our nuclear deterrent is not sufficient? If it is not sufficient, why is the U.S. engaging in strategic arms talks? Another unsubstantiated statement reads, *"DOE has considerable evidence to indicate that, as weapons age, problems related to the deterioration of weapon components can and do occur."* Statements like these demonstrate a 2 replay of the national security argument that was found wanting in the DARHT preliminary injunction proceedings. As the Judge stated in granting a preliminary injunction, "Ample evidence points to the fact that the existing nuclear stockpile is, at this time, safe and reliable."[1] With present safety and reliability established, purpose and need questions are then directed to the future, based on what past experience has taught and where DARHT fits into the reconfigured nuclear weapons complex.

In dismissing programmatic review in advance of the DARHT DEIS, DOE states in the DARHT IP:

[1] Memorandum Opinion and Order, Judge E.L. Mechem, January 26,1995, p.30. The Judge was referring to, among other things, to March 15, 1994, testimony to Congress by Dr. Harold Smith, Assistant to the Secretary of Defense, Atomic Energy, DOD:

> I am pleased to report the stockpile is safe, secure, reliable, and meets the current military requirements...Our stockpile is becoming safer and more reliable simply because we are retiring older weapons...Thus, we should enter the 21st century with a modern, safe and reliable stockpile consistent with the demands of START I and with anticipated military requirements.

This statement was made in the presence of Dr. Victor Reis, Assistant Secretary for Defense Programs, DOE, who added:

> Right now, as Dr. Smith has said, that stockpile is safe and reliable.

> [I]t is appropriate to proceed at this time with the DARHT EIS because the enhanced diagnostic capabilities proposed for DARHT are urgently needed to evaluate and assess the safety and reliability of the existing but aging nuclear weapons stockpile, particularly in the absence of nuclear underground testing testing.[2]

This statement contains a number of issues which deserve careful examination. Safety and reliability will be discussed separately. With respect to other issues, the stockpile, rather than "aging", is becoming "younger" due to planned retirements of individual weapons systems. DOE has data on weapons with lifetimes as long as thirty years. In contrast, of the seven remaining weapons systems in the enduring stockpile, the oldest is now 17 years old, as shown below:

Remaining weapons systems	Year first placed in use
B61-3/4/10 (tactical bombs)	1979
B61-7 (strategic bomb)	1985
W76 (SLBM)	1978
W80 (ALCM)	1981
B83 (strategic bomb)	1983
W87 (ICBM warhead)	1986
W88 (SLBM)	1989 [3]

The 1993 SNL *Stockpile Life Study Summary* ("Study") shows that 58% of existing defects have been discovered in a weapon's first five years and 80% in fifteen years.[4] Hence, it can be argued that confidence in a weapon actually increases with age and that due to ostensible future uncertainties that the stockpile (after planned retirements) is after all things considered, at an optimal age.

The new and reportedly adverse conditions imposed by the loss of underground testing are being used as the underlying rationale for the entire Stockpile Stewardship Program. Why then does the Study clearly state that "actionable" defects have never been first discovered in stockpile confidence UGT.[5] To the contrary, "actionable" defects have been first discovered in existing and robust 3 surveillance programs with existing facilities. Of the 257 "actionable" defect types discovered, only 5% have involved the weapons primaries that DARHT would

[2] *DARHT Implementation Plan*, USDOE, February 1995, ch.1-p.8

[3] Year first placed in use from *U.S. Nuclear Weapons*, Chuck Hansen, Areofax, 1988

[4] Graph entitled "Average 'Actionable' Defect Types per Weapon-Year for Each Year Beyond FPU," 1993 SNL *Stockpile Life Study Summary*.

[5] Ibid, Graph entitled "Where the 257 "Actionable" Defects Types Were First Discovered"

study.[6] So, based on experience, of this 5% class of defects that DARHT would study, would not any age-induced phase change in pits be better examined by
3 metallurgical assay of the primary itself, rather than by hydrotesting of surrogate material? Or by detailed small-scale experiments using equation-of-state techniques? These analytical capabilities already amply exist.

The argument can be made that metallurgical assay and other techniques are not sufficient because potential mixing/boosting problems at the last stages of implosion need examination. But here DARHT is apparently not of great use.[7] These
4 comments then address the remaining, and perhaps key question: what is DARHT's utility in addressing aging effects on the implosion process. For example, DP Deputy Asst. Secretary Everett Beckner has alluded to the possible accumulation of helium along a "grain boundary" that would presumably affect implosion symmetry. Bearing in mind appropriate classification boundaries, potential aging effects such as
5 this need to be explained to in order to fully justify DARHT's rationale. What will be yet more difficult to explain is how existing surveillance programs and existing facilities cannot meet this type of problem. This is especially true given the planned FXR Upgrade, a possible single-axis PHERMEX Upgrade (see later section) and the lack of consensus on the benefits of dual-axis imaging.[8]

In combination, DOE's rationale of DARHT's critical urgency due to the aging of the stockpile and the absence of UGT is weak, compounded by doubts over the value of dual-imaging. These comments now turn to safety and reliability.

Nuclear Weapons Safety

In July 1991, Senior LLNL Physicist Dr. R.E. Kidder (now retired) completed his *Report to Congress: Assessment of U.S. Nuclear Weapons and Related Nuclear Test Requirements*. To the question of what fraction of nuclear safety problems

[6] Ibid, Graph entitled 257 "'Actionable' Defect Types Grouped by Design Skill Categories"

[7] "For a number of stockpile systems, particularly those that are designed with insensitive high explosives and fire-resistent pits, planned radiography upgrades do not provide resolution adequate to observe the gas cavity configuration of the primary stage late in the implosion process." *FY 1995 LANL Institutional Plan*, p.43

"The next frontier in radiography is in determining mix. It would appear that DARHT will not be capable of addressing the mix issue," Phillip Sprangle, DARHT Feasibility Assessment Independent Consultants *Final Report*, March 1995, p. 39.

[8] "There was no consensus position presented to this panel on the needs and benefits of two beam radiography," Juan Ramirez, DARHT Feasibility Assessment Independent Consultants *Final Report*, March 1995, p.36.

have been traced to warhead aging effects, he responded:

> Safety problems within the warheads are generally inherent in the design of the warhead itself, not the result of aging or other causes....Metals corrode, and other organic materials such as plastics, adhesives, and HE that are present in a warhead will deteriorate with age. Such aging effects degrade a warhead's reliability rather than its safety....A severe case of aging was the deterioration of the HE in the W68 Poseidon warhead....The reliability, but not the safety, of the warhead was effected.

Aging effects on HE are frequently cited as of particular concern by DOE officials. To repeat, this poses potential reliability problems, but not safety problems. Dr. John Immele (LANL Associate Director for NW Technologies) stated at the December 8, 1995, DARHT scoping hearing that HE aging has never impacted weapons safety.

With respect to warheads whose designs are not considered inherently safe, Kidder states that: "a key element in improving the safety of the U.S. nuclear weapons stockpile is the timely retirement of most older warheads in the present stockpile." Planned retirements are already in process, as previously noted. Kidder creates a safety "report card" for warheads as follows:

A: Has ENDS, IHE, and RFP
B: Has ENDS and IHE
C: Has ENDS

In combining Kidder's report card and the seven remaining weapons systems in the post-year 2003 enduring stockpile, we have the following grading:

B61-3/4/10 (tactical bombs)	B
B61-7 (strategic bomb)	B
W76 (SLBM)	C
W80 (ALCM)	B
B83 (strategic bomb)	A
W87 (ICBM warhead)	A
W88 (SLBM)	C

Note that all of these warheads are already certified one-point safe, that is the chances of significant nuclear yield is less than one in a million if the warhead's HE is detonated at any one single point. The B83 and the W87 have already have the highest modern safety ratings. With respect to the remaining warheads that lack RFPs and particularly RFPs and IHE, Kidder points out that modifications to operational handling procedures, rather than improved inherently safe designs, would vastly improve weapons safety. One modification would involve keeping

nuclear weapons systems." (DEIS page 2 - 11) *"In 1991, the President stated that the United states would not design new nuclear weapons in the foreseeable future."* (DEIS page 2 - 9)

There is much evidence to the contrary. In reaching a decision to proceed with DARHT, DOE relied heavily on the advice of the HPAIC. One member of that consulting group quotes the Defense Science Board Task Force on Pit Re-Use's conclusion:

> Although the size of any future nuclear weapon stockpile is likely to be very much smaller than the one we have today, it is most unlikely that this stockpile would be merely a subset of the existing stockpile.

This HPAIC member (Richard Wagner, former LLNL Executive Associate Director and former Assistant to the Secretary on Defense Atomic Energy) writes

> A major thrust during the current transition period should be to develop warhead designs which, if retrofitted into the smaller enduring stockpile, would be better suited to live with the ensuing decades of the new era. Being sure that the stockpile is able to conform to even more stringent future safety and security standards, by retrofitting with warhead designs which are inherently safer and more secure, is one much discussed aspect of this. Less discussed, but even more important in my view, is the question of confidence in the reliability over long periods of time, especially if there were to be a cessation of nuclear testing. This can be addressed by retrofitting with warhead designs that are less likely to experience physical degradation over long periods of time, that have more margin to retain performance if degradation occurs, whose performance can be assessed more easily (preferably with less reliance on nuclear testing), and that, if needed, could be more easily retrofitted or remanufactured in the more austere production facilities of the future.[12]

Mr. Wagner is presumably referring to the "robust" warhead. That design work on robust concepts is both ongoing and anticipated in the future is indicated in both the SNL FY 1995 Institutional Plan[13] and the LANL FY 1995 Institutional Plan.[14]

[12] (HPAIC *Hydrotest Program Assessment*, October 1992, page D-15)

[13] "The former paradigm of Phase 1 and Phase 2 feasibility studies is being largely replaced by less formal taskings that relate to the foregoing issues.... Newer taskings address robustness, long life, command and control, and nonproliferation. [ch. 7-p. 12, emphasis added] *FY 1995 SNL Institutional Plan*

Wagner goes on to state [in context] that hydrotesting capability is indispensable for assessment of primary performance issues addressing robustness.

In addition to work on robust concepts, design teams may be working on new earth-penetrating weapons as the SNL FY 1995 Institutional Plan indicates.[15] This is buttressed by comments on radio June 20 by the head of LANL's hydrodynamic program. If I heard him correctly, he stated that the B-53 warhead was being studied for earth-penetrating applications. The B-53 has the largest yield (9 megatons)[16] of any American warhead ever deployed.[17]

This earth-penetrating work may not involve the development of new physics packages, but instead the mating of existing physics packages to new delivery systems. Dr. Kidder points out how hydrodynamic facilities are particularly useful to effect that mating:

> If nuclear test restrictions were such that no new warhead or bomb designs could be added to the stockpile, an important question that would arise is the extent to which weapons already in the stockpile could be used in new and different delivery systems from those for which they had originally been designed....The materials, and their location, that surround the nuclear assembly system of the warhead or bomb can influence its performance in two ways. They can influence the HE-driven implosion hydrodynamically, and they can influence the nuclear performance neutronically....The hydrodynamic influence can be checked by conducting a test implosion producing less than 1kt of explosive yield, *or under conditions in which there is no nuclear yield at all.* The neutronic influence would be calculated with existing large "super-computers."[18] [emphasis added]

[14] Under *Extended Weapons Lifetimes and Options for Improved Safety and Security*: "Future initiatives may include the application of robust design concepts from a current DoD/DOE study to assess proposed strategies for replacing weapons in the stockpile in the absence of nuclear tests and an extensive production complex." (*FY 1995 LANL Institutional Plan*, p. 36)

[15] "We are working with Phillips Laboratory to support its Ballistic Missile Technology Program with maneuvering, guidance and control, kinetic energy penetrators, and earth-penetration warhead technologies...." (emphasis added, *FY 1995 SNL Institutional Plan*, ch.7 - p. 61)

[16] *U.S. Nuclear Weapons*, Chuck Hansen, Areofax, 1988, page 199

[17] The Draft FY 1996 Interagency SSP Plan contains the topic header of Replacement of the B-53 with discussion deleted.

[18] *Maintaining the U.S. Stockpile of Nuclear Weapons During a Low-Threshold or Comprehensive Test Ban*, Dr.R.E. Kidder, October 1987, page 9

8 Given substantial evidence that design work is continuing (or is anticipated) in some capacity on both robust concepts and earth-penetration weapons systems, the DARHT DEIS needs to modify its assertions (or implications) that there is no ongoing design. Distinctions need to be made as necessary between the possible development of new physics packages and the mating of existing physics packages to new delivery systems. The role that DARHT can play in both tracks needs to be made clear and included in the FEIS.

DARHT's Role in Weapons Remanufacturing

On February 14, 1995, DP Asst. Secretary Victor Reis was quoted in *The Albuquerque Journal* as stating to a Los Alamos audience, "The laboratories have to take on a manufacturing role." In the article, he also acknowledged that using the laboratories as production sites is the primary option under study for the reconfiguration of the complex.[19] As reported, Reis pointed to the need to begin remanufacturing pits for warheads sometime in the years 2000-2003, with the numbers being in the hundreds. That LANL officials have been aware of this likely remanufacturing role for some years now is amply demonstrated by the following:

> "The capability to fabricate a modest number of new warheads or remanufacture those in the enduring stockpile will be optimally located at the chosen nuclear-materials storage and processing site (One way of assessing the needed capacity for fabrication is to compare the number of weapons in the long-term stockpile with a typical weapon lifetime. From this basis we can estimate a need for about 100 to 200 units per year).....In the future the traditional distinction between responsibilities of the production complex and the design laboratories will become somewhat more diffuse."[20]

Bear in mind that LANL has the only presently operating processing site for plutonium (PF-4 at TA-55) in the country. Additionally, the Nuclear Materials Storage Facility's design problems are currently being corrected, which may provide for a possible expansion in capacity.

[19] In CCNS' view, this effectively demonstrates a predetermination to pursue the upgrade and modification alternative proposed in the 1993 Reconfiguration PEIS Revised Notice of Intent. This is further discussed in the programmatic section of these comments.

[20] "Redefining the U.S. Nuclear Weapons Program and the DOE Nuclear Weapons Complex", *1993 Los Alamos Science*, John D. Immele (LANL Associate Director for NW Technology) and Phillip D. Goldstone (Chief Scientist for LANL ICF Programs), page 47.

The 1993 LANL Strategic Plan ("Plan") is explicit in stating that the Lab's "unique reason-to-be" will remain nuclear weapons technologies, and makes clear that LANL's goal is to become "the prime...steward for the nation's stockpile."[21] According to the Plan, the expanded LANL role would involve the following manufacturing capabilities:

--fabrication of plutonium triggers,
--manufacture of uranium components,
--manufacture of lithium components,
--fire-testing of new plutonium pits at full scale,
--expanded plutonium and SNM storage,
--loading of tritium into nuclear weapons,
--further development of plutonium and uranium processing technologies,
--development of tritium manufacturing techniques,
--manufacture of detonators for weapons, and
--fabrication of beryllium components.

The attainment of these capabilities would then give the Lab the ability to manufacture compete nuclear weapons.[22]

The June 1995 SS&M PEIS Notice of Intent states that the following matrix of proposed alternatives has been developed for Stockpile Management (attached):

Note that under this matrix, LANL would be assigned responsibility for five out of six capabilities. LANL also has obvious capabilities for the one nondesignated activity (weapons assembly/disassembly).

A February 16, 1995 LANL memo anticipates and discusses likely production activities assigned to LANL in the future SS&M PEIS ROD. Of the four assignments, it is the plutonium production assignment that DARHT would likely directly or indirectly support. That memo states:

> This [SS&M] PEIS will likely cite Los Alamos as the source of something like 150 pits per year to be supplied for renewal builds. Present thinking involves the dedication of one of the four wings of our plutonium facility, PF-4, to be modified to demonstrate modern process and, incidentally, produce 50 pits per year....The other 100 pits to make up the 150 total per year would be obtained by examining and requalifying pits from disassembled weapons of the same type.[23]

[21] *The 1993 LANL Strategic Plan*, p. 13

[22] Ibid, p 27

... provide critically needed global leadership.

27 *Draft Stewardship Report*, JASONS, August 1994, p. 16

the available production systems." (ch. 5 - p.3) "*Flexible integration* of research, development, and

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A DARHT Alternative in the Draft FY 1996 LANL Institutional Plan?

DOE is all too aware of DARHT's NEPA history and LANL's NEPA compliance in general. There is little point in reviewing it here other than to note that, in CCNS' view, programmatic review in advance of all other levels of review is required to fully correct that history. In any event, one would assume that DARHT's NEPA history would have by now instilled a great degree of caution in DOE?LANL. The court ordered DOE to disclose and evaluate in the DARHT EIS a "reasonable range of alternatives to each major federal action involving the construction and operation of the DARHT Facility, as listed in the Notice of Intent referred to above [the DARHT EIS NOI]." As a result, six alternatives are now listed in the DEIS, including an Upgrade PHERMEX Alternative. That alternative is described as

> Construction of the DARHT Facility would not be completed although its building would be completed and put to other uses. Major upgrades would be constructed at PHERMEX, and the high-resolution radiographic technology planned for DARHT would be installed at PHERMEX, including a second accelerator for two-axis imaging. DOE would perform some hydrodynamic experiments; those involving plutonium would be conducted in containment vessels.[35]

In the Draft FY 1996 LANL Institutional Plan is the following:

> The Laboratory will continue to develop the capabilities of its Pulsed High-Energy Radiographic Machine Emitting X-rays (PHERMEX) while preparing for DARHT's availability, assuming favorable disposition of the Environmental Impact Statement. Plans are to provide PHERMEX with a
> 17 double-pulsed capability that, combined with Laboratory developments on a time gated, large-format gamma camera, will provide two images late in the implosion, giving important information about the time evolution of implosion features. The upgraded PHERMEX will also provide higher doses. These PHERMEX improvements will help meet experimental needs until DARHT is available and then will enable scientists to take immediate advantage of the greatly improved capabilities of DARHT.[36]

17 Is this not a second Upgrade PHERMEX Alternative, which also can be a valid alternative to DARHT? Is this not essentially an introduction by LANL of a new

35 DARHT DEIS Executive Summary, May 1995

36 DRAFT FY 1996 LANL Institutional Plan, May 30, 1995, pp.14-15

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17 deck after formal alternatives have already been designated and scoping comments and the DEIS already prepared? What is the difference between this PHERMEX upgrade and the other? The obvious answer is that the first PHERMEX upgrade would provide the facility with two-axis imaging. However, it remains to be determined if DARHT will receive two-axis imaging, based on the performance of the first axis. That is the precise reason why the DARHT project was divided into the two distinct line items of installation of the first axis followed by the second. Secondly, it should be noted that a significant minority (3 out of 9 members) of the HPAIC expressed doubts over the cost benefits of a second axis.[37]

As stated, LANL PHERMEX Upgrade plan is to provide the facility "with a double-pulsed capability that, combined with Laboratory developments on a time gated, large-format gamma camera, will provide two images late in the implosion, giving important information about the time evolution of implosion features. The upgraded PHERMEX will also provide higher doses." The JASONS, a group of scientists who advise DOE, discuss an FXR upgrade in its Draft Stewardship Report:

> A proposed $5M upgrade to the FXR accelerator will allow double pulsing (and hence, when coupled with the active gamma-ray camera, dual images separated by several microseconds) in 1997. This advance will be at the expense of a decrease by a factor of 7 in dose, which should be more than compensated for by the higher sensitivity of the gamma ray camera.[38]

The above suggests that an upgrade without dual-axis imaging can provide important new capabilities to PHERMEX, especially given that its dose would not only <u>not</u> be reduced, but increased. Replacement parts for PHERMEX would not an insurmountable problem if the will is there to ensure supply. CCNS believes that this type of upgrade to PHERMEX is a valid alternative to DARHT, and would
17 address the proliferation concerns addressed in these comments as well. It should be recognized as such and analyzed in detail in the FEIS.

37 "Prior to the construction of the second leg of the facility, I would suggest a comprehensive review of the experience of others with dual-axis experiments," Dave Hall. "The second DARHT leg will be useful, but no nearly so important as attaining or exceeding the accelerator performance goals for the first leg," Ray Pollack. "However, these uses and possibilities [of dual-axis experiments] seem to be nicities rather than significant capabilities. And they hardly justify the cost (and relative inflexibility) of a second LIA axis, with a fixed focal point and severe constraints on containment sphere design," Seymour Sack. *Hydrotest Program Assessment*, HPAIC, October 1992

38 *Draft Stewardship Report*, JASONS, August 1994, p. 26

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1) The urgent need cited by DOE for DARHT and then used to dismiss programmatic analysis in advance of the DARHT EIS is doubtful, as discussed in the Purpose and Need Section;
2) Asst. Secretary Reis' remarks indicate that the prime option under study for the consolidation of the complex is that the labs will take on a manufacturing role. Specifically, LANL will be remanufacturing warheads in the near future.
3) There is presently no programmatic or site-wide NEPA basis for this prime option. Furthermore, pursuit of this prime option constitutes a predetermination to follow the upgrade and modify alternative proposed in the 1993 Reconfiguration PEIS Revised Notice of Intent. This PEIS was then terminated;
4) DARHT's capabilities are a "cornerstone for potential weapons remanufacturing." Judge Mechem ruled that all actions connected and related to DARHT must be disclosed and evaluated in the DARHT EIS. He also retained jurisdiction for the purpose of resolving potential disputes over the adequacy of the DARHT EIS;
5) There are then two possible remedies:
a) The DARHT EIS must be radically expanded beyond the scope of the present Implementation Plan and DEIS; or
b) The present Stockpile Stewardship and Management PEIS must be prepared in advance of the DARHT EIS.
6) Given that the ongoing consolidation of the complex is inherently programmatic in nature and DARHT's central role in that consolidation, programmatic review in advance of the DARHT EIS is appropriate.

Facts that directly or indirectly support the need for programmatic review in advance of the DARHT EIS: [all emphasis added]

Judge Mechem's ruling: In granting a preliminary injunction against further construction of DARHT, he ruled that DOE must prepare a comprehensive DARHT EIS that includes disclosure and evaluation of "how each major federal action involving the construction and operation of the DARHT facility, *in conjunction with all related or connected actions*, as well as past, present and *reasonably foreseeable future actions*, cumulatively or synergistically impact the quality of the human environment."

DARHT's relationship to future programmatic activities: : The use of DARHT's capabilities "*is a cornerstone of Los Alamos nuclear competence, stockpile maintenance, and potential weapons remanufacture.*" DARHT's time-sequenced view capability "*not only improves design capability* ...but also *provides a benchmark for computation for remanufacturing or stockpile maintenance.*"

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Without DARHT, "development schedules for *stockpile improvements*....will be longer than necessary."[40]

DARHT's relationship to the DOE complex: "*DARHT is intended as a user facility for the entire DOE complex*. Los Alamos has, in fact, recently conducted major hydrotests for both Sandia and Livermore. The DARHT facility can expand such cooperation, even to the extent of accommodating diagnostic equipment and personnel from other laboratories."[41] As such, DARHT transcends mere site-specific significance.

DARHT programmatically leads to further investments in hydrotesting facilities: 1) to begin with, $31 million for DARHT's second axis; and 2) the Advanced Hydrotest Facility (total estimated cost of $422 million; construction start date 9/1/08).

DARHT's central importance as a facility critical to the maintenance of stockpile safety and reliability has not been demonstrated: Until 1993 DARHT was described in DOE and LANL budget requests as a weapons design facility. It's sudden switch to a stockpile maintenance role is not credible given the declarations by senior authorities of a satisfactory level of stockpile safety and reliability. The September Nuclear Weapons Posture Review directed DOE to retain design capabilities for future, presently unforeseen needs. DARHT's design capabilities are no secret.[42] Given the likelihood of continuing testing constraints, DARHT's largely irrelevant utility to safety and reliability issues, and a commitment to retaining design capabilities, the conclusion that DARHT's real purpose remains as a design facility is reasonable.

The SS&M PEIS: A Notice of Intent was published days after CCNS' and LASG' first meeting with DOE HQ over DARHT's NEPA compliance. Our original DARHT letter demanded programmatic review. Implicit in the Department's agreement to perform a SS&M PEIS is its recognition of programmatic issues involving DARHT.

The DARHT EIS Implementation Plan (IP): In the IP, DOE acknowledges that DARHT's capabilities are related to the programmatic analysis planned for the

40 Quotes from the *FY 1996 LANL Capital Assets Management Plan* DARHT Activity Data Sheet.
41 Ibid.
42 "Although DARHT could be used to collect information relevant to the design of new weapons, no new weapons are anticipated to be designed *in the foreseeable future*" (DARHT EIS Notice of Intent, 11/18/93). Thus, it is only current political winds that prohibit overt use of DARHT as a design facility.

SS&M PEIS. From there, DOE immediately and wrongfully concludes that it is appropriate to proceed with the DARHT EIS in advance of the SS&M PEIS. The sole justification given for this position is that "the enhanced diagnostic capabilities proposed for DARHT are urgently needed to evaluate and assess the safety and reliability of the existing but aging nuclear weapons stockpile." There is no urgent need as previously discussed.

The IP, which drives the DEIS, acts counter to public scoping comment: The IP categorizes scoping comments. "The most recurring issue ..asserted that the proper sequence of NEPA actions was not followed because DARHT construction began before completing the EIS and its subsequent ROD. The commentators asked that DOE stop construction on DARHT, complete the Stockpile and Stewardship PEIS, and complete the DARHT EIS before making decisions on DARHT."[43] This largest single category of response is then dismissed..

The DEIS is inherently prejudiced in that it assumes that enhanced radiographic hydrotesting is immediately needed regardless of alternatives analyzed or actions selected in programmatic review. Furthermore, DOE contends that a Record of Decision on DARHT will not prejudice the outcome of the SS&M PEIS. The premise that underpins these dubious suppositions is that there is some kind of safety and reliability crisis in the nuclear weapons stockpile that justifies proceeding with a decision on DARHT in advance of programmatic review. As DOE knows, while granting a preliminary injunction against construction of DARHT, a senior federal judge stated that "ample evidence points to the fact that the nuclear weapons stockpile is, at this time, safe and reliable." He was referring to testimony in March 1994 by Asst. Secretary of Defense Programs Victor Reis who reported that the stockpile was safe and reliable. In addition, Dr. Immele, at the DARHT scoping hearing of last December, stated that no safety problems related to aging have been found.

It is interesting that the judge issued his ruling without knowing about the 1993 Sandia Stockpile Life Study. The Life Study states that while nuclear weapons age, they do not wear out and are not allowed to degrade. They last as long as the weapons community desires. Defects have been discovered, but have been fixed with existing surveillance programs and existing facilities. Historically, defects involving primaries, which DARHT would ostensibly study, have been a very small percentage.

If there is no real crisis in safety and reliability since these reports and testimony,

[43] *DARHT Implementation Plan*, USDOE, February 1995, page 4-2

what has changed? DOE cites the termination of full-scale underground testing as justifying the urgent need for DARHT. But the Stockpile Life Study explicitly states that no safety or reliability defects have been first discovered through full-scale stockpile confidence underground testing. Hence, the loss of underground testing is not justification for the urgent need for DARHT in advance of programmatic review. In addition, the Study states that, based on historic data, only one actionable defect will be discovered each year. For the sake of emphasis, the defects that have been discovered have been found and fixed with existing programs and existing facilities. So where then is the real need and purpose of DARHT? DARHT's purpose and need should be analyzed and justified in programmatic review.
In sum, DOE does not have a reasonable basis for justifying a decision on DARHT in advance of programmatic review. There is not now, nor is there likely to be in the next couple of years, the urgency for DARHT that DOE contends. There is not a crisis in the safety and reliability of the stockpile. There is not a study of interconnected actions and reasonably foreseeable actions in the Draft DARHT EIS. The programmatic ROD is expected only one year after the DARHT ROD. This still puts the programmatic ROD two years in advance of completion of DARHT's first axis. DOE commitment to programmatic review, first made in 1989, still has borne no results. The Department is well advised to complete the SS&M PEIS in advance of the DARHT EIS.

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Site Alternatives

Capability	KCP	LANL	LLNL	NTS	Y-12	PX	SNL	SRS
Weapons Assembly/Disassembly				X		X		
Nonnuclear Components	X	X	X				X	
Nuclear Components								
- Pit Reuse (minor)		X		X		X		X
- Replacement Pit Fabrication and Reuse (major)		X						X
- Secondaries and Cases		X	X		X			
High Explosives Components		X	X			X		

In addition, the PEIS will also evaluate the no action alternative. For Stockpile Management, no action is described by the following matrix:

Sites

Capability	KCP	LANL	LLNL	NTS	Y-12	PX	SNL	SRS
Weapons Assembly/Disassembly						X		
Nonnuclear Components	X	X					X	
Nuclear Components								
- Replacement Pit Fabrication and Reuse (major)		X	X					
- Secondaries and Cases					X			
High Explosives Components						X		

Stockpile Stewardship. The PEIS will assess the alternatives for conducting the Stockpile Stewardship mission. New facilities and upgraded facilities that will enable the Department to maintain confidence in the safety and reliability of the stockpile in the absence

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Acronyms Used

ALCM:	Air Launched Cruise Missile
CAMP:	Capital Assets Management Plan
CCNS:	Concerned Citizens for Nuclear Safety
CONVEX:	Contained Nuclear Explosions in Vessels Experiments
CTBT:	Comprehensive Test Ban Treaty
DOE:	Department of Energy
EIS:	Environmental Impact Statement
ENDS	Enhanced Nuclear Detonation System
DARHT:	Dual Axis Radiographic Hydrotest facility
DEIS:	Draft EIS
DP:	Defense Programs
FEIS:	Final EIS
FPU:	First Placed in Use
FXR:	Flash X-Ray Facility at LLNL
HE:	High Explosive
HPAIC:	Hydrotest Program Assessment Independent Consultants
ICBM:	Intercontinental Ballistic Missile
ICF:	Inertial Confinement Fusion
IHE	Insensitive High Explosive
IP	Implementation Plan
LANL:	Los Alamos National Laboratory
LASG:	Los Alamos Study Group
LLNL:	Lawrence Livermore National Laboratory
LIA:	Linear Induction Accelerator
NEPA:	National Environmental Policy Act
NPT:	NonProliferation Treaty
PHERMEX:	Pulsed High Energy Radiographic Machine Emitting X rays, DARHT's predecessor hydrotesting facility
SLBM:	Submarine Launched Ballistic Missile
SNM:	Special Nuclear Materials, i.e. plutonium and highly enriched uranium
SNL:	Sandia National Laboratory
SS&M PEIS:	Stockpile Stewardship and Management Programmatic EIS
SSP:	Stockpile Stewardship Program
SRP:	Savannah River Plant
PHERMEX:	Pulsed High-Energy Radiographic Machine Emitting X-rays
RFP:	Fire Resistent Pit
ROD	Record of Decision
UGT:	Underground Testing

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Comments on the DARHT Draft Environmental Impact Statement

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June 28,1995

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In addition to my oral comments presented at the DARHT hearing on May 17 in Santa Fe, I present the following:

DOE's claim that DARHT will not cause significant environmental impact is based on the stated assumptions that DARHT will be no more dangerous than PHERMEX and that PHERMEX has not caused significant environmental impact. Both of these assumptions need to be examined carefully.

• Differences Between DARHT and PHERMEX

1 The assumption that DARHT will be no more dangerous than PHERMEX is called into question immediately by table 3.3. of the DARHT Draft Environmental Impact Statement. Many potential environmental impacts are described as being exactly the same under several alternatives. It seems exceedingly unlikely that this would really be the case, which implies that some of these numbers are entered as theoretical values rather than being based on the true engineering and design of the alternatives under consideration. For instance, with the stated value for the distribution of
1 depleted uranium contamination being 15 acres for all alternatives, it seems that this value may be considered a maximum and that real values are not used.

It is far from clear to the public that these assumptions of similar individual impacts for all alternatives is in any way justified. Indeed, page d1 describes the amount of depleted uranuim (DU) currently at PHERMEX as "similar" to that proposed at DARHT while the exact same sentence shows
1 that DARHT will actually use 30 percent more DU. The appendix goes on to state " ...the maximum average soil contamination level observed at PHERMEX in the vicinity of the firing point under either the No Action or Upgrade alternatives would be approximately double that currently at PHERMEX " (the document does not explain how contamination under the
28 No Action alternative which is the continuation of the status quo can be more than the status quo contamination at the facility). In addition,
1 appendix E estimates a drainage rate for the DARHT site (under unvegetated conditions) 2.1 to 2.9 times higher than for PHERMEX. Deep drainage is viewed as a significant environmental pathway which has caused contamination in other DOE sites. The appendix goes on to state that due to
1 the huge variability between individual sites, only site-specific data can effectively tell to what extent deep drainage actually exists. Thus there are significant differences between DARHT and PHERMEX which need to be specifically detailed inthe EIS.

DOE's use of estimated values in the DEIS for specific environmental
29 impacts is inappropriate. The point should be to provide accurate data about the facilities, which can serve as a basis for judgment whether there will in fact be a difference of environmental impacts under alternatives. DOE inserts values based on the assumption that there is no difference in alternatives and

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then turns around and claims that there is no difference in the alternatives based on the inserted values.

2 In addition, for all alternatives, it is far from clear that the number or size of the shots would be the same as they are currently. These values are impossible to obtain without some programmatic understanding of what the facility would be used for, how necessary the so-called Stockpile Stewardship program is, and whether DARHT's application to weapons design will be used.

The rest of my comments deal with potentially significant environmental impacts which may be present under many or most of the alternatives presented in the Draft EIS (DEIS). Many of these potential impacts should be regarded more seriously than seems to presently be the case.

• **Environmental Effects of Plutonium**

3 It is disturbing that no mention of the potential environmental effects of plutonium is made anywhere in the Draft EIS. This material is of prime concern to the public on account of its longevity and toxicity. The potential effect of vessel failure should definitely be included in the SWEIS due to the likelihood and severity of vessel failure during the lifetime of the facility (page i4), particularly if a large number of plutonium-bearing shots are performed per year.

4 Even if no vessel breaches were to occur, the plutonium would still form a waste stream which must be included in the EIS. If the plutonium - contaminated material is kept in its solid form, there would presumably be some intention of sending this material to WIPP. However WIPP is a highly problematic facility which, even if it is shown to be safe enough to open, does not have nearly enough capacity for all the transuranic waste presently produced or expected to be produced in the near future. In addition, characterization of waste which will be sent to WIPP must occur before the facility accepts the waste. This charecterization would be impossible to obtain for either the DARHT or PHERMEX facilities in the absence of programmatic planning which could guide the number of plutonium test shots a year.

5 Another alternative is that the plutonium would go into a liquid waste stream through some sort of rinsing or washing process. If this waste stream does occur, it should be considered in the EIS. Presently, the Radioactive Liquid Waste Treatment Facility is in a state of transition, awaiting site-wide and programmatic decisions. Waste streams arriving from DARHT or PHERMEX cannot be appropriately calculated until programmatic decisions are made about these facilities. Approriate waste stream calculation is required in order for the EIS to fully evaluate environmental impacts.

6 Plutonium transport is also of great concern to the public. Sources and routes of all off-site radioactive and hazardous materials should be included

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6 in the EIS so that a full analysis of potential impacts of transportation can be undertaken.

• **Amount of material accessible to the environment:**

7 The DEIS is not clear as to the amounts of DU (and presumably other materials) which will be used for the proposed alternatives. For instance, the water modeling systems use a value of 460 lb of DU per year. However, page 3-21 refers to this amount as being based on the amount of DU used at PHERMEX during the mid-eighties. However since that time, "programmatic objectives have changed and a limit of 1540 lb would be required to meet all objectives under this (preferred) alternative." This is a 3.3 fold difference! These so-called programmatic needs have never been made public and should not even exist before the programmatic Stockpile Stewardship and Management PEIS is completed. It is extremely serious if DOE is intending to make use of such large amounts of DU and has not included this amount in its assessments of environmental impacts in the EIS.

Even the smaller amounts of DU historically used at PHERMEX have had a great effect on the surrounding environment. 34,200 lbs. of DU have been used of which 30 % remains in the environment, and of which 2% is directly respirable. While DU is a problematic radioactive substance which releases radon daughter products for an extremely long period of time, it is far from the only dangerous material released from PHERMEX, and which would continue to be released from DARHT. Historically, 480 lbs. of beryllium, 704 lbs. of lead, 2325 lbs. of copper, 9470 lbs. other metals, 2325 lbs. of lithium hydride, and 76,800 lbs. of high explosive have been used at PHERMEX. Since little cleanup information exists on many of these materials, the DEIS itself makes the assumption that much of this material

8 has remained in the accessible environment. The material which was recovered and treated as waste should also be considered as part of the environmental impacts of PHERMEX (and potentially for DARHT), due to the environmental contamination which has resulted from waste areas such as LANL's Area G where much of this waste has been buried. CCNS believes that if this facility were not part of the LANL complex, and were judged by the

30 same standard as other industrial facilities, such large amounts of environmental contaminants as are presently at PHERMEX would not be dismissed as nonsignificant. It is not sufficient merely to claim that these facilities have not been as harmful as the E-F firing site which was also operated at TA-15. DOE seems to favor this highly inappropriate type of argument to claim that DOE and PHERMEX have no significant environmental impacts. Just because a bad facility was built in the past, is no reason to build an only slightly less bad facility in the future.

• **Air Quality**

9 Air Quality models used are stated to be appropriate for flat or rolling terrain (page c1). Los Alamos is neither. The steepness and variability of the canyon-mesa structure produces highly variable winds which may act in a

considerably more complex manner than modeled. As a result, contaminants may remain suspended for different periods of time or may reach areas not previously considered by the models. These are very important issues since population rates increase within a few miles from the site which could cause the overall dose rate to increase.

9 In addition, because there are no air monitors on site at TA-15 III, air quality data must necessarily be based to a certain degree on guess work. Page c4 states: "the use of more realistic pollutant release heights accounting for buoyant and mechanical plume rise and the consideration of initial plume spreading (e.g. as would result from hydrodynamic testing) are factors which would tend to reduce maximized ground level impacts but were not included in this analysis". Page c5 and c6 discuss how mixing layer height is taken
9 from values appropriate for Albuquerque. These values are of only questionable application to Los Alamos, and increase the uncertainty of modeling procedures. In addition the models used to describe health effects "could significantly underestimate atmospheric dispersion of explosive material (page h4)". These models are all considered conservative by the authors of the DEIS. Taken together, however, they present a picture of a
9 series of models which may bear little resemblance to the actual behavior of airborne contaminants from TA-15 III. The EIS needs to better support the conclusion that factors which would lead to the increased suspension of contaminant gases and particles will protect human health and the environment rather than create an additional adverse effect. The discussion on the health effects model illustrates this problem quite well. Page h5 states: "for large amounts of explosives,the estimated dose for a stem and cap, double-plume release (such as that found in explosions) could be a maximum of forty percent higher than that modeled for an elevated, single-point release."

There is cause for concern even if the picture presented by the air quality models is valid. One problem is that there are materials from the explosions which are estimated to remain in the accessible environment, yet appear in neither cleanup calculations nor estimates of soil contamination
10 (see geology and soils section below). It seems possible that the aerosolization values may be underestimated. If this is the case, doses of radioactive and toxic materials would be higher than is presently calculated. Presently, little attention is paid by the DEIS to either lithium hydride or explosive residues, both of which can be considerably dangerous materials.

Another concern is the dose which may result from fugitive dust emissions. With potential DU contamination rates of 9300 ppm and the
11 above-mentioned high and variable winds, there seems to be a great potential for so-called non-respirable particles to be transported to areas where they could degrade and become respirable. The effect may be something equivalent to having a small uranium mine in the area, a disturbing thought when one realizes that airborne uranium has been linked to adverse health

11 effects such as lung cancer in uranium miners[1] . Doses from high dust conditions (high winds after a dry spell) should be specifically calculated.

- **Geology and Soils**

Soil contamination rates are expected to be quite high, up to 9300 ppm under either the No Action or Upgrade alternatives. At the northeast drainage channel, the total uranium at PHERMEX is approximately 31 times background and is highly accessible to the water supply of the region. The
12 DEIS states that "the general pattern and number of tests would be virtually the same over the next thirty years " (page d1). Although it is not clear how this statement can be made without programmatic support from the SS&MPEIS, the EIS should analyze whether having a larger area contaminated to 4600 ppm or a smaller area contaminated to 9300 ppm would be more likely to adversely affect the environment. In addition, because the highest level of DU contamination was observed near the base of a wall near
13 the firing point (page d3), the potential of buildings such as Nake'muu to similarly concentrate DU contamination should be estimated. This may prove particularly important when estimating adverse effects of DARHT on this unique archaeological and cultural site.

Appendix D estimates that 30% (11,000 lbs) of the DU historically and currently used at PHERMEX has not been not recovered by cleanup processes. As stated on page d6 and d7, 1300 lbs has been accounted for in a contamination circle of 200 feet from the firing point. This figure is approximately 11% of the DU which should be in the environment. Although the appendix points out that the 200 foot contamination circle is only 20% of the total contamination circle (radius 460 feet), surely this circle should contain most of the DU contamination since contamination is known to decrease with distance from the firing point (see page d5). Page d5 shows that by the edge of the 200 foot contamination circle, the DU concentration is already down to about 8 times background as opposed to the very high concentrations which occur closer to the firing point. There is thus an enormous amount of DU which remains unaccounted for. It has not been cleaned up and has not been found in the contamination circle of 460 feet, and was not part of the amount estimated to be aerosolized. Where is this material? This question must be answered in order to fully evaluate the
14 environmental impacts of either PHERMEX or DARHT.

A similar problem seems to exist with other environmental contaminants in the soil. Page b3 states that no detectable high explosive residues were found in the soil around the firing point at PHERMEX. However, in the lifetime of the PHERMEX facility, Over 76,000 lbs. of high explosive were used. No mention is found in the EIS of the fate of these residues. It is hard to believe it would all be contained when so much DU

[1] For annotated bibliography on this subject see "Low Dose Epidemiological Findings on Child Health and Adult Risks of Low-Level Radiation". Prepared by the Child Cancer Research Institute, Concord, Ma.

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escaped during operations at PHERMEX. High explosive residues have been found at other LANL sites where high explosives are used routinely. Because high explosive residues often require environmental remediation (i.e. the E-F firing site at TA-15) , the fate of these materials is far from trivial, particularly if a large portion of them are becoming aerosolized and subject to transport in
14 the highly variable winds around Los Alamos. There is not much documentation of the fate of the 2,325 lbs. of Lithium hydride mentioned on page b9. When the recent fire occurred at PHERMEX which burned lithium hydride contaminated materials for nine hours, the aerosolization of this material caused considerable concern to LANL firefighters. What happens to
14 the lithium hydride in the course of normal operations? Page d8 states that the entire inventory of copper, lead, beryllium and other metals is "assumed to be dispersed within the soil contamination circle and available for migration in hydrologic pathways". There are no calculations in the EIS which might show that this is indeed the case. If these metals behave similarly to the DU, it is possible that not all of them can be accounted for by measurement within the contamination circle. If this is the case, further information must be provided about the fate of these materials.

• Water Resources

As mentioned in the first section of these comments, the deep drainage issue is not fully resolved in the EIS. Page e1 states : "at other DOE sites, deep drainage has transported solubilized contaminants to underlying ground water systems,... the potential exists for deep drainage at both (DARHT and PHERMEX) sites. "Appendix E goes on to stress that site specific measurements must be taken in order to determine the extent of potential
15 deep drainage. Because the deep drainage models do not contain two-dimensional fracture structures (i.e. cracks and fissures), it would be useful for the public to know if drainage rates could possibly be more than suggested by the one-dimensional flow model used.

Because DU becomes more radioactive as time goes on (due to the production of radon daughter products), protection of the public must remain a priority well into the future. Page e13 states: "if the analysis of deep
16 drainage were to extend much beyond 100 years, consideration would have to be given for analyzing for greater precipitation amounts and intensities than used in this study." This consideration must be given due examination in the EIS.

While deep drainage is definite possibility, particularly at DARHT, runoff contamination is also significant and must also be thoroughly considered. Present models do not include runoff from seasonally heavy rains which have been known to be heavy enough to lead to flash floods at
17 LANL. Corrosion rates of most of the metals that would be found on site would make these metals available to runoff. Appendix E shows that, under both the No Action and Preferred alternatives, the source of depleted uranium would be completely removed from the firing site in less than 1000 years and would be available for subsequent surface and subsurface migration

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Like other models used in the EIS, the amount of DU modeled as being accessible to water systems is based on the 460 lbs. per year rates suggested in
18 1988 NESHAPS permit, rather than the proposed 1540 lbs. proposed to meet programmatic objectives (see above). It is also not clear that potential contamination to water supply is taking into account materials such as lithium hydride and high explosive residues.

Another pathway which is mentioned in the DEIS is through well extraction of dissolved contaminant through the highly desirable wells which may later be drilled in TA 15. The DEIS states that modeling of this alternative is not necessary, because the the contaminant must be available at
19 the surface, and be transported vertically down to the main aquifer, which the author claims would take centuries to millennia. However, the presence of corrosion- available metals and deep drainage mentioned above seem to contradict the hypothesis that travel times would take that long. Presently the state of contamination is unknown. The deep aquifer has not been proven uncontaminated. To the contrary, tritium has been found in the deep aquifer. LANL and the New Mexico Environment Department are presently engaged in a major project to dig test wells in order to ascertain if significant contamination of the aquifer by other radionuclides has, in fact, occurred.

Finally, the because of the uranium present in the discharge sink in Portrillo Canyon described on page e32, the hydrogeology of the region
20 should be more thoroughly examinedto ascertain the rate of flow and extent of features such as this sink. At the very least, in order for the inflow rates into the sink to be effectively evaluated, a two-dimensional flow model should be developed to model this sink and its potential to transport contaminants to accessible water.

• Archaeological and Cultural Resources.

Because the closest public exposure would be to workers and visitors to Bandolier National monument, one of the area's prime tourist attractions, more attention should be paid to the potential of the DARHT facility to adversely affect tourism to this site. In addition, it is conceivable that
21 Nake'muu and other sites within the 4000 foot radius of the DARHT facility will take on considerable economic value as tourist attractions. Potential recreational and socioeconomic effects should be calculated in addition to the considerable cultural and paleontological costs which may result from the DARHT facility (see Oral Comments).

22 The Draft EIS states that approximately 95% of the over 975 prehistoric sties at TA-15 III are considered eligible or potentially eligible for the National Register for Historic Places, and that an additional 40 % of the area around the DARHT and PHERMEX sites has yet to be fully characterized. The Pajarito Plateau is, in its totality, a unique archaeological and cultural site. While many of the impacts of LANL overall will presumably be dealt with in the
22 LANL Site-Wide Environmental Impact Statement, the impact of piecemeal destruction of these resources must also be considered. Because of its unique

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Los Alamos County
Chamber of Commerce
Phone 505-662-8105 Fax 505-662-8399
P.O. Box 460 Los Alamos, New Mexico 87544-0460

June 17, 1995

Ms. Diana Webb
DARHT EIS Project Manager
U.S. Department of Energy
528 35th Street
Los Alamos, NM 87544

Dear Ms. Webb:

The Los Alamos County Chamber of Commerce is in support of the completion and operation of the Dual Axis Radiographic Hydrodynamic Test Facility (DARHT).

DARHT is acknowledged to be a vital component in the Nation's stockpile stewardship program. Its completion is critical to the national security interests of the United States. As you proceed with the Environmental Impact Statement, we also urge you to consider the importance of the DARHT project on the economic vitality of Northern New Mexico. Los Alamos National Laboratory has been a good neighbor to Los Alamos County and laboratory activities have contributed to the well-being of local businesses.

Please take the action necessary to allow the completion and full operation of the Dual Axis Radiographic Hydrodynamic Test Facility.

Sincerely,

Janet Rose
Executive Director

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US DOE/LAAO - IN

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Los Alamos Study Group

June 26,1995

Ms. M. Diana Webb, DARHT EIS Document Manager
DOE/LAAO
528 35th St.
Los Alamos, NM 87544

DARHT Draft EIS Comments

The Los Alamos Study Group (LASG) submits the following comments on the draft Environmental Impact Statement (EIS) for the Dual-Axis Radiographic Hydrodynamic Test Facility (DARHT). These comments are organized according to this outline:

I. DOE must complete the SS&M PEIS and the LANL SWEIS before the DARHT EIS (p. 3)
Introduction.
A. Completion of the SS&M PEIS is necessary to define the SS&M program (p. 4)
1. The DARHT project is not independent of the SS&M PEIS.
2. DARHT will prejudice the hydrodynamic radiography portion of the PEIS
3. DARHT will prejudice the remanufacturing and other portions of the PEIS, as detailed at II., below
B. DOE should complete the LANL SWEIS before the DARHT EIS (p. 13)
1. Analysis is needed of the site-wide cumulative impacts of DARHT and all connected actions reasonably foreseeable at LANL
2. The 1979 LANL SWEIS is inadequate for this analysis
C. DOE's "safety & reliability" justification for ignoring the required order of NEPA analyses is legally and factually inadequate (p.16)
1. There is no "national security urgency" exception to NEPA
2. There is no safety and reliability crisis of confidence in the US nuclear weapons arsenal, nor is one likely to arise in the future
3. The PEIS will be complete long before DARHT could contribute in any case

II. The draft DARHT EIS fails to include any analysis of connected and related actions and their cumulative impacts (p. 23)
A. DARHT would be a "magnet" facility for LANL
B. DARHT is part of a planned and in-progress consolidation of the nuclear weapons complex at LANL

III. The draft DARHT EIS does not provide an adequate analysis of a reasonable range of alternatives to the proposed action (p. 32)
A. The PHERMEX Upgrade(s)
B. Proliferation impacts
C. Plutonium operations and the exclusion option

IV. The draft DARHT EIS fails to provide an adequate analysis of the isotope production, waste

generation and disposal, and decontamination and decommissioning activities associated with the proposed action and alternatives (p. 38)

A. DARHT would cause the production of hazardous plutonium isotopes
B. DARHT would cause the generation and disposal of hazardous and radioactive wastes
C. The decontamination and decommissioning impacts of DARHT must be analyzed

V. The environmental and program analysis of the draft DARHT EIS is biased and lacks scientific methodology and credibility (p. 39)

I. DOE must complete the SS&M PEIS and the LANL SWEIS before the DARHT EIS

Introduction

On October 28, DOE published in the Federal Register a Notice of Intent (NOI) to prepare a Programmatic EIS on its Stockpile Stewardship and Management (SS&M) plan, the details of which, according to the NOI, are yet to be defined. DARHT, the DOE has long asserted, is an essential tool for maintaining confidence in the safety, reliability, and performance of the nuclear weapons stockpile in the absence of underground nuclear testing. This is, according to the NOI, an activity of stockpile stewardship.

On August 10, 1994, DOE published in the Federal Register an Advance Notice of Intent to prepare a site-wide EIS (SWEIS) for Los Alamos National Laboratory (LANL). The purpose of the SWEIS, the first programmatic environmental analysis of LANL in more than 15 years, is to consider the environmental, socioeconomic, and other impacts of present and reasonably foreseeable LANL programs and their alternatives.

The DARHT EIS, were the process valid, would determine the impacts of DARHT construction and operation and those of reasonable alternatives to the project.

Thus, it is clear that the proper logically- and legally-mandated order of these analyses and actions is:

A) Complete the SS&M PEIS, thus defining the program and determining its components in the light of analyzed need, utility, costs, and impacts from a nationwide perspective;

B) Complete the LANL SWEIS, documenting the impacts of the SS&M program components and reasonable alternatives at LANL from a sitewide perspective;

C) Complete the project-specific DARHT EIS, determining whether the project should go forward as proposed or whether a reasonable alternative means of accomplishing the mission goal should be preferred; and

D) If preferred, proceed with the DARHT project.

The draft DARHT EIS, however, proposes to invert this order, asserting that

"The information on environmental impacts of the course of action selected in the DARHT ROD will be included in the analysis of cumulative environmental impacts for the SWEIS." [and]

"The environmental impact analysis of the course of action selected in the DARHT

judgment and consideration of alternatives. The
nee.

hydrodynamics facility, the National Ignition Facility, and other facilities
for above-ground experiments to assess nuclear weapons effects.

(c) AUTHORIZATION OF APPROPRIATIONS.--Of funds authorized to be appropriated to the Secretary of Energy for fiscal year 1994 for weapons activities, $157,400,000 shall be available for the stewardship program established under subsection (a).

(d) REPORT.--Each year, at the same time the President submits the budget under section 1105 of title 31, United States Code, the President shall submit to the Congress a report covering the most recently completed calendar year which sets forth--

(1) any concerns with respect to the safety, security, effectiveness, or reliability of existing United States nuclear weapons raised by the Stockpile Surveillance Program of the Department of Energy, and the calculations and experiments performed by Sandia National Laboratories, Lawrence Livermore National Laboratory, or Los Alamos National Laboratory; and

(2) if such concerns have been raised, the President's evaluation of each concern and a report on what actions are being or will be taken to address that concern.

2 As can be seen, this law provides no independent justification for the DARHT or any other hydrotesting project apart from that provided for the stockpile stewardship program taken as a whole. Were this passage to be interpreted as an independent justification for the DARHT project, then the National Ignition Facility, the Jupiter weapons effects project, and every other proposed stockpile stewardship project would also have an independent justification. The National Ignition Facility and the Advanced Hydrotest Facility--the proposed successor to DARHT--together with the High Explosive Pulsed Power Facility, the Jupiter Facility, and the Atlas Facility are, however, all mentioned in and pendent upon the SS&M PEIS (SS&M PEIS Notice of Intent, pp. 17-18). Even the Contained Firing Facility, which, like DARHT, is an enhancement of hydrotesting capabilities, is dependent upon the outcome of the SS&M PEIS. Why then, is the decision about whether to complete DARHT being made prior to any decision about the scope, activities, purpose and need, and program elements of stockpile stewardship?

3 In the final analysis, there can be no justification for DARHT independent of the stockpile stewardship and management program because the work to be done at DARHT is by its nature intimately and inextricably connected to the entirety of the stewardship program. Much of Chapter 2 in the draft EIS is directed to establishing this very point. Thus by formal presidential directive, by law, by the nature of the technological enterprise DARHT is meant to serve, and by admission, DARHT clearly fails the first of the three tests required at 40 CFR 1506.1(c) for allowable interim actions.

3

2. DARHT will prejudice the hydrodynamic radiography portion of the PEIS.

3 DARHT also fails the third test for allowable interim actions, namely that any such action must not prejudice the final programmatic decision. The draft EIS asserts a contrary opinion. It says at page 2-12 that

"Because enhanced hydrodynamic capability is needed in the near-term regardless of the alternatives analyzed in or the courses of action selected as a result of the stockpile stewardship and management PEIS, DOE believes that a decision on whether to implement the proposed action analyzed in this EIS would not prejudice any ultimate decision regarding the stockpile stewardship and management program."

The scope and alternatives proposed for the SS&M PEIS analysis were published in a June 9, 1995 NOI. This NOI is extremely vague, reflecting underlying uncertainty in the size of the stockpile, and the methods used to maintain it. DOE's previous two attempts at a PEIS on this subject had to be withdrawn because their proposed scope was too narrow and left out less capital-intensive options; this could occur again. The public comment period is just beginning, and it coincides with a serious push by the Pentagon, supported by weapons laboratory personnel, to resume nuclear testing. The long and short of it is that the Department cannot be sure of the shape of its stockpile stewardship program, or that DARHT will not prejudice the PEIS analysis. 3

DOE is no doubt free to provide for some degree of upgrades to its hydrodynamic radiography capability, but when the proposed upgrade action is the construction of a $ 124+ million facility that is a crucial element of a particular stockpile stewardship plan, and when that stockpile stewardship plan has not yet been developed and considered, as it must be, within the already-existing SS&M PEIS, the only possible conclusion is that the proposed action (DARHT) must await the ROD on the PEIS.

4 Further, there is evidence that DARHT, far from enhancing national security, will decrease that security by stimulating a new type of arms race. Under a comprehensive test ban, the nation with the best hydrodynamic testing capability will be the one able to most reliably design and field new and destabilizing nuclear weapons, such the much-desired low-yield tactical weapons, enhanced electromagnetic pulse weapons, and others. DARHT will improve that capability, as well as provide a three-dimensional capability to examine nuclear directed-energy explosives and other advanced weapons.

4 Already other nations (France, Russia, and China) have cited the U.S. technological lead in surrogate testing facilities like DARHT as a reason to continue nuclear explosive testing. While DARHT is not needed for stockpile stewardship and management, the technical capabilities ascribed to it in that context, such as giving designers the ability to accurately predict the implosion of cracked and defective pits, are more than enough to design symmetric new weapons, which is an easier task.

DOE admits the crucial role of enhanced hydrodynamic radiography in its "science-based stockpile stewardship program":

"To develop its science-based program, DOE identified five critical issues regarding stockpile stewardship and management and strategies to address them.

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Two of these strategies acknowledge DOE's need for improved hydrodynamic testing capability..." [draft EIS, 2-4]

DOE also admits the crucial importance of DARHT to its science-based stockpile stewardship program:

"The DARHT facility will be the key experimental capability for adequately evaluating the continuing safety and reliability of the remaining nuclear weapons stockpile over the next few decades in the absence of nuclear testing." [Declaration of John D. Immele, LASG et al v. DOE, 11/29/94]

"The Department's Science-Based Stockpile Stewardship program is of critical importance to the nation... Delaying DARHT could undermine confidence in relying upon hydrotest-based stewardship to the extent that, in the absence of nuclear testing, we may not be able to assure the safety and performance of aging weapons." [Declaration of Victor H. Reis, LASG et al v. DOE, 11/29/94]

"The DARHT Facility is a critical component of this Presidentially directed stockpile stewardship program." [Declaration of John M. Deutch, LASG et al v. DOE, 11/30/94]

But SBSS is only the DOE's early development of a stockpile stewardship plan; it has not even been described in detail as the Department's proposed action under the SS&M PEIS. In fact, "Primary Physics Issues," which DARHT is designed to address, is the first listing among the issues to be addressed in the stockpile stewardship program, both under the preferred and the no action alternatives (SS&M PEIS NOI, pp. 17 and 18). More important, the nature and scope of this nation's provisions for maintaining its nuclear arsenal in the future are presently the subject of intense and widespread debate, within the government and without it. Further, the range of strategies, budgets, equipment, and personnel proposed for the various stockpile programs are extraordinarily broad, and it is clear that a facility such as DARHT would be an inappropriate element of many of them. Jonathan Medalia of the Congressional Research Service has recently reviewed this range of proposed stockpile programs in the publication "Nuclear Weapons Stockpile Stewardship: Alternatives for Congress (preliminary draft, April 7, 1995). Attached as Exhibit A is his Figure 1, which illustrates the wide range of current proposals. DOE's current proposal, SBSS, fits in the "Enhancers" category of stewardship plans, as DOE would actively seek to incorporate "enhancements" to stockpile weapons, using advanced radiographic design capabilities (such as DARHT and/or AHF) and hydronuclear testing. This plan is far more expansive, and expensive, than all other types of stockpile stewardship proposals, save only those that would retain and utilize full-scale underground nuclear testing. The Department's approach mandates a very large nuclear weapons research and development infrastructure and very large capital expenditures, including DARHT. As the Medalia work makes clear, the "best" stockpile maintenance program for the [illegible] by belonging the political goals of international non-proliferation and

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development infrastructure and large capital equipment funding.

The point, of course, is not that DOE is obliged to accept any of these (or other) stockpile maintenance programs - on the contrary, the very breadth of the present debate makes clear that DOE must develop its program and consider broad alternatives to it within the context of the SS&M PEIS, as it is now doing. The corollary is that the Department may not implement one enormously expensive and crucial component (DARHT) of a particular plan until the conclusion of the PEIS process.

There is no doubt that some SS&M program proposals include an element which may be called "enhanced hydrodynamic radiography capability" (EHC). By contrast, other proposals eschew the acquisition of EHC, deeming present capability entirely adequate and in harmony with our national efforts to limit the spread of nuclear weapons. One such proposal is that of Professor J. I. Katz of the Department of Physics, Washington University, St. Louis, which may be called the "curatorship" approach. For completeness, we attach as Exhibit B an essay by Dr. Katz on this subject titled "The Case Against Science-Based Stockpile Stewardship." As noted therein, Dr. Katz takes the position that

"...it is better to describe the future task as curatorship rather than as stewardship, and emphasize the distinction between these two concepts. In *stewardship* the human resources required to design and develop weapons are maintained, with skills honed on classified and unclassified experiments conducted at facilities such as NIF and in hydronuclear tests. In *curatorship* these facilities are not built, and design and development skills are allowed to atrophy; only those skills required to remanufacture weapons according to their original specifications are preserved...The chief nuclear danger in the present world is that of proliferation, and stewardship will exacerbate this danger, while curatorship will mitigate it while preserving our existing nuclear forces. [Exhibit A, p.1, emphases in original]

The quoted excerpt should serve as good evidence for three propositions that are fundamental to whether DARHT can be considered outside the context of the SS&M PEIS:

a) There is a very broad range of SS&M proposals, many of which do not include DARHT or any other enhanced radiographic capability;

b) The nation's SS&M program must be considered and developed as a whole, not in piecemeal fashion; and

c) The enhanced radiography element of proposed SS&M programs is connected to, and not independent of, other elements, including weapons manufacturing and remanufacturing capabilities and facilities.

Further, even as to those SS&M proposals which do include some form of EHC, there is no consensus on the utility or nature of that capability. Indeed, the JASON report on stockpile stewardship which the DARHT EIS repeatedly cites as evidence of the need for

have direct,

ns, as those terms are defined at 40 CFR 1508.25.

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11 One obvious example of the deleterious effect of the lack of a currently valid SWEIS on the DARHT EIS concerns the hazardous and radioactive wastes that would be generated by DARHT operations. The draft DARHT EIS assumes that the wastes produced at DARHT will be handled, stored, treated, and disposed in an environmentally-sound and regulatorially-compliant manner. In effect, this assumption is tantamount to tiering the draft EIS off a non-existent SWEIS.

12 In fact, the waste management (WM) program at LANL is in serious risk of being cut below what is necessary to keep its existing degree of compliance, let alone improve it. Current proposals now before Congress involve cuts in waste management funds at DOE facilities in New Mexico of $ 12 million (5/9/95 letter, O'Leary to Rep. Duncan Hunter).

Already, on Feburary 13 of this year, Deputy LANL Director Jim Jackson wrote to Bruce Twining, Manager of the DOE Albuquerque Operations Office, saying

> "This letter is to inform you of a serious concern about the ability to continue waste management operations at Los Alamos.
>
> "As requested by you, we have reexamined the funding requirements for waste management, and have concluded that for FY95, $75M is required for a safely operating, compliant program...
>
> "The total waste management budget authority available from Albuqerque is $53M...At this figure the facilities cannot be operated safely...Therefore, we will cease operations in the March/April timeframe and place the facilities in safe standdown modes.
>
> "The consequences for the Laboratory are severe. We will require that all of our other facilities cease the active generation of radioactive and hazardous wastes..."

The following day, a memorandum was widely distributed within the Laboratory which included the following language.

> "If...efforts to secure the required funding to support Laboratory waste management operations are unsuccessful, we plan to begin shutting down operations.
>
> "In line with this, we regrettably must request that each of you begin planning for a cessation of the generation of both chemical and nuclear wates. At the same time, those nuclear facilities which depend critically on the waste management facilities must be placed in a safe stand-by mode." (Memo from Gancarz and Baca, 2/1/4/95, CST-DO-95-036).

The current Capital Assets Management Process Report (CAMP 97) describes nine

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capital projects in waste management, the funding for which is uncertain, which are described as needed to either comply with existing environmental law, DOE health and safety orders, or to prevent environmental contamination. These projects compete directly with DARHT for funding, and in many cases have been pushed farther into the future because current funding is inadequate. While we do not, in every case, support each project in its current configuration, the underlying environmental concerns are quite real and should figure prominently in planning for the DARHT project.

In addition to building these capital projects, money is required to operate them. As we have seen, funds are lacking to operate existing facilities, let alone additional and improved ones. None of this includes the monies needed to decommision and dismantle existing structure, some of which represent a continuing hazard and expense, or remediate past environmental contamination.

12 Not only will DARHT produce low-level, hazardous, TRU, and sanitary wastes, but funding DARHT now will damage LANL's efforts to comply with existing laws, compliance orders, thus exposing workers, the public, and the environment to increased risks and LANL to litigation and fines.

2. The 1979 LANL SWEIS is inadequate for this analysis

The Tiger Team investigation of LANL and LAAO looked at, among other NEPA inadequacies, the practice of "tiering" (40 CFR 1502.2) NEPA documents off the 1979 LANL SWEIS. The conclusions were:

> **"NEPA documents reviewed by the Tiger Team at LANL, including the sitewide EIS, exhibit shortcomings of procedure and/or content when judged against the rwequirements of the current CEQ regualtions and applicable DOE Orders and guidelines.**
>
> "The 1979 sitewide EIS exhibits various technical and/or procedural shortcomings. Additionally, in light of changes in environmental regulations and standards, evolving methods of analysis, and modofications to the LANL site since preparation of the EIS, the age of the EIS limits its usefulness as abaseline document from which other NEPA documents can be tiered. Further, in some cases, the sitewide EIS has been cited inappropriately as the only required NEPA document for new activities...The impact analysis provided in the EIS is inadequate for the following reasons:
>
> 1) It does not reflect appropriate consultation with authoritative sources;
> 2) It does not reflect current knowledge as required by 40 CFR 1502.9(c)(1);
> 3) It was prepared by the University of California rather than a contractor with "no financial or other interest in the outcome of the project" as currently required by CEQ regulations (40 CFR 1506.5(c))." [emphasis in original]

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Needless to say, the 1979 LANL SWEIS has become more inadequate with the passage of some four years since the Tiger Team considered the matter. Further, this subject is highly germane, as this very project, DARHT, was the subject of a blatantly invalid attempt at tiering off this inadequate SWEIS in 1987, and again, in 1993:

> "...the described action is [s]ubstantially the same as actions previously evaluated in existing NEPA documentation and found to be insignificant...the impacts remain within the scope of the LANL Environmental Impact Statement." [Action Description memorandum - Memo to File, 11/6/87, Soden, Albuquerque Operations Office]

> "The proposed action appears to be encompassed within the original Action Description Memorandum, Dual Axis Radiographic Hydrotest Facility, dated November 6, 1987. It is our opinion that no further NEPA documentation is required for this proposed action." [Memorandum, 11/1/93, Vozella, LAAO]

12 DOE's record of use of the inadequate 1979 SWEIS in this very case is an egregious example of mis-use and ab-use. It would be a mistake to think that the same error can be compounded yet again. To repeat, the 1979 SWEIS is not an adequate foundation to allow the conclusion either that the wastes generated by DARHT can be adequately handled at LANL, or that the vast number of reasonably foreseeable actions connected and related to DARHT will result in no significant impacts on the LANL site. Only the LANL SWEIS now in progress can do that.

C. DOE's "safety & reliability" justification for ignoring the required order of NEPA analyses is legally and factually inadequate

Given the existence of an ongoing programmatic environmental impact statement process designed to determine the best stockpile maintenance program, what justification does DOE provide for pushing ahead with the DARHT EIS? We find:

> Proceeding with the DARHT EIS in advance of the completion of either the SWEIS or the PEIS is necessary because a decision on whether to proceed with DARHT, or pursue an alternative, is needed as soon as possible to help ensure the continued safety and reliability of the nuclear weapons stockpile." [draft EIS, 2-12]

Stripped to the basics, DOE's argument has not changed since it asserted that the DARHT project could not be delayed for the preparation of the admittedly-required EIS. Only months ago, DOE declared:

> "The Department needs to proceed with construction and procurement activities related to DARHT while the EIS is being prepared for reasons of national

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13 Now the claim is that the DARHT project cannot wait for the admittedly-relevant PEIS due to DARHT's "urgent need" to help ensure weapons safety and reliability. Now, just as then, the argument is specious: there is no safety and reliability "crisis" with the U.S. arsenal which DARHT is urgently needed to solve. We will address this question in some detail. Briefly, we find, as have others, that:

13
1. There is no "national security urgency" exception to NEPA;
2. There is no safety and reliability crisis; and
3. The PEIS will be complete long before DARHT could contribute, in any case.

As to number 1, we note the immediately-quoted Reis declaration and the draft EIS statement; the Department obviously believes that recitation of the mantra "national security urgency" overrides NEPA requirements. No extensive citation is necessary in rebuttal; we may simply agree with DOE's Deputy General Counsel for Environment, Safety, and Health, addressing DOE managers on the occasion of the 25th anniversary of NEPA:

> "...I am in a bit of a cranky mood these days about our ability to get NEPA right. If you are among those who has seen the light and believes NEPA really does help the Department make better decisions, you can tune me out...At the same time, however, I am confident that many are still lingering in, or at least occasionally visiting, the camp of those who think that NEPA is a great idea for other peoples' projects, or that your situation is an exception, or -- better yet -- an emergency. (That one has been particularly popular around the Department during the last year.) You may want to stay tuned in to what I have to say...
>
> "Finally, I think that our recent litigation losses send a clear message that courts are not persuaded that the national security and nonproliferation objectives that underlie many of our projects justify giving us a pass on NEPA compliance. There is no national security exemption from NEPA, and unless we can establish some imminent risk of dire consequences resulting from the application of NEPA, the fact that a project will ultimately serve some vital national security function is not likely to be determinative of NEPA litigation. And that is as it should be, since there is rarely a genuine conflict between serving the purposes for which NEPA was devised and serving our very important national security missions. Indeed, I think when we use NEPA as we should -- to help us make better decisions -- NEPA advances those missions." [emphasis added]

As to number 2, the draft DARHT EIS, without justification, attempts to link DARHT to efforts to ensure that the stockpile is "safe" and "secure." The safety and security of the US nuclear weapons arsenal is not now in question, nor will it be in the foreseeable future. On March 15, 1994, Dr. Harold Smith, Jr., Assistant to the Secretary of Defense, Atomic Energy, Department of Defense, testified to Congress that:

"I am pleased to report the stockpile is safe, secure, reliable, and meets the current military requirements...Our stockpile is becoming safer and more reliable simply because we are retiring older weapons...Thus, we should enter the 21st century with a modern, safe, and reliable stockpile consistent with the demands of START I and with anticipated military requirements."

This statement was made in the presence of, and with the approval of, Dr. Victor H. Reis, Assistant Secretary for Defense Programs, DOE, who added:

"Right now, as Dr. Smith said, that stockpile is safe and reliable."

The draft EIS's attempt to link the "urgent" need for DARHT to the safety of the stockpile thus appears to have no basis in fact, as these quotes make clear that there is no safety crisis. Indeed, Dr. John Immele, Director, LANL Nuclear Weapons Technologies Program, confirmed the fact and went further when he explicitly stated at the 12/8/94 Santa Fe scoping meeting:

"Audience: I have one more question...in a deleterious way, they may age or crack. What do you mean, is there a risk to the public?

"J. Immele: No, there's not a safety risk. There's a performance problem...because insensitive high explosive is so insensitive that sometimes if it's cracked it won't light on the other side when it's supposed to, so it's basically a performance problem.

"Audience: A reliability problem?

"J. Immele: That's right, it's a reliability issue. We have not found aging problems that affect safety, that make the explosive more sensitive." [emphasis added]

14 These statements from the most authoritative sources on the subject establish beyond any doubt that the draft EIS is incorrect in calling aging effects assessments an "urgent" need. The conclusion that follows ineluctably is that there is no need for DARHT prior to the ROD on the PEIS, and that the DARHT EIS process should incorporate the results of the SS&M PEIS.

15 It is also clear that the *security* of the stockpile has nothing to do with the effects on pits of aging, and nothing to do with DARHT. The first element of security is ensuring, by physical controls (predominantly guarding), that the weapons remain only in the hands of authorized personnel. The second element consists of the sophisticated use control mechanisms incorporated in US weapons. DARHT, or any hydrodynamic test facility, has no relation to either of these. The one element of the overused triad of "safety, security, and reliability," which might plausibly be affected by aging and to which hydrodynamic testing might have application is that of reliability. We now turn to it.

We note at the outset that it is not at all clear that any need exists, or is likely to develop, for hydrodynamic testing assessment of aging effects on the US stockpile. DOE and the nuclear weapons laboratories appear to possess all the experience, maintenance, inspection, design skills and computational resources necessary for resolving any imaginable stockpile reliability problem without resort to hydrodynamic testing. Current stockpile evaluation, maintenance, and modification programs are both mature and successful. Further, the budget for these programs is on the order of $ 20 million per year, and we are aware of no case in which hydrodynamic testing was part of any fix. **The simple fact is that DOE is attempting to justify billions of dollars of new-facility expenditures for so-called stockpile maintenance programs when**
16 **indisputable evidence and history of DOE's own actual maintenance programs is that problems are few and routinely fixed without resort to hydrodynamic or other expensive simulations, and that total program costs, even for large arsenals, are a few tens of millions of dollars per year.** The most compelling and comprehensive unclassified discussion of the US stockpile maintenance history and future needs is the Sandia Stockpile Life Study. Exhibit D is a set of some of the most relevant pages from this document. They clearly show that:

14 *** - "Nuclear Weapons age, but they do not "wear out" and they are not allowed to degrade."**

* - "It is clear that, although nuclear weapons age, they do not wear out; they last as long as the nuclear weapons community (DoD and DOE) desires. In fact, we can find no example of a nuclear weapon retirement where age was ever a major factor in the retirement decision."

* - "On the order of 70,000 nuclear weapons have been produced and, in fact, full system tests have been conducted on approximately 20% of them. Failures, defects, and aging problems have been discovered, but these have been rare."

Charts prepared by Sandia and included in the study report show:

* - The US has substantial experience with nuclear weapon systems more than 25 years old, even some experience with systems more than 35 years old. Yet the conclusion stands: they don't wear out.

* - Aging defects are rare.

* - Weapons are retired not for aging problems, but rather due to: "Usually a combination of factors in the retirement decision, but policy and DoD requirements predominate (mission eliminated, replacement/retirement of delivery system)."

* - Age of weapon is a consideration, but we can find no example where age is the sole or even primary factor in the retirement decision.

* - Most production changes in weapons are made for operational reasons (new mission or delivery system, for example); only 29% relate to improving reliability and only 9% relate

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The contained firing chamber concept is consistent with the development and application of advanced diagnostic techniques. **Such new diagnostics are required in order that reliable new weapons may continue to be put into the arsenal, especially considering the current moratorium on nuclear testing and the pending Comprehensive Test Ban Treaty.** Weapons safety testing is another area of increasing importance that will be supported by this facility. Advanced diagnostics include such items as time sequenced x-ray imaging of the fission implosion, and multiple beam laser velocimetry. (emphasis added) [FY1996 DOE Congressional Budget Request, Volume I, pp. 321-322]

In addition to pointing out the synergy of proximity, the excerpt also makes clear the principal application of hydrotest facilities - weapon design. And this close relation inevitably means that acquisition of state-of-the-art hydrotesting facilities will lead to pressures for state-of-the-art design facilities. LANL has already proposed exactly this: a $ 150 million Nuclear Weapons
18 Design Laboratory. To properly support the advanced DARHT and other experimental facilities, LANL and DOE have proposed to construct the Experimental Physics Weapons Support Complex, also at $ 150 million. This complex would also support the other aboveground experimental facilities proposed by LANL to complement DARHT: the $ 81 million Explosives Pulsed Power facility and the $ 150 million Nuclear Environment Simulation Facility. Directly connected with DARHT is the $ 30 million Contained Explosives Test Complex.

Similarly, the fact that LANL and DOE have given credence to the notion that DARHT will contribute to the safety and reliability of the arsenal has resulted in plans for other stockpile stewardship and maintenance facilities at LANL, including the $ 722 million Advanced Neutron
18 Source, recently repackaged as the $ 783 million National Center for Neutron Research.

It is thus not too much to say that DARHT is a "magnet" facility for LANL, and that it will, to a high degree of probability, tend to the location of these related facilities at LANL. The proper place to consider the impacts of these suites of related facilities is in the LANL SWEIS, and we believe DOE should complete the SWEIS before the ROD on DARHT. If the SWEIS is not completed before the DARHT EIS, the latter must include analysis of the impacts of these reasonably foreseeable connected actions.

We also note at this point that the very same tendency for colocation of these design and experimental facilities will inevitably prejudice the SS&M PEIS, as noted in I.A.2. above. The only acceptable course is also the only sensible one: complete the PEIS before the DARHT ROD.

19 **B. DARHT is part of a planned and in-progress consolidation of the nuclear weapons complex at LANL.**

The above discussion has been in terms of the likelihood of colocation at LANL, among

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process which can hardly be denied, even though the SS&M PEIS has not been completed. A second, although related, difficulty with proceeding with the DARHT EIS now is that a significant consolidation or collapse of the nuclear weapons complex is occurring at LANL, and DARHT is a pivotal element of this phenomenon. Less than decade ago, DOE's nuclear weapons complex was huge and diversified. Now, environmental outrages and the end of the Cold War have decimated the complex, turning vast and costly facilities into uninhabitable, economically unusable shells. From Savannah River in the east, to Oak Ridge, to Fernald, to Rocky Flats, and to Hanford in the west, nuclear weapons production facilities have been closed and their functions transferred to LANL. LANL has become the only operating plutonium
19 processing facility in the country, and it is slated to soon take on a principal weapons manufacturing and remanufacturing role.

According to the Activity Data Sheet for the DARHT project in the 1997 LANL/DOE CAMP, "The use of intense resolving flash x-ray machines and more than a single high-fidelity picture from each expensive local system's hydrotest is a cornerstone of Los Alamos nuclear competence, stockpile maintenance, and potential weapons remanufacture." If it is indeed a cornerstone of these functions, then constructing DARHT will inevitably prejudice both the PEIS and the SWEIS. That is, if many functions are being consolidated at LANL, as alleged. How **reasonably foreseeable** is it that LANL will become the "Jiffy-Lube" (see below) of the complex?

A wide variety of evidence, some quite recent, suggests that this course - the Department's *de facto* reconfiguration and consolidation of a variety of nuclear weapons functions at LANL, outside the formal PEIS process - is in fact not merely "reasonably foreseeable," but is being rapidly accomplished now. LANL tasks include secondary fabrication
19 and pit manufacture and, with them, a variety of related stockpile support functions. Detonator manufacture, neutron tube loading, beryllium manufacture, calorimeter manufacture, and stainless steel pit support manufacturing are already being moved to Los Alamos. Los Alamos also hopes to inherit some or all of Y-12's uranium and lithium roles, Livermore's plutonium roles, and to construct tritium facilities for weapons reservoir filling, which, together with the above functions, will give LANL the capability to prototype entire warheads and to manufacture the nuclear components of warheads as they are needed for the stockpile. These roles complement LANL's existing weapons research, development, and testing functions.

19 Meanwhile, LANL's plutonium storage capacity is being expanded and further expansion is planned in the near future. Large new facilities for plutonium manufacture and processing have been proposed in the past, but may not be needed if the stockpile is small enough, especially if existing capabilities in the Chemistry and Metallurgy Research (CMR) Building can be upgraded to supplement those at Technical Area (TA)-55, LANL's primary plutonium facility, which was called the Plutonium Processing Facility when it was built in the late 1970's.

Supporting all this are a variety of waste minimization and waste treatment and disposal proposals which will, we are told, soon allow LANL to manufacture warheads without the generation of transuranic (TRU) waste and hence without the necessity for offsite disposal of

wastes. The existing low-level waste (LLW) dump (Area G) is to be greatly expanded, and a new low-level mixed waste (LLMW) dump with a capacity of 475,000 cubic yards--over twice the size of the Waste Isolation Pilot Plant (WIPP)--is now in design. In addition, a 20-year old radioactive waste incinerator, designed to burn both TRU waste and LLW, both straight radioactive and mixed, and both from LANL and elsewhere in the complex, continues to be supported by LANL, despite some recent DOE reservations. Also planned are a mixed waste treatment facility, a TRU waste treatment facility, a high-explosives waste treatment facility, and a large new radioactive liquid waste treatment facility. All these facilities, if permitted and built, will allow LANL to operate as a self-contained full-service nuclear weapons "park" with legal on-site disposal of all radioactive waste streams--what the LANL Public Affairs Officer has (in a candid moment) referred to as "the Jiffy-Lube of the nuclear weapons industry."

Paul Cunningham, the Director of Nuclear Materials Operations at LANL, told us two years ago that he and others at TA-55 see no realistic alternative to the complex consolidating largely around Sandia, Los Alamos, and the Nevada Test Site in the coming decades, once the stockpile reaches a lower equilibrium size and Pantex is no longer needed.

LANL official spokespersons have repeatedly stated that production roles would damage the Laboratory's scientific mission and are therefore not desired by LANL management. Perhaps they doth protest too much.

o LANL continues to portray its weapons manufacturing capabilities, and its plutonium processing and machining proficiencies in particular, as purely for research and development (R&D), and not for production. As early as 1981, however, the publication Los Alamos Science proudly stated that 1500 kg of plutonium had been processed that year for the weapons programs. Subsequent years' issues spoke of the improvements and automation that was added to the processes. 1500 kg is enough Pu for perhaps 300 weapons.

o The design throughput capacity for TA-55 was published on December 8, 1994 by the Albuquerque Journal in a story written by John Fleck. In 1978, that capacity was 100 kg/mo for pit casting and machining, or roughly 20 weapons/month. LANL has said that TA-55 has been reconfigured, and newer stricter exposure standards (i.e. 2 rads/yr instead of 5 rads/yr) would limit pit production to less than this.

o In 1989 the National Research Council wrote in its report The Nuclear Weapons Complex: Management for Health, Safety, and the Environment

> "The Plutonium Facility at LANL..., operating for the most part on a one-shift, 5-day schedule, can process almost half as much plutonium as Rocky Flats can...and turn out a purer product...Although there may be resistance at LANL to converting Building TA-55 into a full-scale production facility, an administrative solution should be possible."

o On November 6, 1990, the Ahearne Committee (the DOE Secretary's Committee on

Nuclear Facility Safety) reported to Admiral Watkins that LANL's plutonium-processing capability and expertise "are a significant but under-utilized asset to DOE...We recommend that serious consideration be given to how the capabilities at TA-55 could be used to provide greater benefits to the complex." It was in January of 1990 that Rocky Flats stopped shipping pits.

o The Secretary of Energy's Advisory Board (SEAB) Task Force on the Laboratories found in January 1992 that

> "When the production levels get sufficiently small the traditional roles of development and production become diffuse. Therefore, the Defense Laboratories must be considered as one element of the total manufacturing, dismantling, and disposal process and their role needs to be integrated into a streamlined process that is highly effective."

This conclusion was strengthened in their final report, which contains the statement that "as the nuclear weapons development and manufacture cycles coalesce due to reduced weapon needs, the Defense laboratories may take on the future production responsibilities" (p. 10, emphasis added).

o The DOE's Draft Protocol for the Lead Laboratory Plan, distributed by Howard Cantor on August 14, 1992, gave to Los Alamos lead responsibility for oversight of 6 out of 11 nuclear weapons functions throughout the complex, including tritium, uranium, and lithium technologies, plutonium recovery and storage, and nuclear subassemblies. (One of these "nuclear subassemblies" is Pu-238 thermal batteries, of which LANL has manufactured thousands for the stockpile.) Sandia, also primarily in New Mexico, was given oversight of non-nuclear components and overall assembly, while Lawrence Livermore National Laboratory (LLNL) was given oversight of plutonium pit manufacture, case materials (described as uranium), and high explosives. As the Plan said,

> "The lead laboratory approach increases the scope of the laboratories' functions and responsibilities into areas that were previously the purview of the production elements. As a result, the role and relationships of the laboratories and other production complex participants will change."

o In August 1992, reports from DOE's Plutonium Strategy Task Force were made public. These reports suggest limited production at LANL as the best mid-term option for the complex (if the options involving production at Rocky Flats are, with hindsight, omitted). The Task Force's conclusions were subsequently confirmed by Leo Duffy (Alb. Journal 8/19/92).

o Plutonium storage at LANL is being upgraded. DOE has declared the bizarre intention of rebuilding the NMSF using as NEPA documentation the old EA that was produced for the original fiasco. Although representations have been made that the design capacity will remain about 6 metric tons, it is also clear that tripling that capacity could be easily and economically (less than 10% of the construction cost) accomplished with straightforward cooling system

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upgrades. Very convenient for a manufacturing role.

On December 7, 1993, Secretary O'Leary released some figures on plutonium disposition; LANL at that time was storing 2.6 metric tons of weapons-grade plutonium. This is actual storage, rather than capacity.

o On January 22, 1993, the 120-page Los Alamos Strategic Plan was released for internal use only. This document maps out a detailed strategy whereby LANL would obtain for itself a growing share of the dwindling nuclear weapons pie by capturing many programs from other facilities. These activities include:

--fabrication of plutonium pits,
--manufacture of uranium components,
--manufacture of lithium secondary components,
--full-scale fire-testing of new plutonium pit designs,
--development and industrial demonstration of a variety of plutonium and uranium processing technologies,
--development of tritium manufacturing techniques as well as an upgraded facility to load tritium into weapons,
--manufacture of detonators for weapons,
--fabrication of beryllium weapons components, and
--manufacturing of complete prototype warheads.

While elements of these plans had been made public before, what was new in this document was the sweep and specificity of LANL's ambitions, along with the assignment of responsibilities to carry out these plans. It is obvious that this plan, which was developed in an intensive process lasting many months and requiring tremendous amounts of management time, reflects a serious commitment of resources. Twenty-four large defense-programs construction projects, with design dates ranging from 1993 to 1998, are listed to support this consolidation, along with 9 new waste management projects and a variety of infrastructure projects. These projects are not all the same as those shown in the publicly-available LANL Institutional Plans, and include:

--Materials Science Laboratory*
--Dual-Axis Radiographic Hydrotest Facility (DARHT)*
--High-Explosive Materials Test Facility*
--Test Transition/Safeguards Facilities*
--DARHT Second Axis*
--Weapon Explosives Safety Test Facility*
--High-Energy Radiographic Facility*
--Weapons Component Testing and Development Laboratory*
--Explosive Pulsed-Power Facility*
--Materials Science Initiatives Laboratory*
--Chemistry-Metallurgy Research (CMR) Building Upgrades
--Nuclear Materials Storage Facility

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--Radiographic Facility, TA-55
--Integration and Consolidation of Livermore Plutonium R&D
--Sigma [Complex]/CMR Uranium R&D Upgrades
--LiH/LiD Component R&D Facility
--Tritium Laboratory
--Special Nuclear Materials Storage and Processing Facilities
--Non Nuclear Consolidation, five subprojects
--Complex 21 Modeling Laboratory
--Nuclear Safeguards Technology Laboratory
--Special Electronics Shop
--Nonproliferation and Arms Control Center
--Energetic Materials Pilot Plant

(* indicates the project was identified by LANL as important for nuclear weapons research, development, and testing, or "RD&T;" see p. 8)

For the record, the nine WM projects are:

--ES&H improvements
--Mixed Waste Receiving and Storage Facility
--Air Exhaust Modifications, TA-53
--Mixed Waste Storage and Disposal Facility
--High-Explosives Wastewater Treatment Facility
--Sanitary Landfill
--Radioactive Liquid Waste Treatment Facility
--Transuranic Waste Treatment Facility
--Accelerator Produced Tritium/Accelerator Transmutation of Waste (ATW) R&D Facility

o On September 15, 1993, Bruce Twining, Manager of the Albuquerque Field Office (AL), wrote a memo to Don Pearman, Acting Assoc. Dep. Sec. for Field Management, describing options for NEPA compliance at LANL. As Twining put it,

> "...many new projects under the auspices of DP [Defense Programs] are planned [for LANL] over the next several years as an adjunct to current missions and operations. Additionally, a large number of new projects and facilities will be required to support continuing waste operations programs...LANL is a high priority among AL sites for updated NEPA documentation because of the very large number of new actions planned over the next few years, and its focus under most reconfiguration alternatives and consolidation strategies."

Twining went on to list some of these new programs. He began with the following Defense Programs (DP)-funded environmental assessments (EAs) now in progress:

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--TRU Waste Compactor and Drum Storage Building
--Uranium Oxide Reduction
--High Vacuum/Atmospheric Furnace Installation
--Decontamination Oven
--HE Material Test Facility (*?)
--Metal Sphere Project
--Isotope Separator Building
--Deactivate, Disassemble, and Decontaminate Bldg. 86, TA-33
--Accelerator Prototype Laboratory
--Weapons Component Testing Facility (*?)
--Low-Level Waste Drum Staging Bldg at the Weapons Engineering Tritium Facility (WETF), TA-16
--Fire Protection Improvement Program
--CMR Building Upgrades, Revised Plan
--Fire Resistant Pit Project*
--Nuclear Material Storage Facility

As can be seen, some of these items were mentioned in the Strategic Plan. It is not completely clear what all of these projects actually are; the projects marked with an asterisk (*) appear to support RD&T functions (see discussion on p. 8).

In addition to these EAs in progress, LANL's FY1993 Technical Task Plans for Stockpile Support include the following (this list does not, Twining says, include any RD&T projects, or any projects which are to begin after 1995):

--Uranium Technology - Re-establishment and growth of the highly enriched uranium recovery and technology program, centered around the initial startup of the Uranium Line for Special Separation Science, research and development of optimum processes for the line, with equipment and glovebox additions to the line as capability is tested and selected. Re-establishment of uranium casting and machining capability and replacement of outdated equipment/facility."

--Surveillance - Pit surveillance (transfer from the Rocky Flats Plant) pit refabrication - development/enhancement of capability to maintain the technology base to build pits.

--Pit Disassembly Technology - Development, installation, startup of a process line to demonstrate innovative technologies for site return processing (pit disassembly, plutonium consolidation, americium removal, and non-destructive assay). Refurbishment, operation of the Special Recovery Line.

Nuclear Material Storage - Vault upgrade at TA-55.

Chloride Based Processing and Pyrochemistry - Consolidation and upgrade of processes and equipment in TA-55 in support of current inventory and future facility design.

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Nitrate Based Processing - Test/demonstration of new recovery technologies; workoff of vault inventories and hard to recover and special residues; development/test/installation of computer-aided process control and automation of recovery operations.

As can be seen, the projects described in the Twining memo implement some--many--of the hopes expressed in the LANL 1993 Strategic Plan.

o The [Livermore] Valley Times reported on January 31, 1994 that DOE is delaying its reconfiguration PEIS, due to budget declines and public comment. More emphasis is to be placed on the modify-in-place and no-action alternatives. In the July 1993 Notice of Intent which began the R-PEIS scoping process, LANL is shown as a possible site for six out of twelve nuclear manufacturing jobs under those alternatives. It was rumored that the R-PEIS was being re-scoped in a way that omits nuclear weapons production alternatives from the process, focussing the R-PEIS on dismantlement and disposition issues.

o In LANL's "News from the Laboratory Leadership Council," Vol. 2, No. 3, we find these notes from the weekly Council meetings:

"Pit Requalification Program.

"We propose to manage aging of pits in the stockpile with requalification of 100 pits to "new" status, combined with manufacture of up to 50 pits per year.

"Manufacturing Roadmap.

"In response to the DOE's planning for the future complex, it is important to consider how we might integrate possible manufacturing roles into Los Alamos, yet preserve the R&D nature of the Lab. Neal discussed the...PEIS...It was noted that as long as the number of items manufactured remains in the category of small lots, it appears manufacturing and R&D activities can coexist and in many cases become synergistic."

The "Neal" referred to is Tim Neal of LANL's office of Nuclear Materials and Reconfiguration Technology, whose February 6, 1995 memo titled "Manufacturing Assignments and the PEIS," concluded:

"This PEIS will likely cite LANL as the source of something like 150 pits per year to be supplied for renewal builds. Present thinking involves the dedication of one of the four wings of our plutonium facility, PF-4, to be modified to demonstrate modern processes and, incidentally, produce 50 new pits per year.

"A second SSM-PEIS mission that could come is related to highly enriched uranium, salt, and CSA assembly/disassembly/surveillance.

2

...ject in the SBSS
...to minimize the
...in arsenal but to maximize the maintenance and

23 advancement of nuclear weapons capabilities that could be achieved under a CTBT.

• The nation has not had, nor does it yet have, a CTBT as an unambiguous goal. Last year, US negotiators proposed a ten year "easy-out" clause, which would effectively limit the duration of any CTBT to ten years. Now the ambiguity of the U.S. position in Geneva regarding low-yield testing will continue to delay a CTBT until it is resolved. The outcome may not, in fact, be a CTBT.

• SBSS has nothing to do with any "U.S. commitment to Nonproliferation Treaty goals." In fact, it contradicts them, specifically Article VI, in which the U.S. agreed to nuclear disarmament, not multi-billion dollar investment in long-term facilities that are needed to maintain and certify new kinds of weapons indefinitely.

• The reliance of nonnuclear weapons states on "the U.S. nuclear deterrent for security assurance" is questionable. That is one theory, by no means a consensus view.

• The implication that there is any threatened "loss of confidence in the safety and reliability" which could cause a "corresponding loss of credibility...[in] a nuclear deterrent" is flat wrong, as discussed above. Still less would DARHT be necessary to redress any such loss of confidence, as also noted in these comments.

• It is not completely true that the U.S. "has halted development of new nuclear weapons systems." Development has halted, perhaps, if the word is used narrowly to mean near-term preparations for production of entirely new weapons, but design continues. As recently as this month, Dr. Don Wolkerstorffer, Director of Dynamic Testing at LANL, told one of us and a radio audience that a new earth-penetrating weapon was being considered to replace the old 9-megaton B53 gravity bomb. Whether this weapon actually is produced will depend on a Presidential decision that has not yet been made, but design work is occurring now. There are literally dozens of references to new and upgraded weapons under design in DOE documents, and it is clear from several sources that the DOE and interagency approach to stockpile management is to upgrade and replace existing weapons where possible under a CTBT.

• DARHT is not needed to assess the "safety and reliability of the nuclear weapon primaries in the remaining stockpile," and, as noted elsewhere, cannot be used directly to test them. Safety is in any case not an issue, and reliability is maintained by other methods.

24 • It is false to imply, as this draft EIS does here and in several other places, that failure to build DARHT would lead to a "lack of hydrodynamic testing capability." Without DARHT, and even without PHERMEX, DOE would maintain a hydrodynamic testing facility - FXR in Livermore - now upgraded to be better than any other such facility in the history of the U.S. or any other nuclear weapons program.

What is most disturbing, however, is not just these errors, but the complete omission of any discussion or analysis of the politics of nonproliferation and arms control, the importance of U.S. surrogate testing in rationalizing the nuclear testing plans of other nations (e.g. France), as well as its influence on the CTBT negotiating strategies of France, Russia, and China.

22 While there is no specific NEPA requirement to analyze the proliferation impacts of DARHT and its related actions, we note that the proposed National Ignition Facility (NIF), a laser fusion facility of only indirect use in designing nuclear weapons, is now receiving a special proliferation impact analysis by the DOE because of concerns raised by Congress. There is no question that DARHT is much more centrally important in the design of new weapons than is NIF. Accordingly, the DOE should conduct a careful proliferation analysis of this project as a part of, or in addition to, its EIS effort.

We also note that DOE has, as recently as March of this year, completed an analysis of the proliferation impacts of its policy concerning foreign research reactor spent nuclear fuel as part of a draft EIS.

These precedents aside, the proliferation impacts of DARHT act to undercut and negate its purpose and need. These impacts are severe and we believe they should be considered fatal to the project.

Rather than relying on its own internal judgement, fraught with conflicts of interest, the DOE should collect data on the proliferation impacts of DARHT by discussing the project with the leadership of the non-nuclear weapons states, who are the main actors in the proliferation arena. What do they think about DARHT, about SBSS, and about the Nuclear Posture Review requirement to retain the ability to certify new weapons under a test ban?

The proliferation impacts of the DARHT project were discussed in some detail on pp. 13-19 of the Los Alamos Study Group's January 10, 1995 scoping comments. Please refer to that document for further applicable comments.

C. Plutonium operations and the exclusion option.

This is another example of sharp practice. In fact, it is clear that the "plutonium exclusion alternative" does not refer to operations at PHERMEX, only DARHT. The draft EIS 25 wholly fails to fulfill the obligation of discussion and disclosure related to the Department's use of plutonium in hydrodynamic testing. We note that the Natural Resources Defense Council, in scoping comments submitted January 10, 1995, stated clearly and succinctly the necessity for analysis and disclosure in the EIS:

> The plutonium-related matters that must be discussed in the EIS include the following issues. First, the Department must describe in reasonable detail the scope and character of its potential plutonium testing plans, including the isotopes to be used and the reasons for using plutonium instead of some other, less

her, they judge that

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52 and TA-16?]

53 5-58 It was assumed that 10 percent of the material aerosolized was respirable.

[Why 10%? This assumption seems completely arbitrary and at variance with assumptions used in other places - e.g., on page B-11 below.]

B-11 The remaining depleted uranium (about 10 of the total) may be released as an aerosol, of which 20 percent (2 percent of the total depleted uranium) is considered respirable.

[As noted, conflicts with assumptions used above.]

54 B-12 Test assemblies that include high explosives are shipped using DOE and LANL trucks, containers, and tie-down techniques from the assembly area at TA-16 to the PHERMEX site.

54 [Yet another reassurance based on wishful thinking instead of analysis. To repeat, citing the existence of regulations and Standard Operating Procedures (SOP) is not a substitute for analysis. It is particularly ironic here because we have documentation of a case in which a "device" fell from a truck exactly because proper tie-down was not accomplished: "LANL did not have the required DOE/AL approved tiedown procedures for the Department of Transportation Specification 7A containers used to ship special assemblies. A special assembly was dropped from a truck because tiedown procedures did not exist." - p. 23, FY1994 Annual Performance Appraisal of LANL. This incident completely destroys EIS's reliance on SOPs and makes clear that it is a public reassurance document rather than a scientific analysis.]

55 C-6 For the No Action Alternative, the construction activities are assumed to be negligible, so no area is disturbed.

[Then what is the $12.6 M in capital spending shown on 5-12?]

C-8 For purposes of this analysis, it was assumed that 10 percent of all the material (high explosive and other test metals) become respirable following a test.

[This is the third different assumption so far - see 5-58 and B-11 above. How much internal inconsistency can you have before the document fails legal muster?]

C-9 Ten percent of the metals available for aerosolization are assumed to be respirable.

[This may be the same as the assumption at 5-58; then again, it may be the fourth different assumption regarding this critical parameter.]

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56 C-17 The maximum number of firings in an 8-h period, assuming 20 minutes between shots is 25...

[What happened to the assumption of 2 shots/month?]

E-1 The potential exists for deep drainage at both sites...One component of the DARHT EIS is an analysis of the potential for deep drainage beneath the DARHT and PHERMEX sites to carry contaminants to the main aquifer.

57 E-2 Core data were unavailable for the DARHT and PHERMEX sites.

[If this important, why not get the data rather than speculate?]

E-26 It is important to note that the long term observations of precipitation, streamflow, and sediment yield necessary to calibrate and validate the model were not available for the Water and Potrillo Canyon watersheds.

[In other words, speculation and guesstimation.]

58 E-42 Since 1991, advanced techniques, not commonly applied to ground water samples, have been used to detect tritium at ultra-low levels and to determine that recent water (no more than a few decades old) has recharged the main aquifer from the land surface in several locations at LANL.

[Yet all modeling for TA-15 uses/finds times for transport to the main aquifer to be in tens of thousands of years, as shown in table on this page.]

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6 could tell us that we need to abrogate the CTB and return to underground testing! This argument is thoroughly specious, directly contradicts and undermines the President's policy in support of a permanent Comprehensive Test Ban Treaty, and insults the intelligence of test ban supporters everywhere, including the representatives of the 175 nations that recently voted in favor of achieving a CTB in 1996.

No basis is offered for the assertion that uncertainty in weapon performance "will *continue to increase* with the passage of time," or that the weapons to be retained in the enduring U.S. stockpile would have continued to require "*nuclear* testing to assess the safety, performance, and reliability...," and thus now require enhanced radiographic imaging as a substitute. EIS at 2-2.

7 On the contrary, such empirical evidence as exists suggests that the incidence of problems in stockpile weapons actually *decreases* with age, and that underground nuclear testing was not critical in either identifying or resolving these problems. The data base for all U.S. weapons reveals that 61 "actionable defect" types (i.e. resulting in remedial action) occurred during the first year of stockpile life, 14 occurred in the fifth year, 9 occurred in the tenth year, 3 in the fifteenth year, 1 in the twentieth year, and 1 in the 25th year. Of these 257 actionable defects types, only 10 were determined to have a reliability decrement of 10% or more. None (0) of the 257 defects were first discovered by underground nuclear tests (UGTs), and only 4 (2.8%) of the 141 "Product Change Proposals" (PCPs) implemented for stockpile weapons involved UGTs. (See Sandia Stockpile Life Study cited above.)

8 The EIS asserts, "DOE has determined that no other currently available advanced techniques exist which can provide a level of information comparable to that which can be obtained from enhanced radiographic hydrodynamic testing." EIS at 2-2. This statement begs the question at issue. The issue is not the *mere existence* of some higher performance technique for radiographic imaging that surpasses other available techniques, but whether such enhanced capability is *required* to maintain a nuclear weapon stockpile in a safe and reliable condition, and whether reasonable alternatives to DARHT, including the no-action alternative, are capable of accomplishing this mission at less cost and with less environmental risk.

9 The EIS asserts, "In the past, DOE has been able to accomplish that [nuclear deterrence] mission by retiring weapons before the end of their design life and by upgrading or redesigning weapons *if potential problems were detected through nuclear testing* and hydrodynamic tests and dynamic experiments (emphasis added)." EIS at 2-2. This statement is misleading. As noted, zero (0) post-deployment defects in stockpiled weapons were first discovered via underground nuclear tests, and only 4 tests since 1970 have been conducted specifically for the purpose of implementing changes to remedy such defects.

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The EIS asserts, "...the President has placed a moratorium on underground nuclear testing and has decided that the United States will not build new nuclear weapons for the foreseeable future (even to replace those past their design life). Now DOE must rely on the data from hydrodynamic tests and dynamic experiments to ensure the safety, security, and reliability of the existing weapons." This statement presents a misleading picture of the current situation. The President has approved a Nuclear Weapons Stockpile Plan that contains no approvals for the engineering design or production of nuclear weapons. It would be more accurate to say that, under current plans, the United States will not build "nuclear weapons of
10 new design," -- rather than "new nuclear weapons" – as the possibility exists for new production (remanufacture) of existing, proven designs.

Moreover, the statement as written misleadingly suggests that there is some link between the President's test moratorium and DOE's current inability to produce nuclear weapons, when in reality these are completely independent conditions, the former arising from an Act of Congress and reasons of international diplomacy, and the latter from the prolonged managerial shortcomings of DOE and its contractors. The statement also strongly, and wrongly, implies that the President has somehow directed DOE to maintain the nuclear weapons stockpile far beyond the "design life" envisioned for such weapons, as if "design life"
11 were a firmly established empirical limitation with known risks associated with exceeding it.

In fact, as noted by the Sandia Stockpile Life Study, "nuclear weapons age, but they do not 'wear out,' and they are not allowed to degrade....We can find no example where age is the sole or even primary factor in the retirement decision." There are several examples of nuclear weapons, and indeed mechanical systems of all kinds, lasting far beyond their nominal "design-lives," which is usually an engineer's or manufacturer's projection of the *minimum* service life that can be expected for a system that is properly maintained. Obviously, "old" functioning mechanical devices of all kinds, from airplanes to bombers to xerox machines, indicate that "design life" is a very fungible concept indeed.

12 The EIS likewise ignores the possibility – indeed, the very strong likelihood – that proper procedures for regular maintenance, periodic component replacement, and eventual remanufacture of the nuclear subsystem, can ensure an indefinite service life for as many nuclear weapons as we wish to pay for, with or *without* any improvement over current hydrodynamic testing capabilities. The virtues and limitations of such a custodial approach to nuclear weapons must be fully analyzed before rash conclusions are drawn regarding the indispensable requirement for DARHT or other advanced radiographic hydrotest facilities.

13 Subsection 2.2.2, "Stockpile Stewardship," presents a misleading picture of the purposes of the "science-based stockpile stewardship" and "stockpile management" aspects of DOE's proposed program. The assertion is made that "stockpile stewardship includes those activities required to ensure a high level of confidence in the nuclear weapons stockpile, whereas stockpile management includes facilities and capability for maintenance, surveillance,

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13 repair, or replacement of weapons in the stockpile." EIS at 2-3. In fact, the so-called *stockpile management* activities are the most likely to contribute to continuing confidence in the nuclear weapons stockpile, whereas science-based stockpile stewardship activities are oriented toward maintaining a cadre of nuclear weapon scientists with the skills needed to quickly resume a meaningful and innovative weapon design effort in the future.

The EIS asserts, "To ensure the continued viability of the smaller stockpile, DOE must *improve* its scientific understanding of the physics of a nuclear weapon, and develop a *better understanding* of how a nuclear weapon behaves during the complex interactions that occur in the brief interval between detonation and nuclear explosion. This information is needed to assure the continued safety, performance, and reliability of existing weapons. (emphasis added)" EIS at 2-5. At no point does the EIS substantiate the claim that
29 an "improved" or "better" understanding of nuclear weapons science is required to maintain acceptably high levels of nuclear weapon safety and reliability, or to provide for eventual remanufacture of the weapons to be retained in an enduring stockpile. An improved understanding of some aspects of nuclear weapons science might well be achievable with DARHT, but this fact alone does not establish a national purpose and need for DARHT. To the contrary, the justification that DARHT will provide an improved understanding of
29 nuclear weapons science will be viewed by many as inconsistent with the purpose and spirit of the U.S. commitment to completion of a Comprehensive Test Ban, which is intended precisely to deny countries an improved understanding of nuclear weapons.

The EIS asserts that "current diagnostic capabilities are insufficient to make all of the necessary types of measurements of an imploding primary, or to make refined measurements at the high level of detail needed." EIS at 2-6. The EIS likewise asserts that this enhanced measurement capability is needed because "DOE has *not yet* determined how *to predict with sufficient accuracy from computer calculations alone* the rapidly changing shape of a weapon primary during the last stages of implosion," and because "DOE needs to be able to predict the implosion movement of the three-dimensional weapon assembly to provide an integral measure of the expected performance of the fission drive, to assess nuclear safety in accidents, and for render-safe and disablement effectiveness." EIS at 2-5.

What is one to make of these statements? We are told that DARHT is needed to supplement computer calculations in order to better *predict* the course of a weapon primary implosion in its late stages. The goal described is a generic one – to achieve a true computer-based simulation capability for predicting the performance of "a nuclear weapon primary" –
14 not merely the primaries of weapons to be retained in the enduring stockpile. Of course this generic statement of purpose stands to reason, because *the performance and nuclear safety of* [illegible] *have already been verified* by previous underground nuclear tests as [illegible] for new capabilities to

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these weapons are known, and need merely be observed through careful maintenance, inspection, and component replacement using already established techniques and facilities.

The EIS appears to be endorsing the view that DARHT should be – and will be -- used to *improve DOE's broad-based nuclear weapon design capabilities*, even to the extent of ultimately freeing these design capabilities from the constraint of step-by-step empirical confirmation. Again, that justification contravenes the spirit of a Comprehensive Test Ban Treaty, and would appear to undermine established Executive Branch policy that the United States will not seek to design new nuclear weapons, but instead merely exercise responsible stewardship over the existing stockpile.

The EIS continues to cite the old DOE canard, thoroughly demolished by independent studies, that "of the weapon types introduced since 1970, nearly one-half required
15 nuclear testing after their development was complete (either while they were deployed, or still being produced) to verify, resolve, or certify that problems relating to safety or reliability have been resolved." EIS at 2-8. In fact, from 1965 to 1980, *no tests* were conducted to identify or correct stockpile problems. From 1980 to 1992, six warhead designs – the W80 ALCM/ACM warhead, B61(Mod 4) tactical bomb, W84 Ground-launched Cruise missile warhead, W79 artillery fired atomic projectile (AFAP), W48 AFAP, and W68 SLBM warhead – are said to have "required" so-called "post-deployment" nuclear explosive tests to identify or correct safety or reliability problems. Of these weapons, only the W80 and B61 (Mod 4) are still in the active stockpile. The others have been retired. However, the only case specifically highlighted in the EIS is that of the rebuild of the W68 warhead because of deterioration in its LX-09 high explosive. We are told that DOE "performed a nuclear test to verify that the rebuilt weapons would perform as designed and was surprised to find that the weapon yield was degraded. However, DOE decided that the lower yield was acceptable." EIS at 2-8.

This is an inaccurate and misleading description of this episode, and thus the unwary reader could well draw the wrong lessons. In fact, the test of the W68 referred to in the EIS was not a "surprise;" but intentionally conducted with a "limited-life component [probably the tritium reservoir] with an age that was over that of any to be used in the stockpile. This extreme test device performed successfully, *confirming the Laboratory's confidence*." Kidder, 1987, at 18. In fact, the test led to modifications in the Navy's *maintenance procedures* for the weapon – not further tests – to ensure that the weapon would perform as designed.

The other cases indirectly cited in the EIS (by reference in the text to the 1987 Miller, et. al. study) likewise fail to support the argument that the recent record of stockpile problems justifies a continuing requirement for nuclear explosive tests that must now be [illegible] an enhanced radiographic imaging capability. The W80 cruise missile warhead and [illegible]

18 a glaring inadequacy in the EIS. It is also surprising, in light of the emphasis the Department has properly placed on proliferation issues during the Clinton Administration.

The EIS's discussion of nonproliferation issues consumes less than one page. EIS at 2-11. Some of this discussion seems quite implausible. For example, it seems very unlikely
19 that a failure to build DARHT would trigger a chain of circumstances leading certain advanced industrial nations to develop nuclear weapons because they harbor doubts about the technical reliability and safety of U.S. nuclear weapons. This line of reasoning represents a strained adaptation of the more often heard argument that other advanced countries, such as Japan and Germany, might turn to the development of their own nuclear deterrent because they harbor doubts regarding the *political* reliability of the U.S. deterrent threat to use nuclear weapons first in their defense. This argument has nothing to do with their technical level of confidence in the performance of U.S. nuclear weapons, and everything to do with the inherent and dangerous dilemmas of continuing to rely on nuclear weapons as the ultimate guarantors of national security.

More important than what this brief nonproliferation discussion contains, however, is what it omits. Nowhere in the EIS does the Department address the impact of DARHT's greatly enhanced capabilities on the generation, proliferation, and control of
19 information useful to the design of nuclear weapons, or the impact of U.S. possession of these capabilities on (a) other nuclear weapon states, (b) nations that have undertaken not to develop nuclear weapons; and (c) nuclear weapon threshold states that are considering whether and how to improve their nuclear weapon capabilities.

If, in a world without nuclear test explosions, the United States is building and operating facilities with significant capabilities for nuclear weapons design and engineering, some non-nuclear weapon states may no longer be willing to forego nuclear weapon development, and other nuclear weapon states may also move to acquire additional information relevant to the design of new weapons. Moreover, what if some nuclear weapon states conclude that they are unable to compete effectively with the United States in the area of computer intensive, highly-diagnosed "core-punching" radiography and other advanced above-ground experimental (AGEX) facilities? Already in the test ban negotiations, some nuclear weapon states are suggesting that maintaining a substantial loophole for underground nuclear tests may be the only way to stay even with the United States technologically under a test ban treaty, thereby undermining the achievement of a *comprehensive* treaty.

These potential developments could have critical consequences for global security and for the global environment. The potential proliferation consequences of

alternative, the single axis alternative, and other reasonable alternatives for carrying out the radiographic component of the stockpile stewardship mission.

C. The EIS Fails to Discuss Adequately Issues Related to the Use of Plutonium in Hydrotesting.

20 One specific plutonium-related issue that demands discussion is what plutonium isotopes the Department would use in its hydrotesting; this issue has relevance for both nonproliferation and public health reasons. Two options appear plausible and worthy of analysis: full-scale contained implosions using non-fissile Pu-242, and sub-scale contained implosions using weapon-grade plutonium.

21 In addition to ignoring nonproliferation issues, the EIS's discussion of plutonium matters has other inadequacies. For example, the document contains no analysis of the waste-generation and waste-management issues posed specifically by using plutonium in hydrotesting. Since plutonium waste poses dangers that are qualitatively different than other forms of waste (in terms of toxicity and duration of contamination), these waste-related issues must be discussed fully in the EIS.

22 In addition, the EIS appears to assume that there is no risk of a double-walled containment vessel breach in hydrotesting involving plutonium. The Department must explain the basis for this assumption, so the public may evaluate it and draw its own conclusions.

D. The EIS Fails to Include a True Plutonium Exclusion Alternative.

23 The Plutonium Exclusion Alternative is improperly defined, as it excludes plutonium use at DARHT but not at PHERMEX. Exclusion of plutonium from all hydrotesting is an entirely reasonable alternative for all of the reasons already discussed in this comment letter, and it is a necessary component of a reasonable range of alternatives in the DARHT EIS. As such, the Department must include a true plutonium exclusion alternative in the EIS.

The Department cannot argue that excluding plutonium from all hydrotesting is outside the scope of this EIS, because the EIS already discusses the environmental consequences of PHERMEX operation throughout the document.

E. Upgrading the Flash X-Ray Facility is a Reasonable Alternative that Must Be Discussed in the EIS

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24 The EIS rejects inclusion of the alternative of upgrading the Flash X-Ray ("FXR") Facility on the ground that "DOE does not conduct dynamic experiments with plutonium at LLNL." EIS at 3-38. This is an illogical and inconsistent reason for exclusion.
24 By including a Plutonium Exclusion Alternative in the EIS, the Department has acknowledged that a facility without a plutonium capability is a reasonable alternative for purposes of the EIS. Since upgrading FXR is a reasonable alternative, the EIS must assess it fully.

F. <u>If the Department Chooses to Complete DARHT, It Should Include a Containment Structure.</u>

25 The EIS indicates that operation of DARHT as an open-air firing site would have a variety of significant environmental consequences. Among other things, it would result in uranium discharges to surface water that would exceed established maximum contaminant levels. EIS at 5-23 &-24. It also would impact the nearby standing walls of Nake'muu, an enclosed plaza pueblo considered to be the best-preserved Anasazi ruin in the region, with significant air waves from blasting and possibly with blast fragments up to one inch in diameter. EIS at 4-55 &, 5-28.

In addition to being serious, these environmental impacts are avoidable through construction of a containment structure. If the Department decides to move forward with DARHT, we urge it to take the modest amount of additional time and money to do the job right by building a containment structure as part of the facility.[1] The Department is currently planning construction of a containment structure at the FXR Facility, and the people of New Mexico deserve no less in this regard than the people of California.

26 We question the Department's analysis of the Enhanced Containment Alternative in two respects. First, the analysis asserts that there would be an increase in worker exposures if a containment structure were built, due to an asserted need to clean the inside of the structure regularly. EIS at 5-46. We do not understand why a containment structure could not be designed so that most or all of the cleanup activity took place remotely, thus limiting worker exposures. The final EIS should assess and discuss this issue directly.

27 Second, the EIS indicates that discharges to the air would be somewhat higher in the Enhanced Containment Alternative both during normal operations and in case of accident because the release would take place at ground level rather than 325 feet into the air. EIS at 5-36 &-47. We do not understand why the Department considers releases to take place 100 meters in the air in the open-air firing alternatives when all of the test explosions likewise

[1] The EIS makes clear that a containment structure is superior to use of containment vessels in all areas of environmental impact.

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27 take place at ground level. The Department should reassess this issue and at the very least explain clearly its assumptions in the final EIS.

G. <u>Failure To Estimate Cleanup, Decontamination, and Decommissioning Costs for All Alternatives.</u>

28 The EIS consistently fails to include analysis of the cost of cleanup, decontamination, and decommissioning for each of the alternatives considered. This is an insupportable omission, both because these are important environmental and financial costs and because they provide an important ground for distinguishing among the alternatives considered.[2]

We understand that because cleanup standards do not yet exist, the Department cannot quantify its cleanup costs with certainty. This area of uncertainty, though, does not excuse the Department from analyzing the issue at all. In a similar context marked by even greater uncertainty, the <u>Baseline Environmental Management Report</u>, the Department was able to estimate its cleanup costs within a range. In the course of doing so it explained the assumptions it used, and readers could thus understand where in the range the ultimate cleanup costs might fall. The fact that cleanup costs cannot be specified with precision does not excuse the Department from analyzing the matter.

Sincerely,

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Senior Research Associate

Andrew P. Caputo
Attorney

28 [2] For example, soil remediation costs for DARHT would be dramatically lower if a containment structure were built than if an open-air firing site were chosen.

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programs. Hydrodynamic testing will also support a development program necessary to help retain and exercise weapons design engineering skills and to examine safety modifications in existing nuclear warhead designs that could be introduced into the stockpile without nuclear testing in case they are needed in the future.

2 Although these points are alluded to in the DEIS, in most cases through the boxed highlights, the discussion should be more pointed. A clear discussion along these lines will improve the DEIS in two important ways. One, it will inform the public of the basis of the President's decision: reliance on DARHT and similar programs is the best, if not the only means of maintaining US nuclear forces, without nuclear testing. Two, because the decision to maintain the nuclear stockpile was made by the President, it is not subject to change by the DARHT NEPA so the anti-nuclear sentiments expressed by various commentors in the DARHT NEPA process are irrelevant.

2 I am concerned that some public participants have unrealistic expectations about what NEPA can accomplish. It cannot change the direction of national security policy. The only way to influence that policy is through our elected officials. This fact must be clearly articulated in the EIS. Otherwise I fear that commentors who believe, perhaps unreasonably, that NEPA is a means to achieving a nuclear-free country will feel betrayed by the process, and by DOE.

3 With regard to why the DARHT technology is needed, our overall comment is that greater specificity is needed throughout. To the extent it is unclassified, the document should describe the precise problems that have been uncovered through nuclear testing. Many critics of the projects contend that safety and reliability are not real issues. They argue in essence that these issues are not only bogus, but designed to justify a "new toy" for nuclear weapons enthusiasts. A strong case for DARHT is there - the EIS needs to better describe it to the public.

3 The discussion of this point is engulfed in too many generalities, without sufficient detail to be persuasive. For example, the Miller report describes in great detail stockpile problems that were rectified through nuclear testing. One of these problems is noted in the DEIS (see p. 2-8, W-68 problem). The Miller report clearly documents numerous instances where safety and reliability problems were discovered. In fact safety and reliability problems have been found in nearly 1/3 of the weapons in the stockpile. Points such as these should be included in the DEIS to ensure that the public is better informed of the issues that have arisen and are expected to arise over the life of the stockpile.

4

The Sandia Life Study is the only study I am aware of which apparently questions whether there are stockpile safety issues. I am unaware of the substance of the report; it was never issued as a final document and for this reason alone I regard its contents as suspect. Obviously, it does not carry the weight of JASON or Miller, both of which have been fully aired and subject to peer review. Moreover, Sandia National Laboratory's expertise with respect to nuclear weapons is not in the area of the "physics package" that is studied in hrdrodynamic testing, but rather in the peripheral equipment in the warhead that supports and triggers the physics package. Acknowledging that I have not seen the draft Life Study report, I nonetheless question whether it actually addresses the issues encompassed by the DEIS.

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5 In our view section 2.5 is deficient in several respects. The second paragraph suggests that the testing moratorium is tied to the Nation's commitment to non-proliferation. I suggest that you avoid discussion that draws such a connection, however slight. As a signatory to the Non-Proliferation Treaty (NPT) and as an active world participant in working toward halting the spread of non-peaceful, nuclear technology (note the Country's active export control regime), the United States was performing nuclear tests until 1992. Certainly, the DOE should not suggest that by performing those tests, the United States was a nuclear proliferant. Nuclear testing does not equal proliferation; nor does a testing moratorium equal non-proliferation.

5 It is important for the DOE to reiterate what non-proliferation is as defined by the NPT. Under Article I of the treaty, the United States has made the following commitment:

> [As a nuclear-weapon State Party, the United States] undertakes not to transfer to any recipient whatsoever nuclear weapons or other nuclear explosive devices or control over such weapons or explosive devices directly, or indirectly; and not in any way to assist, encourage or induce any non-nuclear-weapons State to manufacture or otherwise acquire nuclear weapons or other nuclear explosive devices, or control over such weapons or explosive devices.

The sum and substance of this commitment is that the United States will not assist non-nuclear-weapons States to obtain nuclear weapons technology. The US has conscientiously met this commitment. Nuclear testing is unrelated to the Nation's non-proliferation responsibilities.

5 Moreover, tying the testing moratorium and the CTBT negotiations to the concept of non-proliferation is problematic in another respect. Recent press articles suggest that the United States is considering a resumption of nuclear testing (see for example Washington Post article of June 19, *Perry Calls Renewed Nuclear Tests a Possibility*). In addition, new articles are also reporting that a movement may be afoot to include a provision in CTBT that would allow nuclear tests up to a certain explosive yield (see Tri Valley Herald article of June 7, *Limited Nuclear Testing Sought*). If either of these possibilities comes to fruition, the EIS summary under the non-proliferation heading could be interpreted as inconsistent with the US government's, perhaps soon to be redefined, stance on nuclear testing.

5 The DEIS discussion of how the United States acts as a nuclear umbrella for countries who may otherwise develop nuclear weapons for self-defense(p. 2-11, 4th paragraph) is good. I recommend that this point be called out explicitly. I would note that South Korea is a notable example of a country that may have developed nuclear weapons in response to the threat of the North had it not been for the security provided by the presence of reliable US nuclear forces.

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Proposed Action and Alternatives.

6 As an initial point, I would emphasize that because SBSS is presently the only means to ensure the safety and reliability of the nuclear stockpile, the design of DARHT should provide all options that will enable the United States to meet that goal to the fullest extent scientifically possible. Thus if in the view of experts in the field, tests involving plutonium are necessary to achieve a complete body of information on the stockpile the plutonimu exclusion alternative should not be adopted.

7 In addition, if containment alternatives present impediments to gaining necessary information, containment should only be used for those experiments which are compatible with containment Hydrodynamic tests represent an important source of information on nuclear weapons. They are expensive, and efforts should be made to collect as much data as possible from them. It is likely that a program that requires containment of all hydrodynamic tests will preclude a number of experiments that could be added on, at relatively little expense, to the basic tests. Because the environmental benefits of containment of these shots are small, and thepotential benefits to the nation of increased data collection from add-ons is large, I recommend that the DOE include this criterion in weighing these particular alternatives.

I espouse this position because nuclear testing was a vital tool in ensuring the integrity of the Nation's nuclear weapons. Without it, DOE as the stockpile steward, is faced with a douhly difficult job to provide safety and reliability assessments of the enduring weapons stockpile that
4 will extend far beyond the their design lifetimes. DOE needs to be fully equipped to fulfill the imperative of maintaining a reliable nuclear deterrence

Noise.

With regard to the sections on noise, I recommend providing more relevant data. For, example, only one noise test is reported and no data from Los Alamos townsite are presented although the prevailing daytime winds from TA-15 are in that direction rather than toward White Rock. Even the White Rock data are incomplete Table C2-4 contains typographical errors.

8 More noise tests should be performed under different meteorological conditions and data should be recorded at the nearest townsite dwellings as well as Bandelier and White Rock.

Results are reported (Table C 2-4) in hertz and dBA. Some sort of equivalent in loudness understandable to the general public needs to be presented for comparative purposes.

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Air Quality.

9 We suggest that the air quality sections be strengthened in the following ways:

9 Annual emissions of criteria pollutants are presented in Section 4.2.4 and Table 4.1. However, cumulative impacts (section 5.9) does not roll up the annual increases in criteria pollutant by alternative. As there are differences by alternative in heating and other attributes, this information should be presented.

9 Section 4 2 5 and Table 4 4 present uranium emissions from the Laboratory without dynamic testing additions included. Some table should present all uranium emissions, dU as well as other forms.

9 Section 3.11 and Table 3 3 show for enhanced containment alternative greater emissions of Be, heavy metal, and Pb. This must be an error.
Releases for all alternatives except enhanced containment are modeled at 325 ft. elevation whereas the enhanced containment is model at ground level. Strong justification needs to be provided or, preferably, model all as ground-level releases with a puff model.

Cultural Resources.

10 I believe that the discussion of cultural resources could be improved by explaining more fully the extensive review many of the affected sites have already received by the laboratory in accordance with the National Historic Preservation Act. Although there is some reference to the section 106 review (though not specifically called out as such) a chronology or summary of the many consultations with the local pueblos and the various interactions with the State Historic Preservation Officer would be useful in informing the public of the extensive review most of the affected ruins have received Moreover, such a summary will document the sensitivity that the DOE and the Laboratory has shown toward Native American concerns. One notable example of the Laboratory's receptiveness to the preferences of the pueblos is the fact that on at least one occasion the Laboratory choose to follow the a pueblo's preference of burying some sites rather than pursue the option proposed by the State to excavate a few sites close to the construction area Examples of Laboratory/DOE consultations with the pueblos are important to inform the public of how the Laboratory and DOE are respecting these cultural sites and mitigating possible damage.

International Oversight.

Although not proposed in the DEIS, some public commentors have suggested that an international oversight body should be constituted to ensure that DARHT is only used for tests that are safety- and reliability- based I strongly object to such an approach for several significant reasons First, it would have the effect of reducing the Country's flexibility with respect to its nuclear weapons The President in consultation with Congress, defines national security policy

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COMMENT OF THE WESTERN STATES LEGAL FOUNDATION

DRAFT ENVIRONMENTAL IMPACT STATEMENT

DUAL AXIS RADIOGRAPHIC HYDRODYNAMIC TEST FACILITY

Submitted June 26, 1995

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INTRODUCTION

Western States Legal Foundation (WSLF) is a non-profit, public interest, environmental and peace organization which, since 1982, has participated in administrative proceedings, litigation, and grassroots activities to further the end of the nuclear arms race and related technologies, conversion of military activities, and the cleanup of federal facilities engaged in nuclear weapons production. WSLF is a member of the nation-wide Military Production Network (MPN), and a founding member of the international Global Anti-Nuclear Alliance (GANA).

WSLF participated as an observer in its capacity as a registered Non-Governmental Organization (NGO) in the recent round of international negotiations in Geneva, Switzerland on the Comprehensive Test Ban Treaty (CTBT) and the Nuclear Non-Proliferation Treaty (NPT). WSLF executive director Jackie Cabasso and staff attorney John Burroughs spent a month at the United Nations in New York monitoring the NPT Review and Extension Conference.

WASTE MANAGEMENT

1 There is little in the way of substantive analysis of waste management in the DEIS. The DEIS at several points merely states that waste from the DARHT will be sent to LANL waste management facilities, where it is asserted that waste will be managed in compliance with applicable state and federal regulations. It
1 appears that DOE intends to do a substantive analysis of LANL waste management only in the LANL site-wide EIS, a document which has not yet been prepared.[1] As we stated in our scoping comment,
1 a NEPA environmental review document cannot be "tiered" off another environmental review document which does not yet exist.[2]

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2 [1] See, e.g. DEIS at 5-17 "The LANL site-wide EIS will address the water [sic-- waste?] management matter at LANL."

[2] "Whenever a broad environmental impact statement has been prepared (such as a program or policy statement) and a subsequent statement or environmental assessment is then prepared on an action included within the entire program or policy (such as a site specific action)the subsequent statement or environmental assessment need only summarize the issues discussed in the broader statement by reference and shall concentrate on the issues specific to the subsequent action. The subsequent document shall state where the earlier document is available." 40 C.F.R. sec.1520 (excerpt, emphasis added). It is contrary to the logic of this regulation to attempt to "tier" a project specific document using as a basis a programmatic document which will be prepared in the future.

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ACTIVITIES WHOSE IMPACTS ARE NOT ADDRESSED IN THIS DEIS WHICH ARE PART OF THE PROJECT OR ARE CONNECTED ACTIONS

3 Devices tested at the DARHT must be produced somewhere. These devices would be fabricated out of a wide array of hazardous and radioactive materials, including plutonium. Components for these devices may be produced at other DOE facilities, since the DARHT is described as a DOE "user facility," implying that other laboratories (most likely LLNL) may use the facility. The DEIS briefly describes all of these activities, but merely states that this "complex infrastructure needed to support hydrodynamic tests and dynamic experiments would not change" regardless of the alternative chosen, (DEIS 3-2-33), and that "hydrodynamic testing and dynamic experiments at LANL are only a small proportion of the total workload at the LANL support facilities." (DEIS 3-4; see DEIS Table 3-4 at pp.3-6-38 for summary of the wide range of activities which in fact constitute hydrodynamic testing).

But the DEIS provides no analysis of the environmental impacts of making the devices which will be exploded at the DARHT or at an alternative facility, or of disposing of the hazardous and radioactive waste from those fabrication processes. Apparently, for these impacts as well, DOE is attempting to tier from a site-wide EIS which has not yet been drafted. As we noted in our scoping comment, DOE has admitted that existing sitewide NEPA documents for LANL are outdated and inadequate.[3]

CUMULATIVE IMPACTS

4 Also absent from the DEIS is any analysis of cumulative impacts of reasonably foreseeable activities in the same area. LANL is being proposed as the site for a wide range of nuclear weapons manufacturing functions under DOE's new "Stockpile

[3] The 1979 sitewide EIS exhibits various technical and/or procedural shortcomings. Additionally, in light of changes in environmental regulations and standards, evolving methods of analysis, and modifications to the LANL site since preparation of the EIS, the age of the EIS limits its usefulness as a baseline document from which other NEPA documents can be tiered....
It does not reflect current knowledge as required by 40 CFR 1502.9 (c)(1) (e.g., current sitewide resource data bases and current facility configuration), or the requirements of Federal statutes, Federal or DOE regulations, and/or DOE guidance implemented since 1979 (e.g., the Resource Conservation and Recovery Act (RCRA), Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA), and wetlands)." U.S. Department of Energy, Environment, Safety, and Health, Tiger Team [illegible] National Laboratory, November 1991,

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4 Stewardship and Management" program, including replacement pit manufacture and reuse, fabrication of secondaries, fabrication of high explosive components, pit reuse, and fabrication of non-nuclear components, as well as a number of new weapons test facilities. U.S. Department of Energy, "Notice of Intent to Prepare a Stockpile Stewardship and Management Programmatic Environmental Impact Statement," June 9, 1995, pp.16-17.

RELATIONSHIP TO OTHER NEPA REVIEWS

It may appear backwards to demand a broad review of the impacts of nuclear weapons testing and component manufacture as part of the NEPA review of a single testing facility, but it appears so only because DOE has insisted on doing its NEPA review backwards. DOE apparently plans to complete its site-specific review and make a project decision for DARHT, one of the most important "stockpile stewardship" facilities first, then complete
5 the LANL sitewide review which could have provided analysis of cumulative impacts and site-wide environmental management issues, and only then, after many of the decisions affecting the next decade have been made, complete a programmatic review for a stockpile stewardship and management program whose major components already will be in place.

6 This is being done without evidence of any real urgency or any real reason for proceeding to decisions on specific projects before broader programmatic reviews are complete. The DEIS merely asserts that at some unspecified time in the future, problems may arise with the stockpile which will need to be detected and remedied.[4] There has been little evidence
7 presented that DOE is incapable of assuring stockpile safety and reliability using existing facilities, including existing hydrotest facilities. There also has been no public case made that existing hydrotest facilities are deteriorating so quickly as to be in need of immediate replacement. Certainly, no case has been made that there is an emergency so pressing as to require curtailment or distortion of the NEPA process.[5]

[4] In this regard, the most recent Sandia Institutional Plan noted that "The evaluation program has shown over the last four decades that serious defects in nuclear weapons have been relatively rare" and that "[o]verall, stockpile reliability has been excellent for the last forty years." Sandia National Laboratories, Institutional Plan FY 1995-2000 (October 1994), p.10, p.11.

[5] In any event, the NEPA regulations provide a procedure [illegible] followed here. See 40 C.F.R.

to the impacts of operating accelerators and blowing up devices-- the effects of producing surrogate nuclear weapons, using some of the most toxic materials on earth, of tracking and disposing of the waste, of the cumulative effects of these and other similar activities at sites already badly contaminated from decades of nuclear weapons testing and production-- were exactly what the reconfiguration PEIS was intended to bring into focus for the first time.

DOE appears essentially to have already chosen the "Modifying/Upgrading Existing Facilities" alternative proposed in the Reconfiguration PEIS Revised Scoping Notice, without bothering to complete the promised Reconfiguration PEIS. It is
10 now proceeding with individual projects, and with a sharply narrowed programmatic review. The proposed scope of the Stockpile Stewardship and Management PEIS falls largely within that single "Modifying/Upgrading" alternative from the Reconfiguration PEIS. Further, DOE's approach to the Stockpile Stewardship and Management PEIS converts it into a kind of pastiche of programmatic and project-specific NEPA reviews (for the National Ignition Facility, the Contained Firing Facility, and the Atlas Facility). This implies that basic go/no go decisions for those projects-- which, together with DARHT, constitute a large proportion of the next generation of nuclear weapons test simulation facilities-- already have been made without NEPA review. Programmatic NEPA review is not intended to provide a kind of one-stop shopping convenience for decision makers anxious to keep up with the budget cycle; it is supposed to actually inform decisions about whether to go forward with programs.

The DEIS interpretation of general Presidential Decision Directive and Congressional language as a mandate requiring specific projects to go forward suggests that the Stockpile Stewardship and Management PEIS is a post hoc rationalization for decisions which already have been made.[1] We hope that this will not be the case. The Stockpile Stewardship and Management PEIS should inform not just DOE but Congress, the President, and the public concerning the impacts of a range of alternative technologies and facilities appropriate to a range of stockpile sizes, with an explicit vision of the intended role of U.S. nuclear weapons. Further, DOE's assertion that the Department
11 "will continue to maintain and improve its hydrodynamic testing capability regardless of the outcome of either the SWEIS or the PEIS" (DEIS, p.2-12) appears to rule out the "No Action"

[1] The NEPA regulations state that an EIS "shall be prepared early enough so that it can serve practically as an important contribution to the decisionmaking process and will not be used to rationalize or justify decisions already made [proce-

alternative in this DEIS before even this project-specific environmental review has been completed. We hope that this was not DOE's intention.

The changes in U.S. weapons policy resulting from the disintegration of the Soviet Union undoubtedly have forced the DOE to revise repeatedly its long-range plans for the nuclear weapons complex. The most grandiose schemes for rebuilding the complex have been dropped, which is a positive development. But just because the range of options DOE considers to be plausible has been narrowed is no reason to lose the real advantages of a careful, programmatic review. Even if the projects DOE currently is most committed to now seem feasible only at one or two locations, significant new nuclear weapons testing and production weapons projects should be considered in the context of a thoroughgoing analysis of the entire complex. The existing nuclear weapons complex was built piecemeal, with little thought of the long-range, cumulative environmental consequences. In the absence of a provable urgent need for particular projects like the DARHT to go forward before a PEIS can be completed, DOE should take this opportunity to avoid repeating the ecological tragedies of the past.

PROLIFERATION IMPACT ANALYSIS

The inclusion of a nonproliferation discussion in the DEIS is a positive step. Unfortunately, however, the DOE section on nuclear weapons proliferation impacts provides little in the way of analysis. The analysis does not address the possibility that
12 a U.S. policy which contemplates an entire new round of nuclear weapons testing and production facility construction might encourage other nations to develop nuclear weapons or to improve their own nuclear arsenals. The DEIS states instead that "proliferation drivers for other states...would remain unchanged regardless of whether DOE implemented the proposed action analyzed in this EIS." DEIS at 2-11. Hydrodynamic testing is considered in isolation, without taking into account that the DARHT is part of a larger program of proposed new weapons testing and production facilities.

Other nations will evaluate our intentions in large part by the capabilities we choose to retain or develop-- just as we have evaluated the intentions of other nations in this way in the past. DOE is proposing the construction of new nuclear weapons facilities which appear modest only in comparison to the fearsome excesses of the height of the Cold War, retaining for this nation the capability to design new weapons and to build hundreds of new

warheads per year.[8] At the same time, we are witnessing a significant debate within the government over whether the United States should seek a threshold test ban allowing tests with yields of hundreds of tons rather than a truly Comprehensive Test Ban.[9] The full range of stockpile stewardship and management facilities, in combination with an underground test limit in the range of hundreds of tons, might well give the United States the capability to design and deploy new nuclear weapons. To many nations, this will represent a clear effort to maintain devastating nuclear superiority as an instrument of national policy well into the next century.[10] To remove proposals for new hydrodynamic testing facilities from this broader context, and by doing so to imply that this and other "stockpile stewardship" proposals are somehow no different from merely

[8] See, e.g., Herbert York, Interview, April 1982, In Robert Scheer, With Enough Shovels: Reagan, Bush, and Nuclear War (New York:1982), Appendix, at p.266: "Throughout this period, most of our Presidents have taken the attitude when they've become President and really seen what the situation is, that my God, this is awful, these forces are simply beyond belief, beyond what is necessary..."

[9] See, e.g., Ann Devroy and R. Jeffrey Smith, "White House Defuses Nuclear Test Proposal, Top Adviser Orders Study After Disclosure of Possible Loophole in Draft of Treaty," The Washington Post, June 23, 1995, p.A7.

U.S. nuclear testing policy, furthermore, may have a significant effect on the international nonproliferation regime:

> "Sri Lankan ambassador Jayantha Dhanapala, who presided over the NPT conference, told a disarmament conference in Japan last week that 'we . . . hear disturbing reports of a Threshold Test Ban Treaty (allowing nuclear blasts below an agreed level) being foisted on us in the guise' of a comprehensive ban.
>
> Dhanapala said that if such a proposal is put forward by one of the nuclear powers, it would confirm widely held suspicions among nonnuclear states that 'political expediency'lay behind the promise of such a ban." R. Jeffrey Smith, "Administration Debates Pentagon Proposal to Resume Nuclear Tests," The Washington Post, June 18, 1995, p.A17.

[10] See generally Michael Veiluva et al., Above Ground Experiments Threaten Compliance with Article VI of the Non-Proliferation Treaty: Laboratory Testing in a Test Ban/Non-Proliferation Regime, Western States Legal Foundation and Greenpeace USA/International, April 1995 (Attachment A)

maintaining our existing facilities, simply ignores reality.[11]

In the nonproliferation context, too, the only approach that makes sense is to look at the proposed "stockpile stewardship and management program"-- which is nothing less than the blueprint for the U.S. nuclear establishment for the next several decades-- as a whole. In a letter to Secretary O'Leary in December 1994, the Military Production Network asked that the National Ignition Facility proliferation impact analysis include "the entire array of Stockpile Stewardship and Management technologies," and stated that "[t]he nonproliferation analysis will be most meaningful and effective if it is, essentially, a companion in scope to the proposed Stockpile Stewardship and Management PEIS." Letter, Andrew M. Lichterman, on behalf of the Military Production Network, to Secretary Hazel O'Leary, U.S. Department of Energy, December 1, 1994 (attachment B). Individual project decisions, including DARHT, should be delayed until a truly comprehensive environmental review, and a proliferation impact review of similar scope, is completed. The approach to proliferation analysis taken by DOE-- discussing only the purported benefits of new nuclear testing facilities, while refusing to acknowledge that the path DOE prefers carries real risks-- are unlikely to improve DOE's credibility or to help regain public trust. It also is contrary to the most basic requirements of meaningful NEPA analysis: if you choose to claim certain types of benefits for a program, you must address as well the corresponding negative impacts or costs.

In May, the parties to the Review and Extension Conference on the Nuclear Weapons Non-Proliferation Treaty (NPT) agreed to an extension of the Treaty. As part of that agreement, the parties, including the United States, adopted a set of "Principles and Objectives for Nuclear Non-Proliferation and Disarmament." This document included a "programme of action", which calls for "determined pursuit by the nuclear-weapon States of systematic and progressive efforts to reduce nuclear weapons globally, with the ultimate goal of eliminating those weapons, and by all states of general and complete disarmament under strict and effective international control." 1995 Review and Extension Conference of the Parties to the Treaty on the Non-Proliferation of Nuclear Weapons, "Principles and Objectives for Nuclear Non-Proliferation and Disarmament," adopted May 11, 1995, NPT/CONF.1995/L.6, p.2. This programme is intended to implement Article VI of the Treaty itself. In a post-Conference interview, the U.S. Ambassador to the Conference, Ralph Earle, Deputy

[11] e.g., "Because the United States is already a nuclear weapons state, and has had a hydrodynamic testing program for several decades, continuing to maintain a hydrodynamic testing capability does not change our Nation's status in regards to proliferation-- we would remain a weapons state." DEIS at 2-11.

Director of the Arms Control and Disarmament Agency, stated regarding the Principles that "we are prepared now to begin their implementation as if they had the same standing as the Treaty itself". BASIC Reports, June 1, 1995, p. 3 (newsletter of the British American Security Information Council, 1900 L St. N.W. #410, Washington, D.C. 20036). In another post-Conference interview, the President of the Conference, Ambassador Jayantha Dhanapala of Sri Lanka, observed: "Unless there is substantial progress evidenced in the nuclear disarmament field, we are going to have very serious erosion of the confidence of states parties to the Treaty. This could be quite dangerous for the future . . ." Id., p.2. (See generally Jacqueline Cabasso and John Burroughs, Beyond the NPT: "Abolition 2000!" As Non-Proliferation Treaty Review Process Breaks Down, Non-Governmental Organizations Launch Initiative for a Nuclear Weapons Free World, a special report of Western States Legal Foundation, June 14, 1995, Attachment C.)

A meaningful nonproliferation analysis of new nuclear weapons facilities must address how proposed new facilities will contribute to "systematic and progressive efforts to reduce nuclear weapons globally, with the ultimate goal of eliminating those weapons".

# # #

Laboratory Testing in a Test Ban/Non-Proliferation Regime

Above Ground Experiments Threaten Compliance with Article VI of the Non-Proliferation Treaty

April 1995

Michael Veiluva
John Burroughs
Jacqueline Cabasso
Andrew Lichterman

Western States Legal Foundation

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ARTICLE VI nonproliferation is disarmament

WESTERN STATES LEGAL FOUNDATION

About the Organizations

WESTERN STATES LEGAL FOUNDATION (WSLF) is a non-profit organization dedicated to a peaceful and nuclear free future. We seek to abolish nuclear weapons, compel open public environmental review of hazardous nuclear technologies, and ensure appropriate management of nuclear waste. Our program challenges an array of policies which taken together risk nuclear catastrophe. Our legal, technical, and organizing activities support the growth of nonviolent public participation in shaping U.S. and global nuclear policy.

WSLF was founded in 1982 and is based in Oakland, California. It is supported by thousands of individuals in the San Francisco Bay Area.

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GREENPEACE is an international environmental and peace organization that uses nonviolent direct action, expert research, lobbying, grassroots organizing, and public education to expose threats to the global environment and to force solutions essential to a green and peaceful future. Greenpeace seeks to: protect biodiversity; prevent abuses and pollution of the oceans, land and air; promote safe, renewable energy sources instead of fossil fuels and nuclear power; and promote peace and the elimination of nuclear weapons.

Greenpeace was founded in 1971 and has offices in 31 countries. It currently has about 5 million supporters worldwide.

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ABOVE-GROUND EXPERIMENTS THREATEN COMPLIANCE WITH ARTICLE VI OF THE NON-PROLIFERATION TREATY

Introduction

The United States and other nuclear weapons states (NWS) are developing advanced technologies for conducting above-ground experiments (AGEX) to maintain the readiness of their arsenals of nuclear weapons. The largest and most ambitious program is planned by the United States under the name "Science Based Stockpile Stewardship" (SBSS). SBSS, and related efforts by other NWS, are intended to mitigate or overcome limitations on nuclear weapons programs imposed by the current moratorium on underground nuclear explosions as well as the anticipated Comprehensive Test Ban Treaty (CTBT). By the turn of the century, the United States plans to spend billions of dollars to construct and operate new facilities to preserve its capacity to maintain, test, modify, design, and certify nuclear weapons.

The development of advanced above-ground testing facilities by any nuclear state is inconsistent with treaty obligations imposed under Article VI of the Non-Proliferation Treaty (NPT). Article VI requires the signatory nuclear states "to pursue negotiations in good faith on effective measures relating to the cessation of the nuclear arms race at an early date and to nuclear disarmament..." The Preamble to the NPT explicitly calls for a Comprehensive Test Ban Treaty. When the NPT was signed in 1968, the intention of the parties was to halt nuclear tests in order to stop the development of new nuclear weapons; the CTBT was to be a disarmament measure. Using new technological capacities to undermine this intent is not conducive to "negotiations in good faith". The construction of expensive new above-ground test facilities frustrates Article VI's disarmament goals by allowing the host countries to continue nuclear weapons research and testing despite the cessation of underground nuclear explosions. According to statements by government officials, the above-ground testing regime now underway in the United States is intended not only to ensure the "reliability" (that is, the performance) of existing nuclear weapons, but also to preserve the capacity to design and produce new weapons.

Fundamentally, the large scale investment by the NWS in more advanced above-ground testing facilities is an effort to maintain their technological advantage in nuclear weaponry. The United States' SBSS program presumes that the United States will maintain a large, sophisticated, diverse nuclear arsenal at or near START II levels, rather than adopt a posture consistent with continuous reductions towards eventual nuclear disarmament as contemplated by Article VI

of the NPT. Once the nuclear powers invest considerable political and economic capital into advanced AGEX programs, the incentive and political will to take further effective measures towards zero stockpiles will diminish. The public policy rationale of SBSS as a "hedge" against new aggressive NWS or a resurgent Russian weapons program must be called into question when viewed against the treaty commitment to nuclear disarmament made by the NWS signatories to the NPT.

To the extent that AGEX programs are planned as substitute methods for obtaining weapons design information previously derived from underground explosions, they are contrary to the spirit, if not the letter, of a Comprehensive Test Ban Treaty. The conflict between AGEX and Article VI (as well as any eventual CTBT) is even more pronounced if the United States resumes *hydronuclear* experiments which involve low-yield releases of fission energy. The United States and several other nuclear powers have already taken public positions arguing for "thresholds" for "permitted" nuclear explosions to allow for hydronuclear tests. The drive to permit hydronuclear testing poses the specter of a threshold test ban in lieu of a comprehensive test ban as contemplated by Article VI, or worse, an ambiguous CTBT which leaves the definition of a "permitted" test to the whim of individual nations.

The Commitment To Nuclear Disarmament

The 1968 Treaty on the Non-Proliferation of Nuclear Weapons established mutual commitments and obligations between the nuclear and non-nuclear weapon states. In return for the non-nuclear states agreeing to forego nuclear weapons programs, the nuclear powers agreed in Article VI of the NPT to cooperate in halting the nuclear arms race and to proceed down the road to the complete elimination of nuclear arsenals. Article VI provides:

> Each of the Parties to the Treaty undertakes to pursue negotiations in good faith on effective measures relating to cessation of the nuclear arms race at an early date and to nuclear disarmament, and on a treaty on general and complete disarmament under strict and effective international control.

The text of Article VI does not merely call for reductions in the number of weapons. Instead, as a condition to obtaining the non-NWS' commitment to forgo nuclear arsenals, it requires that the nuclear powers take affirmative steps to halt the competitive development of the weapons and to reduce existing stockpiles to zero.[1] Article VI further embraces (as recognized in the 1968 agenda established by the nuclear states) the early ratification of a Comprehensive Test Ban Treaty, a halt to production of weapons-grade fissionable materials, and binding *commitments* not to use nuclear weapons against non-nuclear states (security *assurances*).[2]

At the present time, Russia, the United States, France and the United Kingdom are observing a self-imposed moratorium on below-ground nuclear explosions. The United States and Russia have also suspended mass production of weapons-grade uranium and plutonium, although environmental and safety issues are among the key factors in this decision.[3] Security assurances have not been made in a form acceptable to the non-nuclear states.

The current cessation of explosive tests and production of weapons-grade fuel does not constitute sufficient compliance with Article VI—especially while the nuclear weapons states develop new capacities to conduct advanced weapons tests, maintain the capability to augment the existing large arsenals, and refuse to unambiguously and bindingly renounce first use. National programs which have as their goal the indefinite maintenance of large arsenals (including those contemplated by START II) and which continue to develop sophisticated nuclear weapons-testing technologies frustrate the NPT's objective of nuclear disarmament. Continuation of extensive "simulated" nuclear weapons testing programs also would compromise a CTBT, even more so if these programs include miniature nuclear explosions (hydronuclear tests).

U.S. Above-Ground Experimental Test Programs

In the United States, responsibility for the development, testing, production, and maintenance of nuclear warheads rests with the United States Department of Energy (DOE). The Department of Energy is charged with the operation of nuclear weapons production facilities, the

"Without underground testing, above ground experiments (AGEX) are the best means available to exercise and validate design judgement."
-- U.S. DOE FY 1996 Cong. Budget Request, Project Data Sheets, Feb. 1995, vol. 1, p. 306.

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"The new weapon procurement strategy calls for ongoing development of advanced weapons systems to retain America's technological edge in military systems. In contrast to past practice, however, these new weapon systems may not be immediately produced in quantity. Instead, the nation will retain the capability to produce them quickly in response to threatening world conditions."
-- Sandia Nat'l Laboratories Institutional Plan, FY 1995-2000, Oct. 1994, p. 5-13.

two principal weapons design laboratories at Livermore, California and Los Alamos, New Mexico (where the first atomic bomb was developed), the Sandia weapons engineering labs at Livermore and Albuquerque, New Mexico, and the Nevada Test Site (where weapons were exploded until 1993).

The United States tested its nuclear weapons by actual explosions above-ground until 1962 (except for a brief period between 1958 and 1961), and below-ground thereafter. For most of this period, the weapons laboratories advised political leaders that the "safety" and "reliability" of existing nuclear weapons, and the capability to develop new weapons, could be assured only by a regime of actual nuclear explosions.[4] The United States SBSS program, in concept, is an important shift of weapons doctrine because it represents that these goals can now be accomplished in the laboratory.[5]

Any discussion of SBSS and AGEX programs must initially confront the ambiguities in terminology employed by weapons designers and policymakers, and in particular, the use of the words "safety" and "reliability" to describe the purposes of AGEX. The term "safety" refers to at least two aspects of the nuclear weapon: (1) its ability to survive aging, fire, or other destructive environmental influences or insults without releasing significant nuclear energy, and (2) the compatibility of safety features with the weapon's performance.[6] Initially, weapons safety was accomplished by mechanically separating the component parts of the warhead.[7] At the present time, insensitive high explosives, fire resistant pits, and "one-point safety" features are employed to prevent a nuclear warhead from detonating in the event of an accident such as an air crash.[8]

The term "reliability," on the other hand, pertains to the weapon's performance to the specifications required by the military, which include the yield of the warhead, its likelihood to detonate under proper commands, and its ability to survive war conditions.[9] Reliability is closely linked to another pervasive term of the nuclear age, "deterrence." True deterrence is the capacity to deter another state's first use by credibly threatening second use. Reliability in the sense of a demonstrated ability to meet exacting specifications for the likelihood that a weapon will explode at a given yield is necessary not for the credible threat of second use, but rather for the threat of first use or first strike with a high probability of destroying precise targets, most importantly the elements of an enemy's nuclear capability. Nuclear policymakers have eradicated the distinction between true deterrence and threatened first use, and thereby justified demanding requirements for reliability, by referring to the ability to credibly threaten nuclear use under any circumstance as "deterrence." A policy of true deterrence based on the capacity to threaten second use does not require "reliability" but only a reasonable chance that the second use would result in a nuclear explosion.

Before a weapon enters the U.S. arsenal and is available for deployment,

it must be "certified" by the U.S. Department of Energy as meeting the safety, reliability, and performance criteria specified by the military.[10] Prior to 1994, this was principally accomplished through actual underground nuclear explosions of representative test weapons at the Nevada Test Site.

In 1994, the Department of Energy, in response to the voluntary moratorium on below-ground explosions declared by the United States and Russia in 1993, proposed an advanced technology program to upgrade its capability to test weapons in the absence of actual underground explosions.[11] The program, known as "Science Based Stockpile Stewardship," encompasses many of the Department's activities related to nuclear weapons research and development.[12] Its principal mission is to maintain the "reliability, safety and capability" of the nuclear weapons stockpile.[13] The United States Department of Defense, in its Nuclear Posture Review, has required the Department of Energy to ensure that it can "maintain capability to design, fabricate and certify new warheads" without underground nuclear testing.[14]

At the center of the above-ground testing program are sophisticated testing technologies designed to study and simulate the physics associated with nuclear weapons explosions. The Science Based Stockpile Stewardship program integrates a number of facilities and projects whose principal missions involve nuclear weapons experiments, component testing, or weapons-related nuclear physics,[15] although individually, some such programs (for example, Inertial Confinement Fusion (ICF)) may have applied physics and materials-science applications apart from

"The NPR (Nuclear Posture Review) also directs the Departments of Defense and Energy to maintain nuclear weapon capability without underground nuclear testing and without the production of fissile material. Specifically, it directs the development of a stockpile surveillance engineering base; retention of the capability to refabricate and certify weapon types in the enduring stockpile; *maintenance of the capability to design, fabricate, and certify new nuclear warheads should that prove necessary*; and maintenance of the requisite supporting science and technology base."

-- Statement by Dr. Harold P. Smith, Jr., Assistant to the Secretary of Defense (Atomic Energy), before the Senate Energy and Water Development Appropriations Subcommittee, March 1, 1995 (emphasis added).

"Without underground tests, we will require better, more accurate computational capabilities to assure the reliability and safety of the nuclear weapons stockpile for the indefinite future. To achieve the required level of confidence in our predictive capability, it is essential that we have access to near-weapons conditions in laboratory experiments. The importance of nuclear weapons to our national security requires such confidence. For weapon primaries, that access is provided in part by hydrodynamic testing. For secondaries, the NIF will be the principal laboratory experimental physics facility."
-- U.S. DOE FY 1996 Cong. Budget Request, Project Data Sheets, Feb. 1995, vol. 1, p. 330.

weapons. These "dual use" facilities have confused the discussion over SBSS and AGEX, since proponents of particular SBSS facilities such as the National Ignition Facility (NIF, see below) tend to describe such facilities outside the context of the entire SBSS program, and emphasize their capability for energy and "pure science" research as well as their AGEX role.[16]

(a) *Inertial Confinement Fusion* (ICF). The United States has developed advanced facilities for studying high-energy and high-density physics approaching the conditions for ignition of the tritium secondary component of a nuclear bomb. Two such facilities, Trident (at Los Alamos) and Nova (at Livermore), already exist.[17] These will be dwarfed by the planned National Ignition Facility (NIF), expected to be built at Livermore. NIF, which according to the latest government projection will cost approximately US $4.5 billion to construct and operate,[18] will be the world's largest laser, intended to bring about thermonuclear fusion within small confined targets.[19] According to a November 1994 report prepared by a consulting team commissioned by the U.S. Department of Energy (the "JASON Report"), NIF represents "the closest laboratory approach . . . to a number of critical parameters in the weapons environment."[20] NIF's objective is to attain actual thermonuclear ignition by using 192 laser beams to produce 500 trillion watts of energy for 3 billionths of a second.[21] NIF is the largest and most expensive of the United States' AGEX programs now underway.

The memorandum from Assistant Secretary of Energy for Defense Programs Victor Reis to Undersecretary Charles B.

Curtis recommending approval of preliminary design for the NIF, and signed by Secretary of Energy Hazel O'Leary, states:

> In the absence of underground testing, the National Ignition Facility would be a critical tool for the Department's Science Based Stockpile Stewardship program. It would play an important role in maintaining the continued safety and reliability of the stockpile by creating experimental conditions that approach certain aspects of nuclear weapons physics. In particular, this experimental capability would allow nuclear weapons scientists to assess stockpile problems, verify computational tools, and increase their understanding of weapons physics.[22]

The U.S. Department of Energy's FY 1996 Budget Request describes NIF as "a key element in the DOE-Defense Programs above-ground simulator experimental capabilities for maintaining nuclear weapons competence and *nuclear weapons effects simulations*."[23] Its importance as an AGEX program is further emphasized elsewhere in the budget documents:

> Since the Hatfield Amendment to Public Law 102-377, Section 507 calls for the end of underground testing in 1996, the weapons laboratories will begin to lose the ability to certify the safety and reliability of this country's nuclear weapons. (Department of Energy-Defense Programs) is developing a stockpile stewardship program to respond to the loss of underground testing capability. The NIF is one of the most vital facilities in that program. The NIF will provide the capability to conduct laboratory experiments to address the high energy density and fusion aspects that are so important to both primaries and secondaries in stockpile weapons.[24]

Other NWS have or are developing inertial confinement fusion or related technologies, although on a smaller scale than NIF. The Russian laboratory at Arzamas-16 is reported to have an advanced laser facility "Iskra-5" capable of studying thermonuclear fusion physics.[25] The French Department of Military Applications, which has worked with Livermore Laboratory since 1981 on cooperative laser fusion programs, is now collaborating with Livermore to build a megajoule ICF laser facility in France.[26] A further concern is that ICF facilities might be valuable to proliferant states in developing advanced weapons already possessed by the existing NWS.[27]

(b) *Pulsed Power Facilities.* The United States, in cooperative arrangements with the United Kingdom and Russia, is developing advanced electrical "pulsed power" facilities capable of studying the effects on weapons and

DARHT

The aim of AGEX is "the full integration of the kind of capabilities that we've always been able to achieve in developing nuclear warheads and in our nuclear testing program."
-- 12-1-93 talk at Los Alamos Nat'l Lab, "The State of the Nuclear Weapons Programs," John Immele, Associate Director for Nuclear Weapons Technology, Los Alamos.

♦♦♦

"[T]he development of rapid prototyping and agile manufacturing techniques must build on emerging simulation capabilities so advanced that they enable virtual prototyping and processing and, ultimately, computational design of entire systems."
-- Sandia Nat'l Laboratories Institutional Plan, FY 1995-2000, Oct. 1994, p. 5-28.

Under the SBSS umbrella, the United States' high level above-ground experimental programs including ICF, ASCI and hydrodynamic test facilities are promoted as allowing a continuation of reliability (that is, yield and confidence) tests of weapons systems even under a CTBT.[58] Proponents of these technologies have stressed both the non-weapons applications of these technologies (particularly ICF) and the need to assure weapons safety. However, it is reasonably clear that the intent and design of these technologies extends far beyond the safety of the primary systems. Instead, the stated goal of the program is to ensure that the weapons systems work as intended, and are survivable.[59] Since one of the principal objectives of inertial confinement fusion as well as pulsed power facilities is to study the effects of nuclear weapons on sensitive equipment (including the weapon itself),[60] these uses must be distinguished from the more benign "safety" rationales for AGEX programs.

The vigorous AGEX program now underway in the United States is at odds with Article VI's mandate to the nuclear states to end nuclear testing and take other concrete steps towards halting the arms race and eliminating nuclear arsenals. Whether the tests are conducted in an underground explosion or in a high technology laboratory, the goal of maintaining weapons performance remains the same. The stated goal of AGEX as a replacement for underground tests[61] fundamentally misperceives the purpose of the CTBT, which is to be an "effective measure" to stop weapons development and move towards disarmament, rather than an end in and of itself. A CTBT affecting only underground explosions inevitably will perpetuate a discriminatory non-proliferation regime if advanced nuclear states retain the functional equivalent (or approximation) of underground explosions by way of aggressive AGEX programs.

The CTBT is an "effective measure" under Article VI only if it inhibits weapons advancement. If sophisticated AGEX programs provide the "informational testing" needed to remove technological barriers otherwise imposed by the elimination of actual nuclear explosions, the CTBT's effectiveness will be seriously eroded.

The Maintenance of Large Weapons Stockpiles under SBSS, and the Retention of Production and Design Capability, Is Inconsistent with Article VI

One of the principal goals of the Science Based Stockpile Stewardship program is to enable the maintenance of thousands of warheads in a state of readiness. Currently, under START I and II, the United States envisions using SBSS to preserve a stockpile at or greater than START II levels (some 3,500 warheads deployed on strategic systems plus thousands in reserve or deployed in tactical systems). It is reasonably clear that the investment of billions of dollars into SBSS is inconsistent with any meaningful attempt to materially reduce the number of warheads in the arsenal towards zero. Indeed, the construction of expensive new facilities for stockpile maintenance will become a potent economic force blocking further arms reduction.

Another impact of SBSS will result from its stated purpose as a "hedge" in the case of a resurgent nuclear power or

"The weapons laboratories must assume more responsibility for production capability in addition to their responsibilities for scientific understanding. Having a capability of creating a larger stockpile in an emergency could permit the U.S. to further reduce its active stockpile if international conditions so warrant."
-- Statement of Dr. Victor H. Reis, Assistant Secretary for Defense Programs, Department of Energy, before the Senate Energy and Water Development Appropriations Subcommittee, March 1, 1995.

ENDNOTES

1. See, for example, Bunn, Timerbaev and Leonard, "Nuclear Disarmament: How Much Have the Five Nuclear Powers Promised in the Non-Proliferation Treaty?", Lawyers Alliance for Word Security, June 1994, i (Bunn I); Bunn, "Extending the Non-Proliferation Treaty: Legal Questions Faced By The Parties In 1995", American Society of International Law, October 1994, 7-8 (Bunn II).

2. Bunn I, 11, 13: "In the eyes of the NPT parties not having nuclear weapons, there is no question that a CTB is the most important measure the nuclear weapons states can adopt in satisfying their Article VI obligations."

3. See, for example, U.S. Department of Energy, FY 1996 Congressional Budget Request: Budget Highlights, February 1995, DOE/CR-0032, 15-6, 84-8. Similar statements were made by Arzamas-16 laboratory personnel at a four day conference attended by two of the authors in Nizhny-Novgorod, Russia, in July 1994.

4. For example, see Thorn & Westervelt, "Hydronuclear Experiments", Los Alamos National Laboratories, LA-10902, February 1987, p. 7: "The most important lesson learned from this experience [the 1958-1961 testing moratorium] was that a nation that depends upon nuclear weapons for its security can get into serious trouble during a testing moratorium or prohibition."

5. Drell, et al., "Science Based Stockpile Stewardship," JASON, The MITRE Corporation, November 1994, 1, 3 ("JASON"). The Jason Report was commissioned by the U.S. Department of Energy to assess the proposed SBSS program and make specific recommendations. The reports concludes that all of DOE's proposed AGEX programs are of value to maintaining confidence in a stockpile program except for hydronuclear experiments.

6. See Cochran and Paine, "The Role of Hydronuclear Tests and Other Low Yield Nuclear Explosions and Their Status Under A Comprehensive Test Ban", National Resources Defense Council, March 1995, iv.; Thorn, et. al., supra at 2-3.

7. Thorn et al., supra at 1, 2.

8. Id.

9. U.S. Department of Energy and Department of Defense Interagency Working Group, "Stockpile Stewardship Program Plan for Fiscal Years 1995 through 1997", Draft, February 27, 1995, 5 ("Inter-Agency Working Group").

10. See Inter-Agency Working Group, supra at 4.

11. The FY 1994 National Defense Authorization Act (P.L. 103-160) called

weapons, including weapons design, system integration, and certification." In response, the U.S. Department of Energy proposed the Science-Based Stockpile Stewardship program. See JASON, supra at 11. See also U.S. Department of Energy, FY 1996 Congressional Budget Request: Atomic Energy Defense Activities, DOE/CR-0030, vol. 1, February 1995, 21.

12. Atomic Energy Defense Activities, supra at 22-3, 27.

13. Id.

14. U.S. Department of Defense, "Nuclear Posture Review", p. 27 (overhead projection), September 22, 1994.

15. Atomic Energy Defense Activities, supra at 41-43.

16. For example, the press packet provided by Lawrence Livermore National Laboratory in November 1994 emphasizes the NIF's applications to nuclear fusion energy research and pure physics, with little mention of its technical role as an AGEX program. Similarly, in Lawrence Livermore National Laboratory's January-February 1994 Energy and Technology Review, the National Ignition Facility is categorized as a "laser program" (p. 30) along with other civilian energy programs. The ambiguous public pronouncements concerning NIF have confused policy makers and the public as to its role and relevance to a weapons stewardship program.

Earlier policy statements leave less in doubt as to the interrelationship of advanced laser fusion facilities such as NIF and AGEX. "The Department of Energy program in inertial confinement fusion (ICF) is not now an energy program. It is an excellent program within Defense Programs (DP) that is generating information valuable to the nuclear weapons program. It is developing understanding and facilities that will permit the completion of the design and initiation of construction of a Laboratory Microfusion Facility (LMF) which in turn will have a major defense role . . .

We accept the NAS [National Academy of Sciences] judgment that the defense applications of ICF as embodied in the LMF are of great importance to weapons physics and weapons effects studies, and can be realized more certainly and much sooner than the energy goals. These applications would become urgent in the case of nuclear explosive testing limitations. It is thus appropriate that ICF remain primarily a defense program. Nevertheless, the promise of an inertial fusion energy program (IFE) seems to us to be sufficient to begin investment now in a small collateral program covering those areas not required for the DP program, e.g. repetition-rated, efficient drivers and reactor studies. We stress that the energy program makes sense only if the NAS recommended target-physics program is pursued vigorously by DP, and care should be taken that adding an explicit energy mission not in any way impede or slow down the ICF progress." Fusion Policy Advisory Committee, Final Report (U.S. DOE September 1990), 39. The "LMF" may be a successor facility to NIF.

17. JASON, supra at 40-42 (NOVA); Los Alamos Science, No. 21, 1993, p. 67. These programs are summarized in Collins, "Above Ground Experiments (AGEX): What and Where They Are", Institute for Science and International Security (paper), July 7,

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1994.

18. FY 1996 Congressional Budget Request: Project Data Sheets, Vol. I, 332, February 1995, DOE/CR-0031.

19. JASON, supra at 39-43.

20. Id., 37.

21. Id.; FY 1996 Congressional Budget Request Project Data Sheets, supra, vol. 1, 328-9.

22. See also Lawrence Livermore National Laboratory, FY 1996 Capital Assets Management Process Report, April 15, 1994 UCRL-AR-110100-94, at FU15-43: "The mission of the National ICF program is threefold: (1) to play an essential role in accessing physics regimes of interest in nuclear weapon design and to provide nuclear weapon related physics data, particularly in the area of secondary design; (2) to provide an aboveground simulation capacity for nuclear weapons effects on strategic, tactical, and space assets (including sensors and command and control); and (3) to develop inertial fusion energy for civilian power production."

23. U.S. Department of Energy, FY 1996 Congressional Budget Request: Project Data Sheets, vol. 1, DOE/CR-0031, 328 (emphasis ours).

See also Lawrence Livermore National Laboratory, Press Background Materials (undated) distributed November 1994: "Only the NIF, of the various proposed facilities, allows on a laboratory scale the study of the fusion aspects of a weapon. Both fusion and high energy density physics questions can be answered with NIF experiments, helping answer specific primary and secondary questions. Beyond direct stockpile inquiries, the NIF experiments provide empirical data to test the 'virtual detonations' of complex computer simulations."

24. Project Data Sheets, supra at 329.

25. Dr. Vladimir Iakimets, Russian Academy of Sciences, "Laboratory Conversion and CTB Negotiations," paper delivered at Russian-US seminar in Nizhny-Novgorod, June 22-24, 1994.

26. "Le Projet de Laser Megajoule," Objectif (French scientific journal) 1994.

27. The U.S. Department of Energy has undertaken an unprecedented review of the potential impacts of the NIF on the proliferation of nuclear weapons. The study will analyze the usefulness of NIF to proliferant states as well as to U.S. nuclear weapons designers. Federal Register/Vol. 59, No. 249/Thursday, December 29, 1994/Notices, 67284: Notice of Public Meetings and Request for Comment Concerning the National Ignition Facility and the Issue of Nonproliferation.

28. JASON, supra at 71-2; Collina, supra at 5, citing Sandia National Laboratories, Summary Description of Facilities and Operations, August 1, 1992, 41.

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29. JASON, supra at 72; Collina, supra at 5.
30. JASON, supra at 72; Collina, supra at 5.

31. JASON, supra.

32. Id. at 75.

33. FY 1996 Congressional Budget Request: Atomic Energy Defense Activities, supra, vol. 1, 42.

34. JASON, supra at 79.

35. Id

36. Interview with Paul Rovaldes, Gramat laboratory worker, October 24, 1993.

37. Timothy R. Neal, "AGEX I, The Explosive Regime of Weapons Physics," Los Alamos Science, Number 21, 1993, 57.

38. JASON, supra at 3.

39. Id.

40. Id. at 4; Collina, supra at 1.

41. JASON, supra at 32.

42. JASON, supra at 28; Collina, supra at 1.

43. JASON, supra at 28-9.

44. Id. at 4.

45. Id. at 32. A preliminary report on the AHTF is expected in summer 1995.

46. Id. at 34.

47. Id.

48. FY 1996 Congressional Budget Request: Atomic Energy Defense Activities, supra, vol. 1, 42.

49. Inter-Agency Working Group, supra at 21.

50. "Perry Emphasizes Pacific Stability," The Washington Post, October 19, 1994, A34.

51. The early hydronuclear experiments are described in Thorn and Westervelt,

Comment 23, page 39

TREATY ON THE NON-PROLIFERATION OF NUCLEAR WEAPONS

ARTICLE VI

"EACH OF THE PARTIES TO THE TREATY UNDERTAKES TO PURSUE NEGOTIATIONS IN GOOD FAITH ON EFFECTIVE MEASURES RELATING TO CESSATION OF THE NUCLEAR ARMS RACE AT AN EARLY DATE AND TO **NUCLEAR DISARMAMENT**, AND ON A TREATY ON GENERAL AND COMPLETE DISARMAMENT UNDER STRICT AND EFFECTIVE INTERNATIONAL CONTROL."

U.S. LAW SINCE 1970

"This important report, which should be widely publicized, reveals the truth about the United States government's plans to continue nuclear weapons development well into the next century."

-- Theodore Taylor, former nuclear weapons designer, Los Alamos National Laboratory

"An eye-opening expose of what's really happening in the weapons laboratory. A revealing, important contribution."

-- Michio Kaku, Professor, Physics Department City University of New York

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Comment 23, page 40

ATTACHMENT B

analyzed in the Stockpile Stewardship and Management PEIS, and should proceed no further prior to the completion of that PEIS.

In regard to the proliferation impact analysis for the NIF, we appreciate your commitment to a "Key Decision One Prime" which will come only after the public process initiated by Congressman Dellums. We would emphasize, however, that in this context the NIF cannot be addressed in isolation from the entire set of proposed nuclear weapons research, development, testing, and simulation programs referred to as "stockpile stewardship." Other nations, in evaluating U.S. nuclear weapons capabilities and intentions, will be considering the NIF as part of a broader program which includes both these technologies and any "stockpile management" facility upgrades which will restore our capacity to remanufacture existing weapons, or perhaps even to manufacture new warheads. In order to provide a genuine national debate on these issues, the Department should provide a public participation process for the nonproliferation analysis which will allow, in Congressman Dellums' words,

> a comprehensive examination of this question that allows the public an opportunity to respond fully to the issues that are on the table, something akin to a programmatic environmental impact statement. "Dellums Applauds Secretary O'Leary's Decision to Pursue Proliferation Impact of Proposed National Ignition Facility," News and Views of Ronald V. Dellums, October 21, 1994.

In the three years since the Department of Energy first announced its intended Programmatic Environmental Review for the Nuclear Weapons Complex, the public repeatedly has been promised a comprehensive review which will address the fundamental policy and environmental choices represented by the many new facilities proposed at the various Department of Energy sites. In those three years, design and construction for several facilities has proceeded without the comprehensive policy and environmental review which is needed to provide the public with both an accounting of environmental impacts and a rationale for both policy and siting choices. We can no longer accept the piecemeal reconstruction of the Nuclear Weapons Complex while the promised Programmatic review is endlessly pushed off into the future. In order to restore public confidence in the integrity of the Department's policy decision making and in its public NEPA processes, we ask the Department to:

-- Clarify that no decision has yet been made by the Department to proceed with construction of the National Ignition Facility, and that no site for the facility has been selected.

-- Delay project specific environmental review and construction of proposed Stockpile Stewardship and Management projects until completion of the proposed

Stockpile Stewardship and Management PEIS. If the Department believes that particular projects are so pressing that they must go forward outside the Programmatic EIS process, the justifications for doing so should be publicly explained.

-- Along with a rigorous and detailed analysis of the NIF, include in the proposed proliferation analysis the entire array of Stockpile Stewardship and Management technologies. The nonproliferation analysis will be most meaningful and effective if it is, essentially, a companion in scope to the proposed Stockpile Stewardship and Management PEIS.

-- Include in the Stockpile Stewardship and Management PEIS a range of alternatives from a "zero" stockpile, through very small stockpile sizes, to the higher ranges proposed by the Department of Defense. These alternatives also should be tied explicitly to alternative policies for use of the weapons themselves. A nuclear weapons policy, for example, which does not anticipate first use against an adversary with high numbers of "hard" targets may require both a smaller stockpile and a lower reliability requirement, with consequences for both remanufacturing and "stewardship" technology requirements.

We stand at a critical juncture in the realm of nuclear weapons policy. As we move toward review and debate on extension of the Nuclear Non-Proliferation Treaty (NPT) and toward completion of a Comprehensive Test Ban Treaty (CTBT), the nuclear weapons powers, and the United States as the most powerful among them, will be watched closely, both by those nations which staunchly oppose nuclear weapons and by those which may wish to acquire them. Our behavior -- whether we appear to be pursuing further technological superiority in nuclear armaments, and so implicitly legitimating their existence as instruments of national power, or instead renouncing their use and committing ourselves to their eventual elimination -- will help to determine whether a CTBT and an extended NPT, if achieved, will be meaningful and effective. In Article VI of the NPT, the U.S. has committed already to the latter path:

> Each of the Parties to the Treaty undertakes to pursue negotiations in good faith on effective measures relating to cessation of the nuclear arms race at an early date and to nuclear disarmament, and on a treaty on general and complete disarmament under strict and effective international control.

Although the policy alternatives we ask the Department to analyze may not all be within the range of current Defense policy options, the reconfiguration of the Nuclear Weapons Complex, and the operation of the Complex as reconfigured, involves a time horizon stretching well into the next century. These are

Comment 26, page 2

page 2

It takes short times to make mistakes. Mistakes which have been made cannot always be corrected. Many of us amerikans believe we have enough radioactive waste already. If the lab needs new
1 facilities they should be devoted to finding safe, simple ways to detoxify nuclear materials. If all of the waste in Hanford or Savannah River gets innundated the way the Mississipi did in '93, it will not be pretty. Department of Energy should deal with the energy which exists in the waste materials.

Study Alternative energies like SOLar, wind, electrostatic and whatever the brilliant scientists think would be good to live in a world after petrolium. Bomb making is like conspiracy to committ murder, genocide, ecocide. When you wipe out as many folks as one bomb would kill, certainly innocent lives will be lost. Consider the butterflies and flowers, the birdies and childrens, like the Nazi's you plod toward mass murder. If we want a world in peace we should fork for peace and put in the energy of funds and research. It is clearly a good time to look at new ideas.

2 Conflicts with the historic preservation and cultural respect of native ruins are serious. The health and well being of all living species is an aspect of our responsibility to the Creator. Your choice to honor ancestors of Pajarito Plateau, the neighbors down hill and stream; could save downwinders too. Future and past generations are the stakes which people hold in this gambling. Reason and ethics must prevail over buracracy and funds. Stop
2 pillaging our earth. Respect our sacred sites and privacy.

The purpose and need as you state it is paramount to success of one political system, yet degrading to life on earth, as is the mission of the whole capitalistic techo power trip.

Comment 26, page 3

page 3

Can you possible step back and see the impact of western civilization on America's west. The past fifty years has been exponential change. What do you want to see in the next fifty? Cumulative Impacts and Irretrievable and/or Irreversibility of constant weapons perfection practices are real on so many levels of socipolitics from local to international. However the Cumul.
3 Impact to lab workers of 239 person-rem (is that per year?) is alarming.

Your should remember that the background is added to this and the high altitude factor make this not a question of comparison, but addition of more person-rems. Cumulative impact should add the
3 x-Rays, background, accidents, waste emmissions, etc. to the one in question and under study in the document.

You need an alternative that shuts down the PHERMEX... A true non-proliferation alternative will minimize the rem dose to trees
1 and people with a sustainable cleanup agenda. The No Action is only a continued action alternative and the action in question is bad. The lack of a clear alternative to change from business as usual shows a clear inability to see the big view. Nor is there info about how many tests per week, month, day or year in this big facility
4 will do at capacity and what the scientific validity of the findings. Would a quarter of the tests be enough? What are the tests used to prove? What new research is projected? 5-5 last para graph indicates
5 probabilities of on-site damage to Facility from seismic impacts, what does this mean? Too many issues are vague. Re-do the EIS!

Thanks and peace, bonnie bonneau

Bonnie Bonneau

Comment 27, page 1

CHRISTINE GRAY CHANDLER
940 Los Pueblos
Los Alamos, NM 87544

18 May 1995

Ms. Diana Webb
DOE/LAAO
528 35th
Los Alamos NM 87544

RE: DARHT EIS

Dear Diana:

Enclosed is the list of individuals that Rhonda requested I send you. You apparently prefer to keep track of who is receiving the draft DARHT EIS. While I am willing to comply with your preference I request that you hold the list in confidence and use it only for the purpose of transmitting the document I suggest that you check the list against the one you have been compiling as I believe a few of the people on the list may have already received one.

1 On another topic - I continue to be perplexed by whose responsibility it is to provide information and answer questions on the DARHT project. I frankly found our conversation of a couple of weeks ago very confusing and circular. Perhaps I misunderstand the process but I thought that DOE was charged with administering the EIS process. It seems to me that inherent in the process of soliciting public comment is providing the information the public seeks to education itself on the proposal (within reasonable limits). Otherwise all the public can provide is uninformed comments. I recognize that you did give me the name of one lab person who can
1 assist me. However, if he is so busy that he is having difficulty getting back to me, who can I contact to get the information I need? I recognize that you are understaffed and that you are not a scientist. I do not expect you to be able to answer the questions yourself. But it does seem to me that DOE should be able to facilitate the access we seek.

I apologize for pressing the point - I sensed some irritation during our conversation of a couple weeks ago and again yesterday about my expectations. But the public comment period is very short. I and others are scrambling to meet the deadline.

Whatever clarification that you can provide regarding gaining access to information would be greatly appreciated.

Sincerely,

Comment 28, page 1

6/7/95

U.S. Department of Energy
Los Alamos Area office
528 35th Street
LOS ALAMOS, NM 87544

ATTENTION: Ms. M. Diana Webb,
DARHT EIS Document Manager

Dear Ms. Webb:

Thankyou for your courteous, people oriented managing of the recent hearing in Santa Fe. Your equanimity and attention are appreciated. One small suggestion: if, indeed the subject matter of comments is to be restricted to the environmental impact chapters, as
1 you announced while I was there, should that not be printed in the call for comments? I heard complaints, from both camps, about the quality and effectiveness of Chapter 2, for example. Were these not germane?

2 I write primarily, however, to register my objections to the so-called round table format, though I am sure you hoped it would provide open and free discussion. Unfortunately, that was not its effect.

- LANL has had a $2 million, well staffed, resource backed chance to make its case in the draft EIS.

3
- In contrast, the public (unpaid, volunteer, often without convenient access to materials) has only the hearing to ask for clarification, locate weaknesses, and make its points.

In some cases, questions were answered directly, and that was useful--except the question why the available material publically stated was not included in the EIS. But in many cases, the "answer" gave factually armed, heavily invested, and unaccountable angry Lab personnel an chance to argue their positions; creating an unfortunate magnification effect to their already significant advantage.

I would be very happy to discuss this with you further should you desire.

Sincerely,

Helen Corneli

Helen M. Corneli
2528 Av de Isidro,
SANTA FE NM 87505

30004440
US DOE/LAAO - IN

Comment 29, page 1

176 Barranca Road
Los Alamos, NM 87544
June 15, 1995

Diana Webb
Los Alamos Area Office
U. S. Department of Energy
528 35th St.
Los Alamos, NM 87544

Dear Ms. Webb:

This letter is in support of DAHRT. I am an engineer, retired from LANL, who has been involved in the design of weapons systems, both nuclear and conventional, for almost 40 years. The United States has invested enormous resources in the development of weapons systems which have effectively deterred the start of any world wide war and maintained peace for 50 years.

1 It is a very important goal to achieve nuclear disarmament around the world and the USA should be a leader in that effort. However, one need only read any daily newspaper to realize that nuclear weapons are still abundant all over the world and that there are governments which would use them were they not fearful of massive retaliation.

2 It is imperative that the USA continue to maintain a smaller but still reliable and superior stockpile of nuclear weapons so long as there are weapons in the hands of
3 other governments in the world. Honoring of present test ban treaties is also essential.

Therefore, the only tool available to test reliability and operational readiness of our
4 nuclear weapons systems is with a facility such as DAHRT. The construction of DAHRT should resume as soon as possible and be finished quickly so that it is available for the testing that is needed to maintain the superiority of the United States nuclear arsenal.

Sincerely,

Robert O. Hedges

Robert O. Hedges

C:\WP61\10\DAHRT1.RO

30004547
US DOE/LAAO - IN

Comment 30, page 1

COMMENTS ON THE DRAFT DAHRT EIS, June 6, 1995
By M. G. Lockhart, 91 Mimbres Drive, Los Alamos, NM 87544

Table S-1 (pages S-5 thru S-7) and Table 3-3 (pages 3-41 thru 3-43):

I challenge the impacts presented and assumptions used for calculating Air Quality for uncontained versus enhanced containment.

a. NO_2, PM_{10}, and SO_2:

1 I could not identify a Table or Exhibit which explained the NO_2, PM_{10}, and SO_2 emissions for all alternatives except No Action. The numbers in Table S-1 appear to be an inconsistent mix from Tables 5-1 and 5-2 (No Action, page 5-4), 5-6 and 5-7 (Preferred Alternative, page 5-21), and 5-12 (Enhanced Containment Alternative, page 5-37).

2 Table 5-6 for fugitive dust appears to conflict with Table C1-3 (page C-7).

3 Table 5-7 (Construction Equipment) appears to conflict with Table C1-6 (page C-8).

4 Every table for air quality contained scaling factor errors (exponents of 10). Calculations (or possibly data) using the regulatory limit from Table 4-3 to calculate "Percent of Regulatory Limit" are wrong in many tables -- Example: Nitrogen dioxide in Table 5-12 is shown as .92 for 24 hours average. When divided by .10 (New Mexico Standard) this calculates to 920%, not 6.3×10^{-1} as shown in Table 5-12. Table S-1 shows 3.3% (the same as for the Preferred Alternative from Table 5-7), but Table 5-7 calculates to 4800%.

5 b. Depleted Uranium, Beryllium, and Lead: Par 3.7 states that the Enhanced Containment Alternative prevents the release of most or all airborne emissions; that 25% of the Preferred Alternative tests would be uncontained; and that contained tests might result in a release up to five percent of the time.

This results in a release in 28.75% of tests under the Preferred Alternative, versus 5% in the contained case.

Ten percent of the metals are assumed to be respirable (presumably vaporized or small particulates).

6 Table C1-8 shows that quantities used in contained tests are generally lower or equal to the uncontained tests. So the only factors which could result in higher emissions come from calculating the containment option as a ground level release versus an elevated release at 325 feet (par 5.4.2.1.2, page 5-36). This results in a percentage of regulatory limits 67 times higher for beryllium, 4.7 times higher for heavy metals, and 1.5 times higher for lead.

7 There is a factor called 1 hr X/Q' (Table C1-8, page C-10) which is 28 times higher for containment and which is unexplained anywhere. I am told by knowledgeable

1

COMMENTS ON THE DRAFT DAHRT EIS, June 6, 1995
By M. G. Lockhart, 91 Mimbree Drive, Los Alamos, NM 87544

7 | Individuals that this is the disperaion term for continuous release and that the dispersion term for short, "puff" releases should be E/Q.

8 | Why is the air burst assumption used? Uncontained tests will be on platforms, but not that much higher than for the containers.

9 | Par 5.1.2.1.2 states that the ambient air concentrations for uranium, lead and beryllium are for an exposed individual located at 0.9 mi southwest of the site. Could the elevated release assumption for uncontained tests (325 feet) lob contaminants over the .9 mile surface level point?

10 | Table S-1 and 3-3 show uncontained lead emissions of 1.8×10^{-3} for the No Action alternative. Table 5-1 shows 1.5×10^{-3}.

11 | Table S-1 and 3-3 show 2.5 emissions for Heavy Metal for the containmentalternative. Table 5-12 shows 2.5×10^{-2}.

12 | Table 5-12 shows 3.3 as the Percent of Regulatory Limit for beryllium. This should be 3.3 x 10-2. All of the air quality tables seem to show the same problem with calculation which I noted for NO_2, PM_{10}, and SO_2. This leads to the conclusion that all tables are suspect.

13 | The terms "Average dose" and "Collective doese" in Tables S-1 and 3-3 appear to be mislabeling. The 0.6 rem average annual worker dose for Enhanced Containment Alternative (Table S-1 and 3-3) conflicts with par 5.4.8.3 (page 5-46) and par H5.2.3 (page H-21), which state the average annual worker dose would not exceed .02 rem and the annual collective worker dose (100 workers) is 2 rem. 2 rem is congruent with 60 rem collective lifetime (30 year) dose and with the .3 rem annual collective dose used for the uncontained alternatives. I recognize that workers will be exposed more

14 | because of container cleanup, <u>but I question a factor of 7</u> (2/.3). Since no worker data are given for the uncontained alternatives, no calculation could be made to extend the .01 rem average annual dose, however, the FTE count would have to be 30(which seems low).

15 | Page MC-2: an acre is 1/640th of a square mile, not 640 square miles.

16 | I thought that Chapters 2 and 3 were well presented but did not explain the unique capabilities of DAHRT.

17 | I do not understand Appendix C. The data are not tied together well. The discussions throughout the document were not rigorous in defining terms. The reader's knowledge level was assumed to be higher mine, with intimate knowledge of air quality and other models.

18 | I suggest that Tables S-1, 3-3, and 3-4 refer to the sources in other parts of the EIS.

COMMENTS ON THE DRAFT DAHRT EIS, June 6, 1995
By M. G. Lockhart, 91 Mimbres Drive, Los Alamos, NM 87544

19 | I suggest that someone not involved with preparation of the document needs to cross check text and tables against each other and do a hoho test on data. Any data, assumptions, or descriptions which are not intuitively obvious needs to be justified.

<u>Socioeconomics</u>:

20 | No data are shown for the No Action Alternative. Since the other alternatives are stated in terms of incremental dollars and FTEs in relation to the No Action Alternative, the writers must have these data. They should be incorporated.

21 | The EIS does not state the socioeconomic impacts on other parts of the weapons complex for the different alternatives.

22 | I suggest adding a Total column in Tables in Chapter 5 and Appendix G. These costs appear to conflict with the cost presented in Tables S-1 and 3-4.

<u>Plutonium</u>:

23 | The unclassified summary from the classified portion of the DAHRT EIS should be incorporated in the unclassified EIS.

Comment 32, page 2

1 DARHT is without question a vital tool for maintaining confidence in an enduring stockpile and therefore key to the Nation's nuclear deterrence policy. For this reason, the Democratic Party of
2 of Los Alamos County endorses the Department of Energy's preferred alternative which is to complete and operate the Dual Axis Radiographic Test Facility.

Sincerely,

Marion M. Morgan

Marion M. Morgan
Chairperson
Democratic Party of Los Alamos County

Comment 33, page 1

320 Valle del Sol Drive
Los Alamos, NM 87544
June 26, 1995

Ms. M. Diann Webb
Los Alamos Area Office
U. S. Department of Energy
528 35th Street
Los Alamos, NM 87544

Dear Ms. Webb:

Re: Draft EIS for DARHT

Enclosed are some comments on the draft Environmental Impact Statement for DARHT that I request be taken into consideration when the document is revised.

Sincerely,

Ann Pendergrass

Ann Pendergrass

Enclosure: a/s

30004693
US DOE/LAAO - IN

Comment 33, page 2

COMMENTS ON DRAFT EIS FOR DARHT

Ann Pendergrass
320 Valle del Sol Drive
Los Alamos, NM 87544

1.0 Noise

1.1 Limited data

1 Only one noise test is reported and no data from Los Alamos townsite are presented although the prevailing day time winds from TA-15 are in that direction rather than toward White Rock. White Rock data are extremely incomplete. Table C2-4 contains typographic errors.
More noise tests should be performed under different meteorological conditions and data should be recorded at the nearest townsite dwellings as well as Bandelier and White Rock.

1.2 Lack of comparison

Results are reported (Table C 2-4) in hertz and dBA. Some sort of equivalent in loudness understandable to the general public needs to be presented for comparative purposes.

2.0 Air Quality

2.1 Criteria pollutants

2 Annual emissions of criteria pollutants are presented in Section 4.2.4 and Table 4.1. However, cumulative impacts (Section 5.9) does not roll up the annual increases in criteria pollutants by alternative. As there are differences by alternative in heating and other attributes, this information should be presented.

2.2 Uranium Emissions

3 Section 4.2.5 and Table 4.4 present uranium emissions from LANL without dynamic testing addition included. Some table should present all uranium emissions, dU as well as other forms.

2.3 Summary of potential air quality impacts

4 Section 3.11 and Table 3.3 show for enhanced containment alternative greater emission of Be, heavy metal, and Pb. This doesn't make sense and needs to be reevaluated.

2.4 Release models

5 Releases for all alternatives except enhanced containment are modeled at 325 ft elevation whereas the enhanced containment is modeled at ground level. Strong justification needs to be provided or, preferably, model all as ground-level releases using a puff model.

Comment 34, page 1

Dual Axis Radiographic Hydrodynamic Test Facility
Draft Environmental Impact Statement
U. S. Department of Energy

Written Public Comment Form

Donivan [ ] Porterfield
First Name MI Last Name

Representing? Telephone

PO Box 1417
Street Address

Los Alamos NM 87544
City State Zip Code

Meeting Location [x] Los Alamos, NM [ ] Santa Fe, NM
Meeting Date [x] May 31, 1995 [ ] June 1, 1995
Session [ ] Afternoon [x] Evening

COMMENT(S) (If possible, please identify the specific section/page(s) of the DEIS that your comment addresses.)

1 - Indicate if Phermex upgrade would/wouldn't require EIS

2 - Indicate whether enhanced containment or plutonium exclusion could be implemented post operation of DARHT.

3 - Address current NPT/CTBT impact on hydrotesting, ie. do these forbidd hydrotesting?

4 - Address impact on PHERMEX use if PHERMEX upgrade choice is made.

5 - would a forest fire impact contaminant migration model?

6 - would Enhanced Containment negatively impact ability to do optical interferometry, ie. would containment walls interfere with optical path?

Please submit to the registration desk at the public meeting.

Comment 35, page 1

Dual Axis Radiographic Hydrodynamic Test Facility
Draft Environmental Impact Statement
U. S. Department of Energy

Written Public Comment Form

First Name: | MI: | Last Name: Risley

Representing? | Telephone

Street Address

City | State | Zip Code

Meeting Location: ☐ Los Alamos, NM ☑ Santa Fe, NM

Meeting Date: ☐ May 31, 1995 ☐ June 1, 1995

Session: ☐ Afternoon ☐ Evening

COMMENT(S) (If possible, please identify the specific section/page(s) of the DEIS that your comment addresses.)

excellent that so many LANL employees came in metaphorical "civilian clothes" but perhaps there could be some reminder that the purpose of the hearing is for DOE to hear from the public (including
1 LANL employees) on the DARHT EIS, rather than to provide a forum from for debate among members of the public — a vector of from public to DOE is appropriate, but prepared attacks on the testimony and motivations of other members of the public & arguments among the LANL folks over detail
Defending the need for DARHT in detail is not appropriate as all will be noted is a simple yes/no for the preferred
2 alternative

Comment 36, page 1

Robert Sander
1442 47 st.
Los Alamos, NM. 87544
June 21, 1995

Diana Webb
DARHT EIS project manager
Dept of Energy Area Office
528 35 st.
Los Alamos, NM 87544

30004667
US DOE/LAAO - IN

Dear Ms. Webb:

I have a few comments on the draft EIS for the DARHT project which I hope can be addressed in the final draft. I believe consideration of these comments will make a technically stronger and more defensible final document.

1 1. In the EIS there is no comparison of the costs of decommisioning and cleanup for the various alternatives. Without including the cost of cleanup the enhanced containment alternatives appear to be far more expensive than the preferred alternative. This is due to the higher initial construction costs. Because eventual decommisioning and decontamination is a certainty for all these options, and with the preferred alternative decommisioning of the PHERMEX site will begin only four years after completion of the new DARHT facility, it should be possible to estimate the
1 relative costs of cleanup. Major decisions such as DARHT construction should be based on complete lifecycle costs rather than on arbitrary cutoffs of essential parts of the lifecycle. The cost of cleanup of the DARHT site can be expected to be substantial. In appendix D it is stated that for PHERMEX the contaminated area is 630,000 square feet; the cost of cleanup of an uncontained DARHT site should be estimated and compared with the cost of a contained option. There is no reason to assume that DARHT will not eventually reach a facility lifetime and require decommisioning.

2 2. There is an increased estimated cost of operating the enhanced containment alternative due to the fact that the radioactive wastes are RCRA (Resource Conservation and Recovery Act) wastes. Apparently the EIS assumes that the same material when blown into the atmosphere as aerosols is not a RCRA regulated waste. This inconsistency in treatment apparently drives up the cost of the enhanced containment alternative. This must be inconsistent with the intent of the RCRA law. In fact RCRA regulates liquid wastes, so it does apply to the uranium and other materials which are used in hydrodynamic experiments, because these experiments create materials in a state which is fluid, or acts like a fluid or liquid (hence the name hydrodynamic). While one can argue that the material state produced in hydrodynamic tests was not envisioned by the RCRA authors, the fact that fluids create wastes which can readily disperse into the environment is still a

Comment 36, page 2

tests. The DARHT tests are for the purpose of measuring x-ray images, so the wastes are created after the x-ray pulse while the materials are in this fluidlike state. With a consistent treatment
2 of wastes as RCRA regulated materials a consistent comparison of construction alternatives can be made. The current assumption that the hydrodynamic tests of materials do not produce those materials in a state which is a RCRA waste is probably not tenable.

3 3. The EIS should be more quantitative in the discussion of safety levels and reliability, otherwise it is just a collection of unsubstantiated opinions. It should state what level of safety is desired in quantitative and probabilistic terms, and what levels of reliability are desired. It should state how those levels where derived and the rationale for those particular levels. In 3.10.7 of the draft EIS an attempt is made at discussing alternatives, but this is really an unrealistic strawman of relinquishing reliability. It should examine the need for various levels of reliability such as 99%, 95%, 90%, and 50% in terms of their effectiveness in missions and as nuclear deterrence, and in terms of the capabilities of the various options to meet these levels.
4 Clearly, it is unrealistic to state that the only alternative to DARHT is an unreliable stockpile.

Similarly, the level of safety can be defined in terms of a probability of a given unwanted explosive yield for various accident scenarios. The effects of the various alternatives on the ability to determine these yields should be given in a quantitative discussion, rather than the current drafts circumspect and qualitative discussion.

5 4. In section 4.8.1.1 the draft EIS states that no significant differences in the level of radiation had been found in elk found in Los Alamos county compared to offsite locations. The reference (Fresquez 1994) is being misread in this case. Actually the levels of uranium found on the elk hair are quite significant. The average values are high in the L.A. sample but the standard deviations
5 given are also larger than the other samples. These sample standard deviations are not counting errors, but I believe, are due to at least one of the elk samples having very high levels of uranium contamination. If one asks the limits set by the sample standard deviation on the other samples from the total elk population the possible degree of contamination is quite significant. I don't know of federal standards for elk hair contamination, but the amounts, if inhaled during dressing the
5 carcass, would exceed the federal limits. The EIS should correctly read the reference, and should note the true hazard of transport of uranium through this mechanism.

Yours Truly

Robert Sander

Robert Sander

Comment 37, page 1

Dual Axis Radiographic Hydrodynamic Test Facility
Draft Environmental Impact Statement
U. S. Department of Energy

Written Public Comment Form

Clement (First Name) | T. (MI) | SWITLIK (Last Name)

Consulting Engineer (Representing?) | Telephone

816 Calle Chamisal #226 (Street Address)

Española (City) | NM (State) | 87532 (Zip Code)

Meeting Location: ☒ Los Alamos, NM ☐ Santa Fe, NM

Meeting Date: ☒ May 31, 1995 ☐ June 1, 1995

Session: ☒ Afternoon ☐ Evening

COMMENT(S) (If possible, please identify the specific section/page(s) of the DEIS that your comment addresses.)

1 1. Would all experiments be contained in the enhanced containment option?

2 2. Can all experiments desired be run in the enhanced cont. opt.? (ie size + configuration of device)

3 3. Why is air quality poorer under contained option? (Possible typo?)

4 Overall, the DEIS process is excellent. This one is "Wonderful" considering the shortened time to do it.

Please submit to the registration desk at the public meeting.

Comment 38, page 1

Bernie Weinstein, 2:03 PM 5/23/9...,DAHRT 1

X-UIDL: 801324931.015
Date: Tue, 23 May 1995 14:03:30 -0600
X-Sender: weinstein@esa.lanl.gov
Mime-Version: 1.0
To: pto@Lanl.GOV
From: weinstein@esa.Lanl.GOV (Bernie Weinstein)
Subject: DAHRT
X-Mailer: <PC Eudora Version 2.0.1>

I believe the Santa Fe contingents will raise any legal barrier they can in order to prevent the Lab from doing any weapons work. I suspect they would favor unilateral disarmament.

1 I'm an avid reader of current events and have never seen any reliable evidence of environmental damage caused by 3 decades of work with PHERMEX. I believe that DAHRT will also be benign.

2 I hope that our government will show some courage and ignore the ravings of special interest groups. DOE should do what's right for the country as a whole. It saddens me that the last sentence needed to be written.

Comment 39, page 1

June 17, 1995

Ms. Diana Webb / DOE/LAAO,

1 Just for the record, I am angry that LANL was able to begin construction of DAHRT before providing a SWEIS. I am appalled that our government condones construction
2 of such a facility while we expect every other country to halt and dismantle nuclear testing & production.
3 And, I am disgusted that $124 million dollars will be spent in such a frivolous way while school lunch programs are being de-funded.

Please stop the insanity.

Sincerely,
Chrysa G. Wikstrom
Chrysa G Wikstrom
1830 Kiva Rd.
Santa Fe, NM 87505

Comment 55, page 1

4404 Kennett Pike
Greenville DE 19807
July 31, 1995

Dept of Energy
528 35th St.
Los Alamos NM 87544

ATTN: Ms Diana Webb

1 I write in reference to plans by Los Alamos National Laboratory to spend up to $3.5 billion for nuclear weapons programs to be built by the year 2007. The entire list should be carefully scrutinized to eliminate new or continuing projects in support of new weapons systems or improvements in old ones. Those funds are desperately needed elsewhere for maintenance of more critical social programs, efforts to economize in government, or deficit reduction.

Please count this as a vote for prudence in the face of pressure for continuing largesse to the nuclear industry.

Sincerely
John R Davis

Transcript 1: Comment Code 40
Los Alamos Public Hearing – Afternoon Session

Comment 38, page 1

Multi-Page™

LOS ALAMOS PUBLIC HEARING
for the
DRAFT ENVIRONMENTAL IMPACT STATEMENT
DUAL AXIS RADIOGRAPHIC HYDRODYNAMIC TEST FACILITY

WEDNESDAY, MAY 31, 1995
2:10 P.M.
LOS ALAMOS INN
2201 Trinity Drive
Los Alamos, New Mexico

REPORTED BY: Irene Delgado, NM CCR 253
Joe Jameson Court Reporters
Suite 800, 320 Gold, S.W.
Albuquerque, New Mexico 87102

1
2 ROUND-TABLE APPEARANCES
3
4 M. DIANA WEBB
DOE/LAAO
5 528 35th Street
Los Alamos, New Mexico 87544
6
7 BARBARA A. STINE
LANL
8 P. O. Box 1663
Los Alamos, New Mexico 87545
9
10 JAMES MERCER-SMITH
LANL
11 P. O. Box 1663 MS A105
Los Alamos, New Mexico 87545
12
13
14
15
16
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20
21
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25

1 MS. WEBB: Good afternoon. I'm Diana
2 Webb. I am with the Department of Energy, the Los Alamos
3 Area Office. This is the Los Alamos afternoon session of
4 the public hearing on the DARHT draft EIS. With me today
5 at the round table is Barb Stine. Barb is the deputy
6 division director for the Dynamic Experimentation
7 Division at Los Alamos National Laboratory, and Jas
8 Mercer-Smith. Jas is the deputy program director for the
9 Nuclear Weapons Technology at Los Alamos National
10 Laboratory.
11 This is a round-table session. Any of you
12 are welcome to sit with us at the table. It's not
13 reserved for me, Barb, Jas and Jerry. So please, feel
14 free to come forward to sit at the table with us and join
15 us in our conversation here.
16 We are here today to listen to your
17 comments on the draft DARHT EIS. DARHT stands for dual
18 axis radiographic hydrodynamic test facility, the DARHT
19 facility. The Environmental Impact Statement is a
20 comparative analysis that has been prepared by the
21 Department of Energy with assistance from the contractors
22 to provide a look at the potential environmental impacts
23 that could occur if the DARHT facility were to be
24 completed and operated, or if one of the other
25 alternatives examined in the document were pursued

1 instead.
2 Our format for today is, we have three
3 areas. This is, as I said, the round-table room. This
4 is a place where you can present formal comments for the
5 record. Irene Delgado is our court reporter. She will
6 be taking a verbatim transcript of the session this
7 afternoon. That will serve as the formal record of these
8 proceedings.
9 We will also have a scribe. Tom Alexander
10 will be the scribe. As we go through the comments, he
11 will be taking down, encapsulating, the statements,
12 comments, questions that you ask, and we will be hanging
13 those sheets around the room, also.
14 We are particularly asking today for your
15 comments on the adequacy and the accuracy of the draft
16 DARHT EIS. The draft DARHT EIS looks like this. It's
17 this big book that we have here, and there's copies of it
18 around. If you would like a copy, please see the
19 attendant at the front desk; give her your name and
20 address, and she'll make sure that you get a copy.
21 The back of this room is our information
22 area. We have a lot of information displayed on this
23 project, on radiography, on different aspects regarding
24 the environmental program at the laboratory, and I think
25 that you will find that very interesting. Please feel

1 free to look at that. You can wander back there at any
2 time. As you can see, it's just an open area. We will
3 also have breaks from time to time when you can feel free
4 to go back there, ask questions of the people who are
5 standing there. We have representatives of the Los
6 Alamos area office, of the Department of Energy, the
7 Albuquerque area office of the Department of Energy, and
8 various specialists from Los Alamos National Laboratory,
9 and from Battelle Pacific Northwest Laboratory, who is
10 the contractor who prepared this document for us.
11 In the transportable, slightly down,
12 outside, a little bit behind this building, is a room
13 where, for want of a better term, I will call it the
14 quiet room. We have some people in there. Feel free to
15 go in there, sit down. If you would like to record a
16 statement for the record, we have a tape recorder in
17 there.
18 If you would like to provide written
19 comments, we have some comment forms in there. Or if
20 just want to have a lengthy conversation with someone
21 that you want to sit down and do it where there aren't
22 many people around, please feel free to use that room.
23 The format today is somewhat interactiv
24 We are here to listen. We are also here to answer
25 questions that you might have, engage in dialogue wit

you, if that is what you would like to do, and do whatever we can to facilitate the public participation with this draft EIS.

I'm going to tell you a little bit about what the EIS is. I'm not going to take a lot of time. I do not have overhead projection slides. I do have a few things up on the wall. The Department of Energy has proposed to provide an enhanced high resolution radiographic capability to perform hydrodynamic tests and dynamic experiments in support of the department's historical mission and the near-term stewardship of the nuclear weapon stockpile.

That is the proposal that is analyzed in the DARHT draft EIS. The department's preferred approach would be to complete and operate the DARHT facility. The department has looked at six alternatives in total in the Draft EIS.

The first is what we call the no action alternative. That would be to maintain the status quo, in other words, continue to provide radiographic capability as we do now with the PHERMEX facility here at Los Alamos and the flash X-ray facility at our sister laboratory, Lawrence Livermore in California. The preferred alternative I just mentioned would be to complete the DARHT construction, phase out PHERMEX, and

operate the DARHT facility. DOE may delay operation of the second axis of DARHT pending evaluation of the success of the first axis under this alternative.

We've also looked at four other alternative ways to accommodate the proposed action. The first would be to upgrade PHERMEX, the existing facility. Under this alternative, we would not complete the construction of the DARHT facility for radiographic hydrodynamic test facility. We would complete it for some other use. We would construct major upgrades at the single axis PHERMEX facility to make it have the dual axis high resolution enhanced capability that we have proposed for DARHT.

We have looked at an alternative where we would provide additional containment over what we do now. At this time, we do perform some experiments on containment vessels. Under the enhanced containment alternative, we would conduct the same operations at DARHT as would be taking place under the preferred alternative, but tests would be contained either by use of a containment building or by use of -- greater use of portable steel vessels that is now the case.

In the information room on the other side of this portable wall, we do have a model of the DARHT facility as it is proposed. It has a nice little

lift-off containment building. You will see what the containment building would look like. And it also has a scale model of the type of containment -- modular containment vessel that is discussed in EIS under that particular enhanced alternative.

Under the plutonium exclusion alternative, we would continue to construct DARHT. We would phase out PHERMEX as very similar to what is -- I'm sorry, I'm saying this wrong. We would complete DARHT as we would under the Preferred Alternative. However, the department would conduct dynamic experiments involving plutonium either at PHERMEX or some other facility.

The last alternative is the "Single Axis Alternative." Under this alternative, the DARHT facility would have one axis completed for enhanced radiographic capability. The other axis would not be completed for that type of use, but would be completed for some other use.

There are several things that the EIS discusses that are common to all of the alternatives. Under all alternatives, the department plans to continue to use the flash X-ray facility at Lawrence Livermore. Under all alternatives, the dynamic experiments involving plutonium would take place in the future. Under all alternatives, the infrastructure involving research,

waste management, security, maintenance, environmental monitoring and other types of support services would continue to take place. And under all alternatives, eventually, at some point in the future, all of these facilities would be eventually decontaminated, decommissioned and demolished.

In addition to the analysis that is contained in this unclassified document, the Department of Energy did prepare a classified supplement to this EIS that contains additional information and analysis. While that particular document is not available to the general public, we have prepared a summary, an unclassified summary of the environmental impacts that are identified and discussed in that classified document. This summary has been made available and has been placed in the Los Alamos Community Public Reading Room, and there are copies of this for your information out on the information table that we have in the hall.

The department has also put a lot of other information in the Los Alamos Community Reading Room. In addition to the some 200 -- 250 documents that are referenced in here, there are some 60 to 70 additional documents that are available that may shed additional information regarding this project and regarding this analysis, and we will continue to put that type of

1 information in the public reading room as we go through
2 this review process.
3 This chart here shows a summary of the
4 potential environmental impacts of the different
5 alternatives. This is very hard to read from a
6 distance. There is a similar chart back in the
7 information room, but again, I invite you to come up
8 here, look at this information when we have breaks or
9 whenever it's convenient for you to do so.
10 On this chart, you can see that the other
11 five alternatives are compared to the status quo, to the
12 no action alternative. That would be what would happen
13 if we continued doing what we do now indefinitely over
14 the period of time that this analysis is examined.
15 For many of the environmental aspects that
16 were analyzed, the environmental impacts do not change
17 across the alternatives. On this chart, things that are
18 in black type remain the same for all alternatives.
19 Things that show up in red type indicate where there
20 would be a greater adverse impact than is the case under
21 the no action alternative. Things that show up in green
22 type indicate a greater beneficial impact than is the
23 case under the no action alternative.
24 This picture here shows what the DARHT
25 site looks like today -- well, it looks like that today.

1 This photograph was taken very recently, on May 19. It
2 is an aerial photograph. It shows the two accelerator
3 halls of the DARHT facility, and it shows how the site is
4 in a stand-down condition. Construction activities have
5 stopped pending resolution of this EIS process.
6 The chart back here on the wall shows the
7 steps in the DOE EIS process. We issued a Notice of
8 Intent for this Environmental Impact Statement in
9 November. We had a public scoping period in December and
10 in January. Many of you came to talk to us during the
11 public scoping meeting we had at that time. We issued an
12 implementation plan for this EIS process in January. We
13 have, in May, issued the draft EIS that is the subject of
14 these particular meetings.
15 After we consider your comments -- and the
16 comment period, incidentally is open until June 26 of
17 this summer -- we will then make changes, revise the
18 text, do what we need to do to take your comments into
19 account. We plan to issue the final Environmental Impact
20 Statement in August of this year.
21 No sooner than 30 days, by regulation, the
22 department will reach a final decision on whether or not
23 to proceed with the DARHT project as proposed or whether
24 or not to take some other course of action that has been
25 analyzed in this Environmental Impact Statement.

1 The Record of Decision now can be issued
2 no sooner than mid September. The Record of Decision
3 will include with it what we call a mitigation action
4 plan. Those are ways that we come up that are part of
5 the decision that would be used to mitigate or lessen the
6 adverse environmental impacts that are identified in this
7 Environmental Impact Statement.
8 This meeting is your meeting. We are
9 prepared to be quite flexible regarding the format here
10 today. If you would like, Barb can give a five-minute
11 overview of the programmatic aspects of the DARHT project
12 and of the hydrodynamic testing program in general. If
13 you would prefer not to take that time in that way, then
14 we can move on directly into taking comments.
15 Also, if there is anyone here who is an
16 elected official or tribal official, who is speaking for
17 the state, the tribes, or one of the local governments,
18 would like to give them first chance to talk. Otherwise
19 we do not have a sign-up sheet; it's sort of your
20 meeting, your format, your forum. Feel free to come up
21 and sit with us at the table and give your comments to
22 and Irene will take them down.
23 When you do give comments to us, I would
24 appreciate it very much if you would tell Irene your
25 name. One of the reasons we like people to come up a

1 little closer is so we can hear a little better. Tell
2 Irene your name and, if necessary, spell it for her so
3 can have names of the people who spoke to provide a
4 formal record of this meeting.
5 Okay. Would people like to hear a five
6 minute talk from Barb on programmatic aspects of the
7 DARHT project, what the program is all about? Okay,
8 see some nods, "Yes, we would," so, Barb, the floor
9 yours.
10 MS. STINE: I will stay seated, if you
11 will permit me to. I broke my toe over the weekend
12 I'm not all that stable standing up and walking around
13 So what I will try to do is speak loudly and move
14 around so that you will all know that I'm speaking
15 of you, but I will stay seated unless someone really
16 unable to hear me or needs to have me standing for
17 other reason.
18 I would like to spend just a couple
19 minutes talking about dynamic tests, hydrodynamic
20 and DARHT as part of the programmatic areas of the
21 laboratory and our weapons program.
22 We have done, historically, a great
23 of dynamic tests; that is, experiments on a broad
24 of materials that we look at to determine their
25 properties and their behaviors at high pressures

motion, and under shock conditions, that are all generally driven by high explosives. These are high-explosive materials involving high explosives moving other things.

One of the materials that's been of interest, historically, has been plutonium, and we have gathered a fair amount of information by dynamic experiments on plutonium always contained in double-walled, steel vessels. Because of the specific and inherent characteristics of the plutonium, we have taken cautions beyond those that we take normally for high-explosive experiments and done these experiments in double-walled, steel vessels.

Hydrodynamic tests, as opposed to dynamic tests, tend to be full up systems kinds of tests. We are looking at primary components for weapons systems. We do hydrodynamic tests in addition to dynamic testing and a large variety of other smaller high explosive driven experiments, and we look here at the full geometry interactions, shape interactions and the various materials involved in weapons systems.

We use, for these hydrodynamic experiments, surrogate materials for the fissionable materials. Some of the materials that we use typically are depleted uranium and tantalum and lead. Choice of

these materials is a function of what kind of information we're trying to get out of a specific hydrodynamic test, but each of these materials has behavior and characteristics significantly different from those of plutonium.

There are several kinds of hydrodynamic experiments that we do on a somewhat routine basis. One of those kinds is called pin shot, and there we use electrical sensors inside a mock device that is made with a surrogate material for plutonium. These pins, electrical sensors called pins, record the movement of the implosion. They look at how the pit surface moves as it approaches critical time. We do extrapolations based on these measurements to estimate what actually is happening at critical time from these experiments, but the blast pipe, that is, the piece that holds the pins and the pins themselves affect the behavior and geometry and the implosion and they skew the shapes.

There are also certain sets of critical information that we are unable to obtain from these experiments. Another set of experiments that we do routinely that we call hydrodynamic experiments are radiographic shots where we use, again, the full shapes, the full system shapes, without a blast pipe or pins. We again have surrogate material for the fissionable

material in a mock device driven with high explosives. We detonate the HE and take very high-speed X-ray pictures of the implosion to get information on things like density and shapes during the implosion of the pit.

We add this information to very small-scale experiments, to dynamic experiments, to pin shots, and use the information to refine our calculational models to allow us to predict material and component behaviors in a more reasonable fashion.

Right now we have PHERMEX, which is a machine that was brought on-line in about 1963, and FXR at Livermore brought on-line in about 1983, as our principal diagnostic tools for these experiments. These machines provide the X-rays that allow us to take the pictures. When these present diagnostic machines were brought on-line, were designed and brought on-line, they were viewed as assisting technologies for the final proof tests for systems that occurred at the Nevada test site.

We are now in a time of a moratorium on underground testing. Even before we moved into the underground testing moratorium, the weapons complex, the technical people charged with getting information from these shots and others, determined that there was a need to improve the diagnostic capabilities available in the present machines, and so the design and concepts for

DARHT were begun.

These two tools have been important throughout the recent history of weapons, diagnosis, surveillance, and development when the complex was still designing and developing new weapons. We are not involved in those activities anymore, and we are using these tools now and proposing to use DARHT to allow us to have an increased, enhanced surveillance program to determine the reliability, the safety, and the performance of our stockpile to allow the American public, the United States Government, the Department of Energy, to have confidence in the nuclear deterrence that our stockpile provides.

DARHT, as proposed, increases the information obtainable by these tests by approximately tenfold, especially in its dual-axis mode. Both of the present diagnostics are single-view tools. We get one view. To provide you with a better feel for it, the difference between the single view and dual view, I would suggest that, if you have the opportunity, to go around the boards here to the information area, and there is an illustrative set of calculated X-ray pictures that show the difference between a single view and a dual view and the kind of additional information one can obtain.

Right now DARHT gives us more dose and

more resolution, allows us to see more deeply into systems and devices than we can, and as we continue in the time of moratorium, where we have no final proof test, the information that DARHT allows us to provide to the modelers, to the calculational people, becomes ever more important.

The weapons that are stockpiled are approaching their original design lifetime. We don't have much experience with weapons older than their design lifetime because in the past, new designs were coming in as old designs were coming out. The information that DARHT provides is critical to our enhanced surveillance program and to allow us to retain confidence in our nuclear deterrence.

I would suggest that if you have questions of a specific technical nature on DARHT, on radiography, on any of the impact analyses, that you take an opportunity to go and look at the information area and talk to the people there. There are experts in all of these areas there who are more than willing to answer your questions or engage in discussion with you. Thank you.

MS. WEBB: Thank you, Barb. All right. Is there anyone here that is representing the state or tribal government or a local government? And if not,

then I will open this up to whoever would like to speak first.

We have two folks here at the table with us. Would you guys like to go first? Jerry, do you want to break the ice?

MR. BEERY: You want me to break the ice? Sure, I will break the ice. As you pointed out the alternatives, vary -- or have very little variance in terms of their environmental impact. And now I'm, of course, giving you my own opinion, not as representative of the lab. The only issue, as far as I am concerned, is the plutonium. I'm not the least bit concerned about the other things in your table which might be released, like depleted uranium; there's probably some beryllium, and even the lithium hydride, but I'm coming back to that later.

So to me, the only issue of the environmental impact is plutonium, and I was very glad that they extracted some of the classified -- there is some information there. But what's not in there at all is the source term for per shot. Some people think it's classified, but the unclassified world knows it's a few kilograms, so one can calculate the dose.

For example, in the unclassified one it says, "Should you have a breach," and in here, the

"What-if accident is the inner -- inner container is breached totally and a one-inch hole appears in the outer container?" And then that leads to, according to this, a 14 REM dose, too close to the LANL boundary, to PHERMEX and DARHT. Of course there's no probability given of that accident, and I think I know why. I don't believe there's been a careful enough study of the containment vessels to be able to calculate a reasonable probability of that exposure --

But what's totally missing in here, then, is the consequent soil and surface contamination from such a breach. Now, I scale from some other things I have done, and if you do that and assume, you know, 312 curies or so released, you will get within or up to 10 kilometers away, so along way you will get numbers of 100 microcuries per meter square, which is 500 times the EPA threshold cleanup. So in terms of environmental impact, it would seem to me that one needs to include the potential of the surface contamination and that I don't find anywhere in the unclassified part here.

The other issue has to do with the fact that no matter what alternative is chosen -- well, I shouldn't say that -- for most of the alternatives chosen, there will still be plutonium experiments, no matter what.

For example, if one took the no action alternative, plutonium experiments would be continued at PHERMEX, as I understand it. I mean, that's what it says up there. And I realize, it cannot properly fit into your DARHT EIS; I understand that, but now I'm speaking in terms of personal things. I would like to see the public be able to give input on whether or not they think we should be doing plutonium experiments at all.

Now, I know all the arguments. You have to do plutonium because plutonium bombs all have plutonium and so forth, but I would claim we have enough history on it that we can use surrogates other than plutonium isotopes for the plutonium experiments and probably get most of the information we need.

So in a nutshell, I don't want to see any plutonium experiments at all. I don't think the alternatives were designed to fit that issue very well, the issue of whether or not we should use plutonium, particularly when the no action alternative still allows plutonium.

And now to just summarize on the plutonium, if you should get a breach with a plutonium experiment of a few kilograms of plutonium, probably the major impact would not be the doses, even though they would be fairly large, but the major impact would be the

1 potential of actually rendering unusable a fairly large
2 area, depending on which way the wind was blowing that
3 day, and that concerns me. I work in White Rock; I don't
4 want the wind blowing towards White Rock. I live in Los
5 Alamos; I don't want the wind blowing that way.
6 So I think the potential economic impact could be
7 tremendous if the surface contamination happens to go out
8 over the heart of TA 55 or, you know, that mesa that has
9 a lot of things, or the heart of the town. So I think
10 there's not enough in there about plutonium, either the
11 source terms for the basic experiments or enough given
12 about what surface contamination would do, and that's all
13 I want to say about that.
14 As a footnote, I would like to say a word
15 about lithium hydride. Most of us from around here know
16 about the recent fire, and that seems to be not treated
17 in the Environmental Impact Statement, the possibility of
18 what actually happened, and that is, trash piled up,
19 lithium hydride from the shot landing on the trash, the
20 trash then burning. That is likely more of an
21 occupational hazard for people in that area than
22 environmental hazard to the public, I understand that,
23 but I don't see that treated as a potential problem.
24 I anticipate, knowing the way things work,
25 that we will no longer pile the trash nearby so it might

1 potentially catch on fire, so I suspect that issue is,
2 perhaps, now going to go away, but it is nowhere treated
3 in here as -- you understand what I'm saying? The
4 lithium hydride is only over in the explosion, but there
5 is no secondary thing treated here. What happens if the
6 lithium hydride goes on the trash which then burns on and
7 on and spreads things around.
8 MS. WEBB: Thank you, Jerry. Jerry, you
9 actually did not give your name for the record.
10 MR. BEERY: I'm sorry. Jerry Beery,
11 B-e-e-r-y. Before I leave, I meant to compliment you and
12 Randy, and I don't know who else worked on it. I don't
13 know, those of you who have been around for a long time
14 realize most of us thought it would be a totally
15 impossible task to put this thing together by May. So
16 here it is, May, and it's done. So you get a gold star
17 in heaven for putting this together so fast and getting
18 this done.
19 MS. WEBB: Thank you, Jerry. We always
20 like to hear about things like that. Just a couple of
21 remarks. You said that you did not see the probability
22 in the unclassified summary here. It is there. It does
23 reference the fact that related departmental studies
24 would indicate that this accident scenario that you
25 describe would have a probability of less than one in a

1 million of occurring.
2 MR. BEERY: I saw that, but at the same
3 time in the EIS, I saw the discussion of the single
4 vessels, and there they talk 5 to 10 percent. When you
5 multiply 5 to 10 percent by itself, you don't get less
6 than 10 to minus 6. So it doesn't sort of jive. You're
7 claiming that somehow the double wall, each wall of the
8 double wall somehow has a much lower probability of
9 breaching than a single wall by itself. So I realize it
10 says less than 10 to minus 6. I don't believe it.
11 MS. WEBB: I accept that, and I also want
12 to mention that there are significant differences in
13 designs, and I invite you to discuss with some of the
14 gentlemen from DX in the information room. Thank you
15 very much, Jerry. Ed, would you like to talk next?
16 MR. GROTHUS: Yes. I just had a couple of
17 technical questions. Do you only get one picture per
18 shot? Do you only get one radiograph per shot, or do you
19 get multiple pictures? Anybody in the room can answer.
20 MS. WEBB: I will let Barb answer that.
21 MS. STINE: From our current -- from
22 PHERMEX and FXR, we get one picture per shot.
23 MR. GROTHUS: One?
24 MS. STINE: Yes.
25 MR. GROTHUS: And each shot costs?

1 MS. STINE: Lots. A million -- about a
2 million dollars a shot.
3 MR. MERCER-SMITH: In addition to the
4 infrastructure costs.
5 MS. STINE: In addition to the infra-
6 structure costs.
7 MR. GROTHUS: How big are radiographs?
8 What size of film do you use to get that one picture?
9 MS. WEBB: Mike, can you help out?
10 MR. GROTHUS: Is this the size of film you
11 get, or is this an enlargement of the -- of the real
12 thing?
13 MS. WEBB: Is that the size of the film or
14 is that an enlargement?
15 MR. GROTHUS: Anybody in the room can
16 answer.
17 MR. WATSON: It's the smallest -- the
18 smallest film cassettes are 17 centimeters in diameter,
19 the largest ones are a meter wide.
20 MS. WEBB: Could you please identify
21 yourself?
22 MR. WATSON: Scott Watson.
23 MS. WEBB: Thank you, Scott.
24 MR. WATSON: The small film cassettes, the
25 small film they use are 17 centimeters in diameter and

the largest ones are a meter wide.

MS. WEBB: Ed, so we'll have an idea for the people that are reading the transcripts later, the films that you have just held up look to me to be 12 by 18, or on that order, inches. Okay, Ed, do you have anything else and would you like to identify yourself for the record?

MR. GROTHUS: No.

MR. BEERY: It's Ed Grothus. He forgot his name.

MR. GROTHUS: There's no way of doing dual -- dual axis at the present time? I have a couple of pictures here. It looks to me -- I'm no expert and I asked one of the experts and they denied even recognizing the damn stuff. And it looks like to me that these two were dual axis and I wondered if they were doing some kind -- if they have to do two million-dollar shots to get these things.

MS. WEBB: That is exactly right. That is exactly right. It's just like if you had a camera and you wanted to take two pictures of this glass of water here -- and I would turn it sideways except I would pour water all over myself -- that if you want to take it, first you have to take that picture, and then you have to set the wine glass down and you have to advance

your film and you have to take the glass again and turn it another way and then you have to take another picture.

MR. GROTHUS: I see.

MS. WEBB: So that's precisely what they have to do.

MR. GROTHUS: Thank you. I have no other questions.

MS. WEBB: Thank you. Don, did you want to clarify something?

MR. WOLKERSTORFER: I just want to clarify the cost. When we talk about a million dollars, that's for a large hydrotest.

MS. WEBB: Don, could you please identify yourself.

MR. WOLKERSTORFER: My name is Don Wolkerstorfer -- W-o-l-k-e-r-s-t-o-r-f-e-r. So a major hydrodynamic test might be $1 million, but we do many smaller ones; for instance, possibly the ones you showed, those are not a million dollars because we do maybe 40 or 50 here at PHERMEX. Each one of those is not $1 million, and I think that needs to be made clear. They may be 20-, $30,000. I think that's important to realize there is a difference in cost depending on the complex.

MS. WEBB: Thank you, Don.

MR. GROTHUS: If there's anybody in the room that would like to take a look at these and maybe tell me. I don't think anything about it, and I would hope that somebody in the room might be able to tell me what this is.

MS. WEBB: I'll bet that somebody in the room could help you look at those, and when we take a break again, I invite you to the information area and perhaps Don could discuss that with you.

MR. VENABLE: Excuse me, Ed. Tell the audience where you got them.

MR. GROTHUS: These came from the salvage yard, of course.

MR. BEERY: He bought them for less than $1 million a shot.

MS. WEBB: All right, Ed. Anything else?

MR. GROTHUS: No.

MS. WEBB: Would you like to have someone else come up to the table and join us. My goodness, you're a quiet group. Doug, how about you? I'm sorry, Ma'am. Please come up. Welcome. Glad to see you here today. And if you would be so kind as to provide your name for Irene, we would appreciate it.

MS. MORGAN: I'm Marion Morgan, chair of the democratic party of Los Alamos County. This spring

our central committee passed unanimously, as I recall, resolution supporting the completion of the dual axis radiographic hydrodynamic test facility and its operation. We believe that DARHT represents a vital means of ensuring that US nuclear weapons remain safe secure and reliable.

That's all of the statement that I ha now. I think that within a week or two, we will hav more detailed written statement to submit.

MS. WEBB: That would be fine, and yo either bring any comments that you have by the Depa of Energy office, or mail them to me. My mailing a is up there on the wall. I also have an internal laboratory mail stop number, which is Mail Stop A31 for those of you using laboratory mail.

MS. MORGAN: I came in late and did your name.

MS. WEBB: I'm Diana Webb. I'm the EIS project manager. I'm sorry, perhaps I should introduced myself again for those people that ca late.

MS. MORGAN: Thank you.

MS. WEBB: Thank you very much, M Who else would like to talk to us? Please come sir.

MR. LOCKHART: My name is Milton Lockhart -- M-i-l-t-o-n L-o-c-k-h-a-r-t -- and I would like to read two statements.

MS. WEBB: That would be fine.

MR. LOCKHART: One is from Sid Singer who sent the statement to me on electronic mail yesterday and asked me to read it today.

My name Sidney Singer and I request that the following summary comments be placed in the record of this meeting, a review of the draft DARHT EIS.

My comments reflect my personal opinions and I have been encouraged to present them here by REAL as part of their effort to provide alternative credible review sources to this process. I understand that this process is intended to develop and present for public review an assessment of the socioeconomic impact of the proposed DARHT project.

In my first reading of the draft, I concluded that, one, the basis for DARHT's role in the SS&M mission is not adequately developed. The statement of need on Page 2-4 deals with the need for this type of resource and does not explain the need for enhanced resources nor what they are or are expected to accomplish. The discussions of paragraphs 2.2 and 2.3 are superficial and do not define in sufficient detail

how DARHT would be used to support meaningfully the SS&M mission.

Two, in the absence of that background, it is impossible to evaluate properly the various alternatives. Such evaluations require knowledge of the consequences of the various alternatives on DARHT's mission, but that mission has not been stated in terms of performance criteria and desired outcomes so that meaningful comparisons of alternatives based on mission impact are not feasible.

Three, of considerable importance is an explanation presently absence in the Draft EIS of why the containment alternative is not the preferred one. The notion of releasing into the environment the indicated quantity of heavy metals when presumably a containment technique is feasible boggles the imagination.

Finally, I suggest that a comprehensive discussion of the socioeconomic impact of the no action alternative, which may be very great since it deals with the nation's security, is an important part of the EIS process. While the DOE may prefer to deal with this issue elsewhere, only from such a discussion can the true role of the DARHT be discerned, explained, justified.

This is from Sidney Singer -- S-i-d-n-e-y S-i-n-g-e-r.

MS. WEBB: Thank you very much. You can give that estimate to me.

MR. LOCKHART: This one is in my name, Milton Lockhart.

DARHT is the first in a progression of more advanced hydrotest facilities planned by DOE, will provide data for the design of later facilities and help identify unknown problems. The stockpile has never been allowed to become this old before. Delaying DARHT until problems are identified to be solved is akin to waiting until the flames are consuming your house before applying for fire insurance. Nuclear testing was an integral part of the program for 50 years and has been discontinued.

Having not foreseen the demise of nuclear testing, scientists do not have the data necessary to construct accurate computer models which DARHT and its successor can furnish. DARHT would study chemical explosives and any other part from disassembled weapons, which might be suitable for studying aging effects, but particularly primaries. Weapons primaries use chemical high explosives.

Page 29 of the JASON report states, quote, "The design community has properly judged that improved hydrotesting capabilities are important in the absence of underground tests. The ultimate goal would be a

tomographic movie of the late stages of the imploding pit," unquote.

DARHT's data can be used in the computer simulations to verify the results of computer simulations and to identify problems which are not readily detectable by inspection. Can these data be used to design new weapons? Of course; data are data. If the national policy changed tomorrow, these data could be used for designing new weapons. But more importantly, the data can be used in improving safety and reliability of nuclear weapons. This is also a design function, and the improved weapons could be considered a, quote, "new," unquote, weapon, but not under the president's definition.

DARHT is currently the most cost effective and prudent way to implement the nuclear policies of the United States. I suggest that the draft EIS be rewritten to specify what the mission is and to choose the containment option to protect the environment. Thank you.

MS. WEBB: Thank you very much, Milton. I appreciate that, and also thank Sid Singer for us.

MR. LOCKHART: Will do that.

MS. WEBB: All right. Who would like to speak next? Everyone is shy.

1 MR. SHANKLAND: I have a question. I'm
2 Steven Shankland from the Los Alamos Monitor. There are
3 these three terms you hear all the time; safety, security
4 and reliability. Which of these aspects of nuclear
5 weapons would be under investigation -- would be
6 researched at DARHT, all three or just reliability?
7 MS. WEBB: Security is not so much what is
8 looked at. When the term -- you hear the term that
9 nuclear weapons needs to remain safe, secure and
10 reliable, the security aspect is not particularly
11 extremely relevant to the types of tests and experiments
12 that would take place at DARHT. That's why the phrase
13 that's used in this EIS is "safety, performance and
14 reliability."
15 The purposes of the data that would be
16 obtained from these types of experiments and tests would
17 be used to judge the safety of nuclear weapons, the
18 performance measures, and the reliability of the weapons
19 over time. So there's been some confusion with that,
20 even amongst our own troops. We have had to re-edit a
21 lot of editing. Does that answer the question? Great.
22 Who else would like to speak?
23 MS. WEBB: Yes, sir. Please come
24 forward.
25 MR. ROSEN: May I?

1 MS. WEBB: Yes, you certainly may.
2 MR. ROSEN: My name is Louie Rosen, and I
3 must say, I agree completely with what Mr. Lockhart has
4 told you. And in addition, I talked to your group on
5 December 7 of last year and gave you a statement which
6 was probably much more than you wanted to hear and there
7 is nothing in that statement I would retract at this
8 point. I think you have done a great job with the EIS
9 that you've developed. I also agree with the notion that
10 containment ought to be seriously considered, especially
11 when hazardous materials are being used.
12 However, there's one reason for DARHT that I have not
13 heard here, and which I think may be as important as any
14 other reason that can be provided, and that reason is
15 that DARHT will permit maintaining the personal and
16 technological skills that we just have to have if we're
17 going to have science made stockpiles and storage.
18 There's no -- nothing -- nothing can replace those
19 skills, and the way to do it is to have on-site and
20 on-board here the people and the technologies that one
21 will need to address unexpected eventuality, and that is
22 what this is all about. DARHT is a microscope to get new
23 knowledge. It's not possible to say what that knowledge
24 is. It depends on what happens to your stockpile. We
25 don't know what's going to happen.

1 So let's not shortchange this particular
2 reason for DARHT. I personally think it may be as
3 important as any other.
4 MS. WEBB: Thank you, Louie. Yes, I
5 certainly do remember you at our meetings in December,
6 and if you would like, we can take the statement that you
7 gave us at the scoping meeting and re-enter that for the
8 record as a comment at this stage of the process. Would
9 you like for us to do that?
10 MR. ROSEN: I will be glad for you to do
11 that.
12 MS. WEBB: Okay, we will do that. You
13 don't have to resubmit it; we know where it is. Thank
14 you. All right, anyone else? Again, we have, early on
15 at the meeting today, we issued a special invitation for
16 anyone speaking on behalf of our local governments, if
17 they would like to speak.
18 MR. PONGRANTZ: Diane, has anyone else
19 from the county council shown up?
20 MS. WEBB: No one else from the county
21 council has shown up.
22 MS. STINE: Ginger is here.
23 MS. WEBB: I'm sorry, Ginger.
24 MS. WELCH: Just because I am a woman,
25 Diane. Just because --

1 MS. WEBB: I'm so sorry. I even said
2 hello to you when you came in. Ginger, I apologize
3 profusely.
4 MR. PONGRANTZ: So self-effacing.
5 MS. WELCH: Yes, I will let Morrie speak.
6 MS. WEBB: Thank you, Ginger.
7 MS. WELCH: I will yield.
8 MS. WEBB: Again, I apologize.
9 MS. WELCH: The county does have a
10 statement we will submit in writing.
11 MS. WEBB: I appreciate that, and also I
12 will be speaking to the county at the regularly
13 scheduled meeting next week.
14 MR. PONGRANTZ: Diane, I'm Morrie
15 Pongrantz, I won't be able to be there on Monday night;
16 I'll be in Omaha. And I had previously -- I don't
17 know -- last fall, sent a letter to Secretary O'Leary
18 endorsing the DARHT project. And then I participated in
19 the council as endorsement of that project before. I see
20 no reason to change my mind.
21 I guess what I would be interested in with
22 respect to the containment alternative is some sort of
23 total life cycle cost analysis. Is it -- is it cheaper
24 to not build a containment device and then clean it up,
25 or to build a containment device? And that's how I wo

make that decision.

MS. WEBB: We do have a little bit of cost comparison information at the end of Chapter 3 of this document. It is very summarized, however, so we'll take your comments for the record. If you again have questions regarding this when we take a break, please discuss them in detail with the gentlemen over there that will be standing next to the DARHT model.

Anyone else? My goodness, I hadn't intended to take a break this soon, but if none of you are going to be interested in speaking for the record, and Jerry wants to speak.

MR. BEERY: I waited until nobody said anything because I wanted to add on the item of containment, as you call it, if I might.

MS. WEBB: Surely.

MR. BEERY: Jerry Beery. There's a lot of unclassified reports out there on testing of the various containment vessels, and there's a series of reports with 12 pound HE shots, 40 pound HE shots. And I believe from those, since there seems to be a lot of interest among some of the commentors, at least, in considering containment, I wonder maybe if it doesn't make some sense to put some of the technical information, or at least a summary of it that's been found in those tests, so that

those of us who are in the public and not directly involved can better judge whether your probabilities for the breach of containment would be -- so my suggestion is, pull some of that unclassified information in, perhaps, for the containment. And I just reiterate, so you understand my -- I don't feel strongly that you need containment except for plutonium. There is a lot of feeling apparently that people would like to see containment of all the shots, but I don't feel that that's an environmental impact for the nonplutonium shots, to keep those in the open. Thank you.

MS. WEBB: Thank you, Jerry. Would anyone else like to speak to us here formally on the record at this time? Seeing no one stepping forward, then I suggest we take a break. It's five after 3:00, by my watch, to 3:30. Again, appreciate your coming, comments here are on the record, and please feel free to have informal conversation in the information room.

(Break taken at 3:05 p.m.)

MS. WEBB: It's 3:30. We said we would convene at 3:30. If there is anyone else that is a member of the general public that would like to give a statement for us at this time, we would be glad to have

you come forward and talk to us. And if not, do any of you -- do you want to say anything at this time?

THE AUDIENCE: (No response.)

MS. WEBB: Dan, do you want to say anything at this time? All right. Since it's 3:30, nobody else wants to talk to us at this moment, we will take another adjournment, and we will reconvene right at 4:00 and see if anybody wants to talk to us then, if they don't, then we will adjourn for the afternoon. Thank you.

(Break taken at 3:30 p.m.)

MS. WEBB: It is now 4:00. For the record, we are reconvening. Would anyone else like to speak to us at this time? And seeing no one, this meeting is adjourned until the evening session at 6:30 in this room. Oh, I am sorry --

MR. SWITLIK: I have something written, and I want to make a comment.

MS. WEBB: Of course. All right, for the record, Tom would like to say something to us.

MR. SWITLIK: My name is Tom Switlik, and I live in Espanola, and I have no connection with DOE, LANL and anyone else right now, but I have 24 years with

the government from California. And I just want to say that I like the EIS process, and I think that this one I read, because I got a copy of it, was a real good one because it was indepth, even though it was a short fuse that they had to try to get it done and stuff. And I would have to say that, being in the government, I was taught to try to do the assessment so we can say there is not a whole lot of impacts, so we don't have to go through the costly thing, but you can see, if you don't weigh the other public interest and that sort of thing, you end up having to do them beleagueredly and all that. So I just want to go on record saying that it's a good job and I hope that everything turns out for DOE.

MS. WEBB: Thank you very much. We always like it when people tell us we did a good job. Okay. Is there anyone else who would like to say anything at this time?

THE AUDIENCE: (No response.)

MS. WEBB: I'm hearing no one, seeing no one coming forward. I will say, then, that this session is adjourned. We will reconvene in this room tonight at 6:30. Thank you very much for coming.

(Hearing adjourned at 4:01 p.m.)

1

2 STATE OF NEW MEXICO)
) ss
3 COUNTY OF BERNALILLO)

4

5 I, IRENE DELGADO, New Mexico CCR 253, DO HEREBY
6 CERTIFY that I did report in stenographic shorthand the
7 foregoing proceeding as set forth herein; that the
8 foregoing pages are a true and correct transcript of my
9 stenographic notes and were reduced to typewritten
10 transcript through Computer-Aided Transcription.
11 I FURTHER CERTIFY that I am neither employed by
12 nor related to any of the parties or attorneys in this
13 case, and that I have no interest in the final
14 disposition of this case in any court; that on the date I
15 reported these proceedings, I was a New Mexico Certified
16 Court Reporter.

17

18

19

20

21 _____
IRENE DELGADO, NM CCR 253
22 Notary Public Expires: 5-1-96

23

24

25

Transcript Attachments
Comment Codes 41, 42, and 43

FROM: INTERNET:ssinger@roadrunner.com,
INTERNET:ssinger@roadrunner.com
TO: Milton G. Lockhart, 75244,432
DATE: 5/30/95 1:20 PM

Re: Re:EIS Meeting

Sender: ssinger@roadrunner.com
Received: from beep.roadrunner.com by dub-img-4.compuserve.com
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[198.59.109.130]) by beep.roadrunner.com (8.6.5/8.6.5) with SMTP id MAA18783
for <75244.432@compuserve.com>; Tue, 30 May 1995 12:59:55 GMT
Date: Tue, 30 May 1995 12:59:55 GMT
Message-Id: <199505301259.MAA18783@beep.roadrunner.com>
X-Sender: ssinger@roadrunner.com (Unverified)
X-Mailer: Windows Eudora Version 1.4.3
Mime-Version: 1.0
Content-Type: text/plain; charset="us-ascii"
To: "Milton G. Lockhart" <75244.432@compuserve.com>
From: ssinger@roadrunner.com (Sidney Singer)
Subject: Re:EIS Meeting

My name is Sidney Singer and I request that the following summary comments be placed in the record of this meeting, a review of the draft DAHRT EIS. My comments reflect my personal opinions and I have been encouraged to present them here by REAL as part of their effort to provide alternative credible review sources to this process.

I understand that this process is intended to develop and present for public review an assessment of the socioeconomic impact of the proposed DAHRT project. In my first reading of the draft, I concluded that

1 1. The basis for DAHRT's role in the SS&M mission is not adequately developed. The statement of need (p. 2-4) deals with the need for this type of resource and does not explain the need for enhanced resources nor what they are or are expected to accomplish. The discussions of paragraphs 2.2 and 2.3 are superficial and do not define in sufficient detail how DAHRT would be used to support meaningfully the SS&M mission.

2 2. In the absence of that background, it is impossible to evaluate properly the various alternatives. Such evaluations require knowledge of the consequences of the various alternatives on DAHRT's mission.

3 But that mission has not been stated in terms of performance criteria and desired outcomes, so that meaningful comparisons of alternatives based on mission impact are not feasible.

4 3. Of considerable importance is an explanation (presently absent in the draft EIS) of why the containment alternative is not the preferred one. The notion of releasing into the environment the indicated quantity of heavy metals when -- presumably -- a containment technique is feasible boggles the imagination.

5 Finally, I suggest that a comprehensive discussion of the socioeconomic impact of the no-action alternative, which may be very great since it deals with the nation's security, is an important part of the EIS process. While the DOE may prefer to deal with this issue elsewhere, only from such a discussion can the true role of DAHRT be discerned, explained, and justified.

Milton G. Lockhart
for Sidney Singer
188 El Gancho
Los Alamos, NM 87544

Comments on Draft DAHRT EIS, May 31, 1995
by M. G. Lockhart, 91 Mimbres Drive, Los Alamos, NM 87544

DAHRT is the first in a progression of more advanced hydrotest facilities planned by DOE, will provide data for the design of later facilities, and will help identify unknown problems. The stockpile has never been allowed to become this old before. Delaying DAHRT until
1 problems are identified to be solved is akin to waiting until the flames are consuming your house before applying for fire insurance.

Nuclear testing which was an integral part of the program for fifty years has been discontinued. Having not foreseen the demise of nuclear testing, scientists do not have the data necessary to construct accurate computer models which DAHRT and its successors can furnish.

DAHRT would study ~~old pits, liners~~ delete ✓ chemical explosives and any other part from disassembled weapons which might be suitable for studying aging effects, but particularly primaries. Weapons primaries use chemical high explosives. Page 29 of the JASON report states "The design community has properly judged that improved hydrotesting capabilities are important in the absence of underground tests. The ultimate goal would be a tomographic movie of the late stages of the imploding pit."

DAHRT's data can be used in computer simulations, to verify the results of computer simulations, and to identify problems which are not readily detectable by inspection. Can these data be used to design new weapons? Of course. Data are data. If the national policy changed tomorrow, these data could be used for designing new weapons. But more importantly, the data can be used in improving safety and reliability of nuclear weapons. This is also a design function, and the improved weapons could be considered a "new" weapon, but not under the President's definition.

2 DAHRT is currently the most cost effective and prudent way to implement the nuclear
3 policies of the U. S. Rewrite the draft EIS to specify what the mission is, and choose the containment option to protect the environment.

1.

Environmental Impact Statement for DARHT
Louis Rosen, Dec 7 1994

I am a retiree (who refuses to retire) with 50 yrs. experience at LANL, in nuclear science & technology. I represent only myself & receive compensation from no-one. My credentials are documented for your perusal.

It was on this date that the Japanese military triggered the eventual birth of Los Alamos National Laboratory, born in secrecy but now open to the world scientific community.

I very much applaud the DOE policy of
1 openess, and willingness to receive input from everyone. However, I worry that DOE may be defeating its objectives by lavishing undue attention (such as invitations to Washington) on representatives of small groups which may not have the knowledge, experience and technical background to provide credible advice on high technical issues, such as the DARHT facility.
2 DARHT is an extention of FERMEX, which has operated for decades with impressive positive impact on our national security, and very limited impact on the physical environment.

Although I believe it to be a waste of time and money, and an unnecessary

Transcript Attachment 43, page 2 of 3

2.

diversion from important tasks, I do not object to yet another environmental impact study. However, as a supporter of public involvement, I am embarrassed that any group would go to court to interrupt construction on a major facility designed to enhance the safety and credibility of our nuclear deterrent, while our nuclear stockpile is being reduced. This to me is the height of irresponsibility, a serious disservice to our National well-being and an abuse of our judicial system. Claims of thousands of supporters are insignificant compared to the interests of those whose livelihood are at stake, of the other 1.5 million citizens of New Mexico and of the 250 million citizens of our Nation. Los Alamos is obligated, by Congressional mandate, to serve all these citizens; and it has been doing so, magnificently, over the past 50 yrs, while also contributing very substantially to international stability.

If DOE wishes to know how the citizens of New Mexico feel about the programs at Los Alamos and Sandia, ask our Congressmen, all of whom, Republican & Democrat, have ~~just~~ ~~now~~ been returned to the Congress. And if you want to know what the Nation thinks about these facilities, look at the platforms of those elected to the New Congress. If DOE does otherwise

Transcript Attachment 43, page 3 of 3

3.

it will become irrelevant, in my opinion.

All human activity impacts the environment. One must always make an objective cost-benefit-risk assessment before implementing any major initiative. However, ~~all~~ government agencies should consider the credentials of their sources of advice. Uninformed judgements or superstitions should not be given as much prominence by the Government and by the news media, as appears to be the case in recent time. Catering to "political correctness" not only leads to waste of scarce public resources, as, for example, the recent study of a postulated brain tumor cluster in the Western Area, which appears to have been ~~poor~~ triggered by someone who misinterpreted a radiation-measuring instrument; but, more importantly, it demoralizes and diverts the attention of skilled and gifted people who are working in the National interest. Should we continue on our present course, I predict that within 10-20 years all of us will be consumed regulating each other. In the meantime we will be overwhelmed by pollutants - the pollutants of unemployment, disease, energy shortages and climate change. That is not a proper legacy to leave to our progeny. I thank you for listening.

LOUIS ROSEN
1170-41 St
Los Alamos, N.M., 87544

Transcript 2: Comment Code 44
Los Alamos Public Hearing – Evening Session

Multi-Page™

LOS ALAMOS PUBLIC HEARING
for the
DRAFT ENVIRONMENTAL IMPACT STATEMENT
DUAL AXIS RADIOGRAPHIC HYDRODYNAMIC TEST FACILITY

WEDNESDAY, MAY 31, 1995
6:33 P.M.
LOS ALAMOS INN
2201 Trinity Drive
Los Alamos, New Mexico

REPORTED BY: Irene Delgado, NM CCR 253
Joe Jameson Court Reporters
Suite 800, 320 Gold, S.W.
ı b XLAM r N n Mexico 87102

No sooner than 30 days after that publication, the department will issue a final decision that is documented in a Record of Decision. That Record of Decision will explain the decision factors that we went through including these environmental considerations that are documented in the Environmental Impact Statement.

Along with the Record of Decision, we will be issuing what's called a Mitigation Action Plan. The Mitigation Action Plan is part of the decision and will include those actions which we propose -- or that we will be taking to mitigate or lessen any adverse environmental impact that we anticipate would occur based on the analysis in this document.

This is the Draft DARHT Environmental Impact Statement. If you would like a copy and do not have a copy, please give your name and address to the staff at the front desk and they will make sure that you get one as soon as possible.

In the Environmental Impact Statement, we analyzed six alternatives. An Environmental Impact Statement is comparative environmental analysis. It looks at what would be the environmental consequences if we took an action, and we compare those to what would happen if we did not take the action. That is called the

no action alternative, sometimes called the status quo alternative.

In this Environmental Impact Statement, we look at, under no action, the continuation of the PHERMEX facility at Los Alamos National Laboratory to continue to do the program regarding hydrodynamic tests, dynamic experiments without the enhanced capability that we are proposing to provide.

Under that alternative, we would not complete the construction of the DARHT facility as a hydrodynamic testing facility, but the building would be completed and put to other uses. The department's preferred approach for meeting the proposed action would be to complete and operate the DARHT facility here at Los Alamos National Laboratory and to phase out the PHERMEX facility, the existing facility, over about a four-year period.

The department may choose to delay the operation of the second axis pending installation of the equipment in the first axis and testing and proving of that equipment to make sure that it performs as expected.

In addition to those two alternatives, we have looked at four other alternatives. We have looked at upgrading the existing PHERMEX facility. We would not

complete the construction of the DARHT facility for use as a hydrodynamic test facility, but we would complete the building for other uses.

The existing single axis PHERMEX facility would be enlarged and expanded to provide a dual axis capability using the same enhanced radiographic capability that has been proposed for DARHT.

Under the enhanced containment alternative, the department would provide more containment than would be the case under the DARHT proposal. The department does now and plans to conduct some experiments in containment; anyway, the difference is that under the enhanced containment, most or all experiments would be contained.

We have looked at two options; one is a constructed building. There is a model in the information area around on the other side of this portable wall that shows how that containment building fits into the dual axis construction that's now in place. It's a fairly large building, would fit over the firing site, and you can see what that would look like in the other room.

A second option under the contained -- enhanced containment alternative would be a greater use of containment vessels than would now be done. These are

modular transportable vessels that would be used to contain most experiments that would be conducted at the DARHT facility.

We also looked at a plutonium exclusion alternative. This weighs the consequences, the environmental impact comparing what it would be like if we operated DARHT with contained experiments involving plutonium, comparing that to what would happen if we operated DARHT without doing contained experiments with plutonium at that facility. However, the department would conduct dynamic experiments involving plutonium at PHERMEX or some other facility under that alternative.

The last alternative is a single axis alternative. It's very similar to the preferred alternative, except only one accelerator hall of the DARHT facility would be completed for hydrodynamic tests. The other hall would be completed and used for some other use.

There are certain things that are common to all alternatives. Under all the alternatives, analyzed under this Environmental Impact Statement, the department would continue to use the flash X-ray facility at our sister laboratory at Lawrence Livermore, California. Under all alternatives, dynamic experiments involving plutonium would take place and hydrodynamic

without walking. So I will just have to make do with this kind of action seated, but if you can't hear me, please indicate and I will try to speak even louder.

I would like to spend just a very few minutes this evening talking dynamic experiments, hydrodynamic experiments, and enhanced capability that DARHT as proposed would represent. We do a number of experiments in the weapons programs in DX division, and among them are two kind of tests that you've read about in the Environmental Impact Statement. The first is dynamic tests.

These tests are experiments on a broad variety of materials that we use to determine material properties and behaviors at high pressures, materials in motion, and materials under shock conditions. Most of the conditions that these materials see are induced by the application of high explosives.

We do a large number of dynamic experiments of different sizes and complexities, having to do with the investigation into the property of different materials, many different materials. One of the materials of interest has been plutonium. And because of the unique characteristics of plutonium, the information that's been gathered on plutonium in these dynamic experiments has always been performed in

double-walled steel vessels so that there were not any products into the environment.

Another kind of test that we do are hydrodynamic tests or hydrotests. Where the dynamic tests tend to be more single or sets of material tests, the hydrodynamic tests are more aimed at full systems in weapons geometries to gather information about materials in the primaries of weapons systems and to get the interactions of the shapes and geometries as the system is imploding.

In these hydrodynamic tests, we use surrogate materials for the fissionable materials. Typical surrogates might be depleted uranium, tantalum or lead. The choice of surrogate is a function of what kind of information we're trying to get out of a hydrotest. Each material is a reasonable surrogate for some aspect of the pit material, but no surrogate matches the plutonium behavior exactly.

We do several kinds of hydro experiments in order to get different data sets. One kind is called a pin shot. In a pin shot we have a series of electrical sensors that are inside a mock device that is built with surrogate material, surrogate pit material. These electrical sensors called pins record the movement of the implosion; that is, they record the movement of the pit

surface as the device implodes and gets to near its minimum size, near to critical time or what would be critical time.

We can extrapolate the data obtained in these pin shots by calculation to estimate what might be happening at this critical time. But the blast shield for all the diagnostic cables and pins themselves can affect the behavior, the ultimate geometry and skew the shapes as the implosion occurs. Therefore we do not get completely realistic data, particularly as the size gets smaller and smaller. There are also other aspects of the data that we need that we cannot obtain in pin shots.

Another kind of hydrodynamic test that we do fairly regularly is called a radiographic test. In these tests, we again have full shapes. This time we have no blast shields or pins. We have a mock device again with a surrogate material for the fissionable material. We detonate the high explosive which drives the metal inward in an implosion and takes very high-speed X-ray pictures of the implosion.

From this high-speed X-ray picture, we can get information on density and shape during the implosion. We take the data that we have gotten from a series, many series of dynamic experiments on materials involved, from pin shots, from these radiographic shots,

and use this data to refine our calculational model so that we can predict behaviors and improve our predicted models.

Currently, the complex of principal tools for these hydrodynamic experiments are PHERMEX, which became operational in 1963 at Los Alamos, and FXR at Livermore, which became operational in 1983. These two substantial dynamic tools were brought on line to assist us in the full program for nuclear weapons development, surveillance and testing that included the capability for final proof testing underground at the Nevada test site.

There is now a moratorium on underground testing at Nevada. Even before the moratorium was brought about, it was recognized within the complex that we needed an enhanced diagnostic capability to give us better information, more detailed information, more accurate information from hydrodynamic testing. And so the process of designing and proving technology for DARHT was started.

Part of the reason that we needed to improve the capability was that both PHERMEX and FXR provide now a single view, basically a one-dimensional view, and do not deliver enough dose to see clearly the level of detail we need at sufficient depth into the systems that we need to look at. As proposed, DARHT

1 would increase the total available information from each
2 shot by about tenfold, especially in the dual axis
3 configuration.
4 The kind of information that would be
5 obtainable from DARHT is particularly important within
6 the confines of the underground testing moratorium where
7 we have no final proof test. We need more and better
8 information than our present diagnostics can deliver in
9 order to be able to do effective computer modeling and to
10 fold in the detailed experimental data that will truly
11 model the material's behavior effectively and properly
12 and allow us to make predictions.
13 Safety and reliability via an active
14 surveillance program from the stockpile also now have no
15 final underground proof test. We are building more and
16 more predictive capabilities into our computer codes, but
17 in order to do that, we must have data that's based on
18 what I've characterized as old information, old tests of
19 then new systems and now new tests of existing systems,
20 baseline information, surveillance information from the
21 stockpile.
22 Although we all understand that the
23 stockpile is safe and reliable now, the weapons that are
24 there now are approaching their design lifetimes and very
25 soon will be in the stockpile for longer than they were

1 ever intended. This is a new situation for the United
2 States stockpile. In the past, when we were doing new
3 design work and new production work, weapons were being
4 replaced in the stockpile much faster than they were
5 approaching their design lifetime. The United States is
6 no longer designing and producing new weapons. The
7 weapons that are in the stockpile are approaching their
8 design life. We have no experience with weapons that are
9 that old.
10 Active surveillance programs and the
11 diagnostics that will allow us to determine problems,
12 potential problems, early, become more and more important
13 as each day goes past. One of the major problems in
14 diagnosing aging concerns is that most aging problems
15 don't happen in one dimension. There are many problems
16 associated with aging that we may not be able to see in
17 one dimension, and to be able to get a three-dimensional
18 representation is extremely important in these cases. I
19 would invite you to take the opportunity to go and look
20 at the information area and look at a representation of a
21 one-dimensional X-ray photograph versus two views that
22 give you some three-dimensional information. The
23 difference in the information obtainable from those --
24 from the two views, is striking.
25 Also, as the Department of Energy

1 Production complex changes, if we find, if and when we
2 find problems in the existing stockpile that need to be
3 addressed, that need to be fixed, materials or components
4 that may need to be replaced, the old technologies that
5 were used in the early production complex are no longer
6 viable in the new smaller complex where some of the
7 production agencies are closed. We need to be able to
8 verify that any repairs or fixes for problems that we
9 would do and replace components or materials in the
10 stockpile, do not negatively affect reliability or safety
11 or performance.
12 The enhanced level of information that
13 DARHT would provide is particularly urgent now that we
14 have moved into and continue within a time of moratoriu
15 on underground testing. I would invite you to ask
16 questions of a technical nature in the information area
17 where we have people from the laboratory who are
18 technical experts, people from DOE who understand the
19 regulatory concerns and people from PNL Battelle, who d
20 much of the analysis and impact analysis for the EIS an
21 I would to invite you again to take an opportunity to g
22 into the information area and ask people these detailed
23 questions. That's all I have, thank you.
24 MS. WEBB: Thank you, Barb. There's lo
25 of chairs over here. Again, you are also invited to si

1 at the table. This is a round-table discussion, and i
2 please, feel free to join us at the table. There's al
3 a lot of chairs over here on this side.
4 All right. Having heard our talk topic
5 I would like to ask first if there are any represen-
6 tatives of state, tribal, or local governments that w
7 like to speak of behalf of their constituencies.
8 (No response.)
9 MS. WEBB: And seeing no one coming
10 forward, then, the floor is yours. Who would like to
11 talk first? Surely someone would like to talk first
12 Yes, sir?
13 MR. BARR: Are you still -- this has
14 under study a few years. Are you still state-of-the
15 in your analytical techniques in the building, or a
16 fixed as far as the development of the DARHT facili
17 goes five years ago?
18 MS. WEBB: Mike, would you like to a
19 that?
20 MS. STINE: I will let our technical
21 experts answer on DARHT technology.
22 MR. BURNS: It's hard to be called
23 expert. My job is a project leader for the equip
24 that would be installed if DOE continues to compl
25 facility at DARHT. Technology, as you said, is a

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1 important thing for DARHT. In the early '90s -- or from
2 February '91 through 1993, we demonstrated new technology
3 that would be working in DARHT. That technology exists
4 today and has been demonstrated and is still state-of-
5 the-art for X-ray machines of this type. Right now it's
6 still the definition of how these X-ray machines should
7 be built.
8 MS. WEBB: Thank you, Mike. Do you have
9 any other questions? Okay. As you may notice, our
10 scribe here, Jay, is capturing short summaries of the
11 comments that are given. The comment summaries from this
12 afternoon are on those sheets that are stuck to the
13 transportable wall over here if you want to look at those
14 during break to see what transpired this afternoon. All
15 right. Who would like to speak next? All right.
16 Chris?
17 MS. CHANDLER: My name is Christine
18 Chandler. In reviewing the DARHT Draft EIS, I was struck
19 by the generalities that were contained in it for
20 supporting it and was concerned that not enough specific
21 information was contained in it. For example, I went and
22 checked out the Miller Report, which is a reference that
23 you all cite. There's a lot of information contained in
24 that report about specific weapons problems that have
25 been uncovered through testing, nuclear testing,

Page 23

1 specifically safety issues that have been uncovered by
2 nuclear testing, and I think that there is some very
3 compelling information in that report that could be used
4 to -- or in the EIS to inform the public about what
5 you're really talking about, because really -- there are
6 really just bland statements in the document itself, but
7 when you go to the Miller Report, particularly, there are
8 numerous warheads documented as having issues with regard
9 to safety that were uncovered, as well as other kinds of
10 issues, performance issues.
11 For example, you cite on Page 2-8, the
12 W-68, I think it would be useful to talk about how DARHT
13 would play into a situation like that and explain to the
14 public how DARHT, instead of nuclear testing, will
15 outline the problems, define the problems and assist the
16 lab and federal government in evaluating that warhead,
17 and that is not done anywhere in the document. So for
18 what that's worth, that's a comment.
19 MS. WEBB: That's great. That's the kind
20 of thing that helps us finalize the document in the final
21 process. Thanks. Anything else, Chris?
22 MS. CHANDLER: Not now. I have a whole
23 list, but I don't want to dominate.
24 MS. WEBB: Well, you may get your chance
25 unless there's someone else who would like to step

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1 forward. Who would like to speak next? And again, we do
2 have chairs over here. You don't have to stand over
3 there unless you really want to.
4 MR. McCORKLE: My name is Melvin McCorkle,
5 and although I work for the laboratory, I am here as an
6 interested citizen, but I used to work for EPA, so I have
7 some insight into some of the regulatory approaches. And
8 while I haven't read the entire document yet, I intend to
9 and would make comments as part of the record later.
10 But I would encourage the department to
11 really look at the enhanced containment option from the
12 following perspective: I think that preferred option
13 probably meets many of the regulations as they exist
14 today; that we are going to continue to see, in my
15 opinion, a reduction in the amount of disbursement that
16 occurs during the explosive test and this sort of thing,
17 which I understand would occur under the preferred
18 options, would be disbursed around the ground.
19 So I would encourage to plan for
20 increasingly stringent regulations with respect to the
21 regulatory aspects of what we're going to be allowed
22 to -- I'm going to use the word discharge. We see it
23 happening in the NPDES permit continually to get more
24 stringent limits. We continue to see more stringent
25 limits in the air monitoring that's required. I'm sure

Page 25

1 we are going to see more stringent limits with what we
2 can disburse through the air.
3 So I would encourage the consideration of
4 the enhanced containment alternatives up to and including
5 that it might become the preferred option because it
6 allows to increasingly mitigate environmental laws that
7 are associated with the experiments.
8 MS. WEBB: Okay, thanks. Anything else?
9 MR. McCORKLE: No.
10 MS. WEBB: All right. Who else would like
11 to speak? Yes, please?
12 MS. MULKA: My name is Linda Mulka. I
13 think to a large extent, DARHT is based on the premise
14 that we will continue to need large numbers of nuclear
15 weapons in the future, and I think that, you know -- the
16 reason I think things should probably be on hold is that,
17 you know, I'm not sure that, you know -- I suspect
18 nuclear weapons are -- they're nearly obsolete right now,
19 the concept of nuclear weapons, and DARHT is trying to
20 protect that, the concept of nuclear weapons. And by the
21 time DARHT is finished, I kind of suspect that they'll
22 just be -- the whole focus is going to be on dismantling
23 them and how -- you know, how few can we get by with.
24 So I kind of suspect that it's a moot --
25 it's almost a moot issue. I mean, I would feel that

Now, looking at the amounts and all of that and 40,000 years to reach the atmosphere and all of these other kinds of details that I pick up in the EIS, it seems like I'm dealing with everything from microscope cells. You can't see the elephants, you can only see the tree or other little parts, and there are some of these -- the incredible thickness that you have to read in your spare time when this isn't your job, the amount of details are impressive, but I think it sometimes obscures the bigger picture that we are really just trying to keep things in a state of nuclear development, nuclear funds to develop better weapons. Even though we say it's for safety, I think safety is better achieved by dismantling, unless you take the high explosives from the plutonium and, you know, just take the thing apart, that would ensure safety a lot better than any kind of design.

MS. WEBB: Thanks, John. You point out that there's lots of little details and lots of information in the EIS, although Barb just mentioned a little while ago that the department has operated PHERMEX in the laboratory since 1963, as it's stated in the Environmental Impact Statement, the Department of Energy and its predecessor agencies have conducted hydrodynamic testing at the laboratory since the 1940s. And you also

made reference to the PEIS SS&M and I presume that you're referring to the Stockpile Stewardship and Management Programmatic Environmental Impact Statement. There's quite a bit of information on that document that is out on our related information table.

You also made reference to the sitewide EIS. And I presume you meant the Los Alamos sitewide EIS that's going on at this time. May I presume those things, John?

MR. USSERY: Yes. This is in the proper order here. It's the first time I've seen this.

MS. WEBB: We have copies of this programmatic report, like I said, on our information table regarding the Stockpile Stewardship and Management Program. Please feel free to pick up a copy, and if you want more information on that, leave your name and that written request with our front desk and we will get you all the information that you can imagine.

Who would like to be next? My goodness. All right, George.

MR. CHANDLER: I would like to just point out what I think is a part of what we can possibly afford when considering the alternatives here. In the plutonium exclusion alternative, you don't show any increment in the operating cost. Under that alternative, you would

have to operate both PHERMEX and DARHT, and the cost of keeping PHERMEX open under that circumstance would be substantial, I think. It does show up in the -- in the Table 3-4.

MS. WEBB: All right. Thank you for that comment. George, you did not introduce yourself for the record. Would you like to?

MR. CHANDLER: George Chandler.

MS. WEBB: Thank you. Yes, someone else? I thought I saw a hand over here, but maybe I didn't. Who else would like to -- thank you.

MR. THOMPSON: I'm Dave Thompson, and I speak as a private citizen, retiree of the laboratory. I've been here for over 40 years, and I guess I would like to address the comments that were made with respect to the obsolescence of nuclear weapons, for example. I am a strong proponent of arms control and have been for many years, and I guess, given the present treaties, for example, START, which will take at least eight, ten years to get down to the START II level, assuming START II is ratified by the Russians -- well, our own senate hasn't ratified START II, but the Russians, I think they will. I think the signal is the Russians might, and it's very questionable right now when the Russians are going to do it.

But START II gets you down to 3500 warheads for each of the two sides. There's no treaty -- it will take further treaties to get down to some lower level. There's no treaty yet that includes the Chinese and British and French. We are very fortunate that the Nonproliferation Treaty was extended indefinitely just a couple of weeks ago, 170 nations, but there are eight or nine nations that are not members of the Nonproliferation Treaty that include India, Pakistan, Israel and several other nations who want to -- who think at the present time they want to keep a nuclear option. It's not clear what they're going to do in the next 5 to 10 to 20 years.

But as near as I can see, there's going to be thousands of nuclear weapons out there, even under best arms control we have in place now for the next 10 to 20 years. And it's never been -- it's not my personal view, contrary to many people and contrary to the present administration that a CTBT with zero yield is in the -- really the best interest of arms control or for the long-term future.

A CTBT with very limited numbers of tests, and a CTBT with a threshold at the -- let's say a threshold set at the verification level, which right now is generally believed to be in the ballpark of 5 kilotons or could be in the interest of arms control, but to go to

1 weapons as they age is actually a far harder task than
2 designing brand new weapons. The reason for that is when
3 you're designing new weapons, you can control things.
4 When you are allowing weapons to age, you are no longer
5 in control of the processes.
6 Specifically, if you think of the problem
7 that you might have with a new car, you can go turn the
8 key on and expect that it will work. If you go out to my
9 25-year-old Ford and turn the key on, it may not.
10 Without nuclear testing, we can't turn the key, so we're
11 asked to rely on trying to understand how aging impacts
12 the performance of these things. It's a very difficult
13 task.
14 Part of the process to understanding this
15 will be to get basically zero time snapshots of what the
16 weapons were supposed to look like, in order to
17 understand how things will age. They're going to age in
18 a variety of ways that you know about. Generically,
19 every material or process or whatever, you're going to
20 see develop chips, gaps, cracks, corrosion, somebody
21 dropped it; things like that actually happen, and that
22 changes the characteristics. Beyond that, the materials
23 involved in the nuclear weapons, plutonium, for instance,
24 is radiolitic, and it decays, and that changes its
25 properties. There is corrosion that will tend to occur.

1 All of these things may change the safety and performance
2 characteristics.
3 Therefore, baselining, before we can
4 affect those changes, we're going to have to understand
5 exactly and in better detail than we have had in the past
6 of what we thought we had there.
7 MS. CHANDLER: There's some mention in the
8 Draft that DARHT can be used for counterproliferation
18 9 purposes. To my mind, it's not very well articulated,
10 and I think it would be helpful to articulate
11 particularly in light of some of the previous comments
12 which seem to assume that we are the only ones that are
13 driving the arms race, and I think for some of us in the
14 audience, we believe that certainly there are other
18 15 nations that are pushing arms and are in fact doing so
16 illicitly. So if someone could address that issue, that
17 would be helpful.
18 MS. WEBB: I understand that you are
19 talking about addressing that in the final EIS, but
20 again, Jas, would you like to say anything about
21 counterproliferation uses for this facility?
22 MR. MERCER-SMITH: There are potentially
23 ways to disable nuclear weapons if you could get hold of
24 an adversary's nuclear weapon. This has to be done very
25 carefully. There are potentially ways to disable weapons

1 that in fact would result in significant amounts of
2 yield, which is what you want to avoid, very much so. It
3 tends to kill the people trying to do it.
4 A facility like DARHT allows you to look
5 at disabling schemes for various potential classes of
6 devices to ensure that in fact when you disable them, you
7 are not producing significant problems for yourself.
8 MS. WEBB: Does that answer or kind of
9 give you a brief answer? And then we will take your
10 comments as something we should consider further in the
11 final EIS.
12 MS. CHANDLER: Yes, happy to comment.
13 MS. WEBB: Yes?
14 MR. McCORKLE: My name is Melvin McCorkle,
15 again, in the lighthearted vein, I will tell you, my
16 25-year-old Ford does start when I turn the key because I
17 do, with respect to DARHT, I replace things from time to
18 time, as opposed to today just rebuilding, which is the
19 PHERMEX option which is what led us to address this, and
20 that is my view of what PHERMEX is, that it's like a
21 B-52, you can only rebuild things so often and so
22 frequently, and when you get to the end of a cycle, what
19 23 you have married together is some old technology and some
24 new technology and the interfaces between those two
25 technologies don't work very well together.

1 And while I'm not in the business of
2 weapons development, I am in the business of facilities
3 and operations of facilities, and one of the places that
19 4 we continually have problems is when we try to marry a
5 direct digital control system with a pneumatic system,
6 and I suspect that even if you were to do the Upgrade
7 DARHT Option -- I'm sorry -- the Upgrade PHERMEX Option
8 that you still have to deal with marrying some old
9 technology and some old equipment up with some new
10 technology and new equipment and that can be sometimes
11 difficult to do and can put some unreliability in the
12 system that's not intended.
13 MS. WEBB: Thanks. I don't have a 25
14 year-old Ford, so I can't add too much to the Ford
15 stories. Who else would like to talk to us? If no
16 we'll let Chris -- yes, sir, please.
17 MR. WATANABE: Diane, I'm Harry Watanabe.
18 I'm speaking for myself tonight. I wanted to make a
19 comment about the enhanced containment alternative. The
20 first sentence there talking about similar to the
21 preferred alternative, except that most or all of the
22 tests would be conducted in a containment vessel, not a
23 containment structure. Okay, that sounds like a
20 24 statement, but when you start talking about making
25 modifications for containment and so on or trying

1 reduce the environmental impact, that doesn't come
20 2 without cost increases. Okay? That, I'm not sure, has
3 been discussed in detail here.
4 MS. WEBB: Okay. You're talking dollar
5 cost?
6 MR. WATANABE: Dollar cost.
7 MS. WEBB: Yes, okay. Thanks. We will
8 take that under consideration as we prepare the final.
9 An Environmental Impact Statement is not the document
10 that the department generally uses to develop costs, but
11 it is appropriate for us to reference costs when they --
12 when they bear on the advisability of one alternative
13 over another. So we'll take that comment into
14 consideration here, thanks. Anything else? Yes?
15 MS. CHANDLER: Can I follow up on Harry's
16 comments? Because I think that's a really key point for
21 17 some of us who have been discussing this question and
18 wondering why the lab and DOE is not pushing for the
19 containment option. We all assume there must be a cost
20 factor, but it's never entirely clear to us what that is.
21 Frankly, most of us who have been working in this group
22 that we have been environmentally responsible and we have
23 talked about this, why is it the case that the lab is not
21 24 pushing us since it seems to be more environmentally
25 responsible to go that route? And I think to make your

1 case to the public, you're going to have to talk about in
2 some detail, why it is that is not the preferred option,
3 because for the layperson out there, that would strike
21 4 you as the preferred option just automatically because it
5 seems to be more respectful of the environment in which
6 you are going to be performing the tests.
7 MS. WEBB: Okay. Yes?
8 MS. McCORKLE: I just want to say -- I'm
9 Anita McCorkle -- (indicating document) on this out there
10 it tells you how much more it would cost to do the
11 containment option rather than do the -- just the regular
12 option.
13 MS. WEBB: That's the DARHT fact sheet
14 that Anita is holding up. It does have some costing
15 information on it which perhaps not all of that costing
16 information was included in the EIS, so thanks for
17 pointing that out, Anita. Yes?
18 MR. BROWNING: Just a comment. It is in
19 the EIS Table 3-4.
20 MS. WEBB: Table 3-4 at the back of
21 Chapter 3 does have a kind of a programmatic summary of
22
23 some of the cost and other programmatic decision factors.
24 MR. BROWNING: It might not be broken out
25 as well as you would like, but there are some costs.

1 MS. WEBB: It's not a really detailed cost
2 study, but thanks for pointing that out, Richard, that,
3 yes, it does have a summary of cost info in there at the
4 end of Chapter 3. Thanks. Okay, anything else?
5 Christine, anything else?
6 MS. CHANDLER: I'm sure there are.
7 MS. WEBB: We will give you a minute to
8 collect your thoughts. If anybody else would like to
9 have anything to say to us while Christine is collecting
10 her thoughts -- yes?
11 MS. CHANDLER: This is sort of one kind of
12 a controversial question, maybe. Everyone, when they're
13 talking about DARHT is very clear to say, although the
14 stockpile is presently safe -- yaddi yaddi yaddi om --
22 15 how do you know that? When you have -- the whole case
16 about DARHT is that there are uncertainties involved in
17 the materials, etc., the components that we need to keep
18 monitoring, how do you know that?
19 MS. WEBB: Well, the position of the
20 Department of Energy and the Department of Defense and
21 the laboratory directors is that the current stockpile
22 remains safe, secure and reliable.
23 MS. CHANDLER: That's like a mantra
24 thing. I mean, we all say that and so --
25 MS. WEBB: And I'll let Jas expand on that

1 in a minute, but primarily those are based on
2 observations such as through the direct surveillance
3 program. The difference, of course, with DARHT is, when
4 do you know you're going to have an earthquake? I
5 suspect that on the Russian island that just had an
6 earthquake, if they knew they were going to have an
7 earthquake the other day, they probably would have braced
8 those buildings a couple of weeks before the earthquake
9 came.
10 It's sort of a similar thing. You don't
11 exactly know when there's going to be a problem. You
12 have to be prepared, though, in advance in the event that
13 a problem occurs. And Jas, I will let you speak a little
14 bit more about our mantra.
15 MR. MERCER-SMITH: There is a surveillance
16 process in which every system in the stockpile is
17 surveilled every year on a regular basis, and a given
18 number of weapons from each system is taken as a
19 representative sample and examined, torn down and looked
20 at. Statistically -- I've forgotten how it works -- you
21 have some 95-percent probability of finding a common mode
22 system failure within two years within surveillance,
23 traditional surveillance process.
24 MS. WEBB: Jas, would you like to explain
25 what a "common mode failure" is?

1 MR. MERCER-SMITH: A type of failure that
2 would occur across the system randomly or distributed
3 across the system.
4 MS. WEBB: Across the entire weapons
5 system or across several systems?
6 MR. MERCER-SMITH: Across the individual
7 system.
8 MS. CHANDLER: Okay.
9 MR. MERCER-SMITH: So there is an active
10 surveillance program that has been going on for 40 years
11 or more.
12 MR. CHANDLER: Now connect that to
13 hydrodynamic testing.
14 MR. MERCER-SMITH: When you see the class
15 of failure that -- let's see. There are types of
16 fa. ures that will affect the dynamic performance of
17 either the high explosives or materials in the weapon
18 dynamic basis during the implosion process. Those are
19 classes of aging effects that you may be able to
20 determine the consequences of by looking at the dynamic
21 systems such as the DARHT facility.
22 MR. CHANDLER: Why would you do --
23 MS. WEBB: George, I'm not sure we can
24 hear you.
25 MR. CHANDLER: Why would it be better with

23
1 DARHT than with PHERMEX?
2 MR. MERCER-SMITH: Eventually the multiple
3 use, high energies, you can look more deeply into the
4 system.
24
5 MR. CHANDLER: Can you write that in the
6 EIS, all of those things?
7 MS. WEBB: Well, we will take that comment
8 under advisement and see what we can write in the final
9 EIS. We will get Jas to dictate notes for us. Anything
10 else, George, Christine?
11 MS. CHANDLER: Computer calculations.
12 Those who oppose the construction of DARHT rely heavily
25
13 on the notion that we can do it all with computers. How
14 do you dispell that? I mean, there is some reference to
15 it in here, but I don't think it's very well articulated.
16 I think I have a sense of it now that I have been reading
17 about dynamic testing, but I think that needs to be
18 clearly articulated because it's used a lot as a counter
19 in DARHT.
20 MS. WEBB: Okay. We will take that under
21 advisement. In Chapter 2 there is a little diagram that
22 shows some arrows chasing each other around in a circle.
23 And the point of that diagram is, in the past, when we
24 had underground nuclear testing, it was used in
25 conjunction with computational theory read computers. Of

1 course, in the olden days, I guess we did it without a
2 computer or something -- but read computers, and
3 hydrodynamic testing was an adjunct of that. In other
4 words, they were both used, both underground and nuclear
5 tests and hydrodynamic tests were used to verify the
6 computational codes, and then computational codes were
7 used to predict what would be expected.
8 Once this part of the equation is removed,
9 then it is a smaller circle; it is only the inner circle,
10 the relationship between the computational theory, real
11 computers and the hydrodynamic tests. Hydrodynamic
12 testing has never been used all by itself. It has always
13 been used in conjunction with computational development.
14 And I will let either Jas or Barb expand on that if you
15 would want to.
16 MS. STINE: Well, they have also -- both
17 of those also in the past have been used with underground
18 testing. That goes as well for the effectiveness of the
19 surveillance program in the past, which also had
20 underground testing as a major portion to allow final
21 proof testing of systems even after they had aged.
22 Without underground testing, both were to add data to
23 computational analysis and to provide proof testing for
24 surveillance activities. The level of detail and amount
25 of information available from hydrotesting becomes more

1 and more important.
2 DARHT provides significantly increased
3 levels of information over PHERMEX and FXR. That leads
4 directly to the importance that we see for DARHT in the
5 environment of no underground testing. Models,
6 calculations, computer simulations need data in order
7 build accurate models. That data we can -- the best
8 we can get would come from PHERMEX -- I'm sorry -- from
9 DARHT. The best data we have now comes from PHERMEX.
10 MR. MERCER-SMITH: The computer does
11 That ought to be the real answer.
12 MS. CHANDLER: I mean, that's a good
25
13 answer, and it's direct. I mean --
14 MR. MERCER-SMITH: Remember, you're
15 doing -- let me know if it's too high of a technical
16 level. You're solving the wrong set of equations on
17 computer. When you're looking at the hydrodynamic
18 equations, those are differential equations. You
19 them on a computer on a mesh that does a different
20 equation. That introduces something called truncat
21 errors. So you are not even solving the right set
22 equations when you go to a computer. You approxim
23 them, but you are solving the wrong equations.
24 Unfortunately, you're taking the amounts and they
25 down into the feedback loops into yourself and the

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1 MS. WEBB: Okay, Melvin?
2 MR. McCORKLE: Let me offer a way to
26 3 demonstrate that better in the EIS. And I'm going to
4 preface it with, as I understand the JASON Report, it
5 indicates that about a third of the underground tests had
6 to do with -- I'm sorry; I'm looking at this one right
7 here. (Indicating documents.) It's the Miller Report.
8 MS. WEBB: Yes, that is the JASON
9 report.
10 MR. McCORKLE: The Miller Report. I'm
11 wrong. I will apologize. But in any case, one third of
12 the underground tests had to do with looking at
13 postemployment testing safety and reliability of the
14 device itself. And so if you're going to claim that
15 DARHT will increase the safety and reliability, if you
26 16 can tie that to a previous underground test that was used
17 to address a safety and reliability issue, and you can
18 make a case that DARHT would have eliminated that
19 underground test, then I suggest that it then
20 demonstrates the need for DARHT in a stronger fashion
21 because you're tying it back to a previous underground
22 test. And that may be difficult to understand that, but
23 I would argue it would strengthen the case for DARHT, if
24 that was a possibility to discuss.
25 MS. WEBB: Thank you. Scott, our man at

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1 PHERMEX, also has his hand up back there.
2 MR. WATSON: I'm speaking for myself,
3 Scott Watson. It seems to me that because you have
4 better information with DARHT than you would have with
27 5 PHERMEX or FXR, you would potentially fire fewer shots
6 and not have to repeat shots, and presently addresses --
7 this addresses that the shot rate would be the same under
8 the no action alternative as it would be under the DARHT
9 alternative. It's reasonable to suggest there were going
27 10 to be fewer shots fired at DARHT, and I think that's an
11 important environmental impact.
12 MS. WEBB: Okay. Thank you. Do you want
13 to say anything about that, or should we just take His
14 comments?
15 MS. CHANDLER: Because you're taking two
16 pictures?
17 MR. WATSON: Right. For example --
18 MS. STINE: I think that's correct. The
19 supposition is that, under the no action alternative, you
20 might actually result in more testing than would need to
21 be done at DARHT in order to get the same level of
22 information.
23 MS. WEBB: Because of the two axes --
24 MS. STINE: Because of the two axes of
25 DARHT.

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1 MS. WEBB: -- you get two for the price of
2 one. Anything else, Scott?
3 MR. WATSON: No.
4 MS. WEBB: Thank you. Okay, anything
5 else? Yes, Christine?
6 MS. CHANDLER: One last question.
7 MS. WEBB: Please, ask away.
8 MS. CHANDLER: It seems to me that one of
9 the keys is, we have no nuclear testing, and we know
10 nuclear testing provided certain data about weapons
11 systems. I think what you need to do in this draft is to
12 show how DARHT will provide similar or the same, if
13 possible, but I suspect it's not quite the same. I
14 suspect there is a deficiency there that nuclear test
15 would give because that's what you are, in a sense,
28 16 attempting to replace now that there's a moratorium on
17 testing, and there may be a purpose if the CTBT gets
18 passed in 25 years from now, but that seems to be a key
19 point that needs to be made very clear in this document,
20 which I'm not sure is to the general public.
21 I think those of us who have been thinking
22 about it a little more lately have sort of put some of
23 these pieces together, but it strikes me, you need to put
24 those pieces together for people and share those with
25 them.

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1 MS. WEBB: I will let Barb and Jas speak
2 to that, but first I would like to say that the
3 department believes that the best source of this type of
4 information has been in the past and would remain to be
5 underground nuclear testing. However, the nation has
6 chosen not to do underground nuclear testing, so given
7 the fact that we would not be doing underground nuclear
8 testing, then the hydrodynamic testing process is the
9 next best thing. So it's not quite a one-on-one
10 substitution, but that's why it says in there several
11 times, "in the absence of nuclear testing, DARHT would
12 provide the best capability." And I will let either Barb
13 or Jas expand on that.
14 MR. MERCER-SMITH: There is crucial data
15 involved in nuclear testing that DARHT will not deliver.
16 We're doing the best we can.
17 MS. STINE: And we need the best
18 technology available.
19 MS. WEBB: Did I see another hand, or was
20 somebody just stretching over here, out of the corner of
21 my eye.
22 MR. McCORKLE: I will go back and address
23 Harry's issue a little bit; that is, if you take the
24 preferred alternative, I think one of the most nebulous
29 25 cost considerations in the preferred alternative is what

1 the clean-up costs are at the end of the useful life of
2 DARHT without containment and, granted, if we go to
3 containment, that the immediate cost and up-front cost
4 may be higher and, in fact, I think are demonstrated to
5 be higher, roughly 123 million versus 154 million or 259
6 million, but I think that would be offset by the
29 7 mitigation cost of cleanup of the D&D effort that takes
8 place at the end of a useful life of DARHT and/or
9 PHERMEX, you know. We're beginning to understand, the
10 department has a lot of information that the initial
11 estimates regarding what D&D turns out to be is rather
12 relatively low and that the actual cost of mitigation are
13 much higher.
14 So granted, I think pollution control
15 would cost a little bit of money, but those costs are
16 borne up front, and they are difficult to prove a cost
17 benefit ratio in all cases because you are trying to
18 estimate the benefits of 30 years from now of not having
19 to mitigate pollution or some environmental concern in 30
20 years from now. So I don't agree with his observation.
21 There is some additional up-front cost, and I don't think
29 22 it can be offset by mitigation in the future, and these
23 estimates are the ones I distrust the most. The farther
24 out you go with the cost estimate, the more concerned I
25 become with its reliability.

1 MS. WEBB: Okay. That's sort of the
2 near-term cost trade off against long-term, very
3 long-term --
4 MR. McCORKLE: Term costs that are
5 difficult to estimate.
6 MS. WEBB: You are absolutely right. As
7 we go out into the future, the 30-year life, the end of
8 the 30-year life of the project, it's very hard to
9 estimate what costs would be.
10 MR. McCORKLE: And on occasion the
11 laboratory has taken that position. For example, in the
12 Sanitary Waste System Consolidation Project, it was
13 actually built so that we could return treated waste
14 water back to the TA-3 area and reuse that treated waste
15 water so that it allows us to not use as much potable
30 16 water, well water, as we would otherwise. So the
17 laboratory has taken this initiative in some specific
18 cases; that is, yes, they have increased the cost of a
19 particular project because it does buy some beneficial
20 return that may be difficult to quantify.
21 MS. WEBB: Okay, good point. Anything
22 else? I would like to just explain a little bit about
23 the decision process. As I mentioned, when I was talking
24 about the steps in the Environmental Impact Statement
25 process, the department will, after going through the

1 environmental analysis, we will make a final decision
2 that will be documented in a Record of Decision.
3 That decision will be based on many
4 factors, including costs, including programmatic concerns,
5 including national need, national security needs and
6 including the environmental aspects that are analyzed in
7 this environmental impact statement.
8 So when I said that the environmental
9 impact statement itself does not do an indepth discussion
10 or analysis of costs, I didn't mean to imply that those
11 considerations are not important in the final decision
12 that the department will make, rather than to just kind
13 of point out that the Environmental Impact Statement
14 focuses on, obviously, environmental impacts and does
15 mention summaries of costs and other types of
16 programmatic considerations for the information of the --
17 of the reader, and to explain a little bit about the
18 relative merits of the various alternatives. I just
19 wanted to point that out.
20 Okay. Anything else? If we are winding
21 down, I would entertain the suggestion to take another
22 break and -- yes, Tom?
23 MR. SWITLIK: Yes. Tom Switlik, free
24 agent. I want to back up the gentlemen here saying that
31 25 the present things are safer, reliable and they perform

1 properly. That's assuming that they are getting periodic
31 2 maintenance, like replacing the batteries or tires, and
3 the main thing that people need to understand is that
31 4 they go into their -- as long as they are in their shelf
5 life or life cycle, that's a good assumption.
6 Now, if you're trying to project 30, 40
7 years after they are designed, that's why you are at a
8 higher risk and start doing something. So that is a good
9 assumption. Right now they do teardowns. It costs a lot
10 of monies to keep these things because it's not sitting
11 there like a -- it's relatively inert. They are designed
12 for 30 or 40 years, but it might be 100 years. But the
13 thing about radioactive stuff, you are putting out the
14 heat that could be tearing up rubber and plastics and all
15 that sort of thing, and it makes it really hard to try
16 predict what's going to happen.
17 MS. WEBB: Yes, you're right. Thanks.
18 Yes, Morrie?
19 MR. PONGRATZ: My name is Morrie Pongratz.
20 I am a member of the Los Alamos County Council, and I
21 I was here this afternoon and made a brief statement,
22 after I left, it occurred to me that one of the concerns
23 I have about a containment vessel, my job at the
32 24 laboratory is involving treaty verification and making
25 sure that people aren't detonating weapons in the

32

clandestine modes, and I think that you should seriously look at the CTB implications and the nonproliferation treaty implications of admittedly tested weapons, like things behind something that I can't see in to. I -- I think that is a very serious impediment to disarmament treaties to be doing that.

MS. WEBB: Thank you. And would you like to clarify for us, Morrie, are you speaking tonight --

MR. PONGRATZ: That time I probably was speaking not as a county councilor.

MR. McCORKLE: I have a question, Morrie. Would you be willing, under that scenario, to provide some sort of auditing capability to get to see it before it goes behind the vessel that you can't see?

MR. PONGRATZ: Those things are state department things, and I play a little bit in that game, and it very quickly gets out of the realm -- rationale and into the realm of almost religious organizations, and they have great pomp and circumstance, so I don't know.

MS. WEBB: Thank you for explaining the state department.

MR. McCORKLE: Use see-through containment vessels.

MS. WEBB: Actually next door Mike has a model that looks like it's out of tupperware, sort of a

model of a modular containment vessel. Does anybody else have any comments for us tonight, remarks that you would like to make for the formal public record? It's a little bit after 8:30. This meeting was called to continue until 9:00. We will be here until 9:00, and if we have people at 9:00 who want to speak to us, we will reconvene. Until that time, then, it being 8:35, we will take a break. Again, I invite you to look at the information displays, take a look at the sheets that are on the board of this afternoon's session and this evening's session, and particularly if you came in late, and I appreciate very much all of you taking the time to be here tonight.

(Break taken at 8:35 p.m.)

MS. WEBB: All right. It's now 9:05. We said we would reconvene at 9:00. I do not see anybody else that wants to say anything to us tonight. So seeing no one step forward, we will now adjourn for the evening. We will have our next session tomorrow afternoon in Santa Fe starting at 2:00. Thank you very much and good night.

(Hearing adjourned at 9:05 p.m.)

STATE OF NEW MEXICO)

COUNTY OF BERNALILLO)

I, IRENE DELGADO, New Mexico CCR 253, DO HEREBY CERTIFY that I did report in stenographic shorthand the foregoing proceeding as set forth herein; that the foregoing pages are a true and correct transcript of my stenographic notes and were reduced to typewritten transcript through Computer-Aided Transcription.

I FURTHER CERTIFY that I am neither employed by nor related to any of the parties or attorneys in this case, and that I have no interest in the final disposition of this case in any court; that on the date I reported these proceedings, I was a New Mexico Certified Court Reporter.

IRENE DELGADO, NM CCR 253
Notary Public Expires: 5-1-96

Transcript 3: Comment Code 45
Santa Fe Public Hearing – Afternoon Session

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SANTA FE PUBLIC HEARING
for the
DRAFT ENVIRONMENTAL IMPACT STATEMENT
DUAL AXIS RADIOGRAPHIC HYDRODYNAMIC TEST FACILITY

THURSDAY, JUNE 1, 1995
2:17 P.M.
HIGH MESA INN
3347 Cerrillos Road
Santa Fe, New Mexico

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1 MS. WEBB: Good afternoon. Good
2 afternoon. My name is Diana Webb. I am with the
3 Department of Energy, Los Alamos area office. This is
4 the Santa Fe afternoon session of the public hearing for
5 the DARHT draft EIS in the High Mesa Inn. DARHT stands
6 for dual axis radiographic hydrodynamic test facility.
7 With me today are Bob Day, who is the director
8 of the Dynamic Experimentation Division of the Los Alamos
9 Laboratory, and Jas Mercer-Smith, who is the deputy
10 programs director for the Nuclear Weapons Technology
11 Program. We also have Irene Delgado. Irene is our
12 stenographer who will be making the verbatim transcript
13 of our meeting today. We have a scribe, Tom Alexander.
14 Tom will be capturing your comments in summary form, and
15 we will be putting them around so you can see, if you can
16 come in later, or for people who come in later to see
17 whose comments were made this afternoon.
18 We are here today to listen to your
19 comments on the draft Environmental Impact Statement for
20 DARHT. We are interested in the comments regarding
21 adequacy, the accuracy of the analysis in that document,
22 and any other comments you might want to make regarding
23 this process, these public meetings, or the DARHT program
24 in general.
25 Our format today consists of three

1 separate areas. This is our round-table discussion area.
2 As you can see, this is a round table, it's not quite
3 round. This is a round-table discussion area. This is a
4 formal proceeding here, and like I said, Irene is making
5 a verbatim transcript, and that will serve as the formal
6 record of this portion of the meeting.
7 In a few moments, feel free to come
8 forward, sit at the table with us, give us your comments.
9 We are flexible. We can either sit here and listen as
10 you provide spoken or written comments to us; we will be
11 happy to answer questions the best we can, or entertain
12 an open discussion amongst you, the members of the
13 public.
14 On the other side of this partition, this
15 gray partition, is an information area. We have a lot of
16 displays regarding the DARHT project, the alternatives
17 that we are analyzing, Environmental Impact Statement,
18 and other information pertaining to Los Alamos National
19 Laboratory and various aspects of this project. Out in
20 the hall, we have, besides the cookies and ice tea and
21 coffee that most of you have already discovered, we have
22 a table that has information handouts, and we have
23 another table that has information that has been provided
24 for alternative points of view. You might be interested
25 in looking at that information also during the break.

1 We do have some evaluation forms, if you
2 care to, we would be very interested in your ideas on
3 whether or not you like this type of meeting or your
4 suggestions, comments on how we can make it better. We
5 also have, kind of across the lobby, a separate room I'll
6 call the quiet room -- I believe it says "Comments Room"
7 on the door -- where there is a tape recorder. There are
8 forms, if any of you would like to either give a comment
9 to us in a separate setting than this room, feel free to
10 go in there. That material also will be made part of the
11 formal public record of this process.
12 While we encourage you to ask questions of
13 our folks in the information room, I do want to point
14 out, however, that that is an informal discussion and
15 that those comments are not being recorded and will not
16 be made part of the record.
17 The Department of Energy has proposed to
18 provide enhanced high-resolution radiographic capability
19 to perform hydrodynamic tests and dynamic experiments in
20 support of the department's historical mission and
21 near-term stewardship of the nuclear weapon stockpile.
22 The Department of Energy's preferred
23 approach would be to complete and operate the DARHT
24 facility at Los Alamos National Laboratory. An
25 Environmental Impact Statement provides a comparative

1 analysis of the environmental impact of the, in this
2 case, the preferred alternative and the other
3 alternatives analyzed in that document.
4 The DARHT EIS analyzes six alternatives.
5 The no action alternative, which is the status quo. That
6 serves as a basis for comparison for all other
7 alternatives or all other impact analyses. We look at a
8 comparison of what would happen if we went forward with
9 the DARHT preferred alternative or one of the other
10 alternatives and weigh that against what would happen if
11 we did not -- if we maintain the status quo of the way we
12 run the program today.
13 Under the no action alternatives analyzed
14 in the DARHT EIS, we would continue to use the PHERMEX
15 facility at Los Alamos National Laboratory, and we would
16 not complete the construction of the DARHT facility for
17 use as a hydrodynamic test facility. The preferred
18 alternative, as I have already mentioned, would be to
19 complete the DARHT construction and operate the facility
20 to provide the enhanced high resolution radiographic
21 capability that we have proposed to acquire.
22 DOE may delay operation of the second axis
23 of that facility until after the accelerator and X-ray
24 equipment in the first axis is tested and proven. We
25 have looked at four other operational -- alternatives in

1 the DARHT EIS. Upgrade PHERMEX, would be an alternative
2 where we would not complete the construction of the DARHT
3 facility for use as a radiographic hydrodynamic test
4 facility. It would be completed for our uses. We would
5 enlarge the existing PHERMEX facility beyond its current
6 small single axis to be larger and to provide the dual
7 axis capability and the enhanced high-resolution
8 radiographic equipment that we would put on -- under
9 DARHT, in the preferred alternative.
10 Under the enhanced containment
11 alternative, the facility would conduct its operations in
12 a very similar manner to the preferred alternative except
13 we would use containment for most or all of the
14 experiments that took place. We have looked at two
15 options. We have looked at a building, a containment
16 building, in which case, all experiments would take place
17 inside in containment buildings and we have looked at a
18 containment vessel.
19 At this time, the department does conduct
20 some experiments inside a vessel. Under this
21 alternative, we would conduct most experiments inside a
22 vessel. Under the plutonium exclusion alternative, we
23 would conduct essentially the same operations as under
24 the preferred alternative, but we would not conduct any
25 experiments involving plutonium at the DARHT facility.

1 However, if the department does foresee a need to conduct
2 dynamic experiments involving plutonium, these would be
3 conducted at PHERMEX, our other facility.
4 The sixth alternative is a single axis
5 alternative. Under that alternative, the department
6 would conduct its operation very much under the same
7 alternative but only one of the two axes of DARHT would
8 be completed for use in hydrodynamic testing. The other
9 accelerator hall would be completed for other uses.
10 All other alternatives examine the
11 continued use of the flash X-ray facility at our sister
12 laboratory Lawrence Livermore in California. Under all
13 alternatives, the department foresees that dynamic
14 experiments involving plutonium would be conducted and
15 hydrodynamic tests would be continued. Under all
16 alternatives, alternatives involving research, waste
17 management, security, maintenance, environmental
18 monitoring, and other related support functions, would
19 continue.
20 And under all alternatives, eventually
21 both the PHERMEX and DARHT facility would be
22 decontaminated and decommissioned. We are in about the
23 middle of the steps in the EIS process. We started out
24 with a Notice of Intent in November. We had a public
25 scoping period in December and January. Some of you

1 attended the public scoping meetings with us the first
2 week of December.
3 Our implementation plan, the document of
4 that scoping period, was issued in January. The draft
5 Environmental Impact Statement has been issued for public
6 review and comment in May. We are now, of course, in the
7 comment period for that draft. The formal comment period
8 will run until June 26; however, we will continue to
9 accept late comments as long as we are able.
10 After we receive and analyze the comments
11 from you and others that we get during this comment
12 period, we will prepare the final Environmental Impact
13 Statement. No sooner than 30 days after the final
14 Environmental Impact Statement, we would issue a Record
15 of Decision. The Record of Decision would serve as the
16 formal record of the decision that the Department of
17 Energy would make based on this analysis and other
18 decision factors as to whether or not to continue to
19 construct the DARHT facility and operate it, or whether
20 or not to take one of the other courses of action that
21 has been finalized.
22 At the same time of the Record of
23 Decision, we would issue a Mitigation Action Plan. That
24 is a brief document that explains the mitigation measures
25 that we would take to lessen any adverse impacts that we

1 have identified during this process.
2 This photograph over here shows what the
3 DARHT facility looks like today. The construction has
4 been shut down. This photograph is looking essentially
5 due north. This east accelerator hall is the hall that,
6 if we decide to proceed with DARHT, would be the first
7 hall to be completed, and would be the first hall to have
8 accelerators and X-ray equipment installed. In the event
9 that the department would decide to go forward with the
10 single-axis alternative, it would be the east accelerator
11 hall that would be the hydrodynamic test facility.
12 This is a map, a generalized -- actually,
13 it's not very general at all; it's fairly specific.
14 That's a map of the Los Alamos townsite. This is the
15 White Rock townsite. This is the site of the DARHT
16 facility, and right adjacent to it is the site of the
17 PHERMEX facility. They are located in Technical Area 15
18 within the explosive test area of the laboratory.
19 This is a summary of the results of the
20 environmental analysis in the -- in the EIS. As I
21 mentioned before, there is a comparative analysis. The
22 first column shows the no action alternative, what would
23 happen -- what we would expect to happen if we continue
24 to operate PHERMEX at the Los Alamos area -- Los Alamos
25 National Laboratory. We have compared the impact of the

1 other five alternatives to that.
2 If you look at that closely, you can see
3 that it does have different colors of type. The black
4 type represents those impacts for which we do not foresee
5 a change across the six alternatives that were analyzed.
6 The red type indicates where we see that
7 there would be a greater adverse impact that would occur
8 under one of those alternatives when compared with the no
9 action alternative. And the green type indicates those
10 aspects of the environment where we would expect a
11 greater beneficial impact than those that would occur
12 under the no action alternative.
13 This is the DARHT EIS. If any of you have
14 not received a copy or would like a copy, please leave
15 your name and address with the staff at the front desk.
16 In addition to this unclassified document, the department
17 did prepare a classified supplement that includes
18 additional information of analyses. The department has
19 prepared an unclassified summary of the impacts that are
20 contained or identified through that classified
21 analysis. Copies of that unclassified summary are
22 available outside on the information table.
23 The department has placed quite a bit of
24 information in Los Alamos Community Public Reading Room.
25 In addition to the 200 or so references that are

1 mentioned in the draft EIS, we have included at least 60
2 other documents in the public reading room. A list of
3 those documents are also included in the information
4 that's contained on the table outside.
5 Following my remarks, which are going to
6 end here very shortly, if you would like, we could have
7 Bob Day give a five-minute overview of the programmatic
8 aspects of the hydrodynamic testing program that's
9 conducted at Los Alamos National Laboratory. If you
10 would prefer not to take the time to do that, we will
11 defer to your wishes. As I said before, this is your
12 meeting and we will do what you want to do.
13 If there are any elected officials that
14 represent the state, tribal governments, or local
15 governments, that are speaking on behalf of the
16 constituencies, I would invite those people to speak
17 first after we discuss whether or not Bob is going to do
18 his talk.
19 What is the consensus, then? I'm asking
20 you, would you like to hear a short overview from Bob
21 regarding the hydrodynamic testing program? I see one
22 yes and one no. How about then that we pass that at this
23 time, and if we still want to hear that later at this
24 meeting, we can go ahead and do that later.
25 Then I would ask, are there any elected

1 officials or people that are representing the state,
2 Indian tribal governments, or municipal or local
3 governments. And I see no one. We will then open the
4 floor then to the public to come forward and make your
5 comments.
6 Since this is a recorded proceeding, I
7 would ask that you give your name for the record and, if
8 necessary, spell it for Irene. Irene will also indicate
9 for you if she's having a hard time hearing you or if you
10 need to speak louder. Again, these chairs at the table
11 are for you to sit in. They don't have to remain empty.
12 Feel free to join us up here. And Marilyn, you asked if
13 you could speak first because --
14 MS. HUFF: I don't have to speak first; I
15 have to speak pretty soon.
16 MS. WEBB: Marilyn says she would like to
17 speak pretty soon. Other than that, I'm willing to find
18 out who would like to talk first. Greg, would you like
19 to talk first?
20 MR. MELLO: I'm very ill-prepared, but --
21 MS. WEBB: I doubt that.
22 MR. MELLO: No, please don't doubt.
23 MS. WEBB: Please feel free to join us at
24 the table. Other people can sit here besides Bob and
25 Greg. And if you would be so kind as to mention your

1 name for Irene.
2 MR. MELLO: My name is Greg Mello, Los
3 Alamos Study Group. And thanks for all the work you guys
4 have done and I'm not as prepared. We were really spread
5 thin, and it's kind of senseless for me to come so
6 ill-prepared as I am considering all the preparation you
7 have done.
8 MS. WEBB: We understand you are busy and
9 appreciate your taking the time to come.
10 MR. MELLO: My questions revolve around
11 the purpose and need for the facility. Reading the
12 purpose and need chapter of the draft EIS, what it looks
13 like from this reader is that there are some fairly vague
14 statements used to paint a picture of the necessity of
15 this project without really making a very convincing
16 case. It's our experience in working on these issues
17 that -- that vague statements are repeated within the
18 laboratory and Department of Energy and other contractors
19 until they become -- they gain credibility and weight by
20 repetition rather than by accuracy, and it seems like
21 this has happened here.
22 There's just a bald statement DOE needs to
23 improve its hydrodynamic testing capability as soon as
24 possible. This is not clear. The statements that
25 follow; "uncertainty in the performance of the enduring

1 stockpile will continue to increase with the passage of
2 time." Well, that's certainly talk-logical. It doesn't
3 point to any for DARHT, exactly.
4 Yes, DOE no longer uses nuclear testing,
5 although that's being discussed again right now. There's
6 a confusion throughout this language between the
7 maintenance of existing weapons or kind of a curatorship
8 program and the kind of build-down options that the
9 department has been looking at in the congressional
10 budget requests, and in our documents, such as this
11 interagency draft stockpile stewardship program plan that
12 I would like to submit to the record.
13 And in a -- there are a lot of weapon
14 upgrades planned. This is a February 27th document which
15 contains statements like discuss B-52 replacement.
16 That's a nine megaton city-busting bomb. There's
17 statements in here about finishing a Phase II study for a
18 Navy warhead for a high-powered radio frequency warhead.
19 There's some modifications to various stockpile weapons
20 B-6 -- B-61s.
21 We usually hear the purpose and need for
22 these facilities is related to the existing stockpile,
23 but when you actually look at the plans, that it doesn't
24 look like the existing stockpile at all. It looks like a
25 continual, gradual improvement or modification. There's

1 reference here to retrofitting of fire resistant pits
2 that could be done transparently without nuclear
3 testing.
4 There's reference here to the concept of
5 self-aware weapons systems and the use of hydrodynamic
6 testing facilities, DARHT, to retrofit pits with sensors
7 that would monitor the aging of the pits and provide, as
8 it says here, a dynamic real time analysis of each
9 weapon's state of health. While the state of the health
10 of the country falls to pieces, we will be able to have
11 real time, instantaneous analysis of the state of health
12 of our nuclear weapons, I guess.
13 This is a big program outlined in this
14 document. It looks like actually billions of dollars of
15 work. And it doesn't comport with what is put in the
16 DARHT draft EIS. The use of the FXR facility, from our
17 view, seems completely adequate to solve the curatorship
18 problems of the enduring stockpile.
19 The use of radiography facilities, dynamic
20 radiography, generally seems greatly overstated as a tool
21 for dealing with aging problems and with safety problems.
22 As numerous high-level officials have testified to
23 Congress, there are no safety or reliability problems in
24 the current arsenal. In the long run, problems you
25 expected the way that this is -- this is a copy of the

1 Sandia Stockpile Life Study, which can also enter into
2 the record. These problems have been solved in the past
3 relatively simply. There haven't been a lot of problems
4 with pits. Most of the problems are in the nonnuclear
5 components, and we don't see any real impediments to
6 simply remanufacturing pits to the original
7 specifications as needed, if problems are detected
8 through metallurgical examination and ordinary stockpile
9 surveillance.
10 The upshot of this is that, it's not clear
11 that DARHT needs to be pushed rapidly as a project,
12 especially given that its technology is kind of perhaps
13 even a little old now, given that its order in the -- in
14 the grand scheme of NEPA analysis is wrong; that is to
15 say, as an integral part of the stockpile stewardship
16 program, the direction of the stockpile stewardship
17 program, its scope, its philosophy, ought to be
18 determined before the facilities that would implement
19 those philosophies are built.
20 There are some -- I'm not sure that that
21 last thing was a sentence. If not, please bear with
22 me. -- FXR, there may have been an experiment last month
23 at the FXR. There are rumors of a significant experiment
24 last month. I would be interested in any comments you
25 might have about this, or if that gave a pretty high-

8 1 resolution shot. The completely unchecked source I had
2 was as good as DARHT. There are people, you know Seymour
3 Sack, Jim, who does not think that DARHT is a good idea,
9 4 particularly, and these are very qualified people, and
5 Seymour is highly regarded in Livermore.
6 MR. MERCER-SMITH: And Los Alamos, but
7 then again he never had a nice thing to say about Los
8 Alamos.
9 MR. MELLO: To conclude these comments, I
10 would be very interested in your responses. I want to
11 give to Jim some draft papers on stockpile stewardship.
12 MR. MERCER-SMITH: I have a copy.
13 MS. WEBB: If you are submitting them for
14 the record, why don't you just hand them over to me and
15 then Jas can look at those.
16 MR. MERCER-SMITH: I have a copy.
17 MS. WEBB: We will make a copy. And Greg,
18 you asked a direct question to Bob before you -- before
19 he answers that, you have given us an interagency
20 stockpile stewardship program plan. I would just like to
21 point out also that the Department of Energy has just
22 completed a stockpile stewardship and management plan.
23 Copies of this are available to anyone who wants them
24 outside on our information table. And having said that,
25 then I will --

1 MR. MELLO: One other of the questions
2 that I would also like to ask before it's forgotten; can
10 3 someone comment on the draft interagency stockpile
4 stewardship program?
5 MS. WEBB: Bob, can you do that, or would
6 that be more appropriate for Jas?
7 MR. MERCER-SMITH: I'm not sure if I read
8 this. Let me see if I --
9 MS. WEBB: All right. Well, you take a
10 look at this and Bob can go back to your first question
11 which has to do with this test last week with FXR.
12 MR. MELLO: Last month, supposedly.
13 MR. DAY: FXR, for those who are not in
14 the know, FXR stands for the flash X-ray radiographic
15 machine. It's a machine that exists at Livermore. It's
16 site 300 -- which is another location where hydrodynamic
17 testing is done. There are actually two machines that
18 are presently being used, and this one and PHERMEX, which
19 is the machine we use at Los Alamos. It presently has
20 the capability of something under a couple of millimeters
21 in resolution and something approaching a couple of
22 hundred rads in radiation.
23 The capability of FXR is essentially the
24 same in terms of resolution and a little bit higher in
25 terms of total dose, maybe up to 300 rads. And those two

1 parameters are really important in terms of our ability
2 to understand these devices and understand the kinds of
3 questions we are after, because what we're trying to do
4 is see deep into thick material and take X-rays of that
5 material, and we have to look at finer detail. And
6 actually, if you are interested, you go look at some
7 pictures on the back wall over there, and what they will
8 do -- it's over in the information area behind that
9 wall -- what they will do is sort of give you a visual
10 representation of what the different capabilities of the
11 machines are, a real life picture.
12 And the present PHERMEX capability is
13 fuzzy. FXR capability is comparable. The doses from the
14 two machines are getting comparable now as well because
15 these machines undergo evolution. What we need is a
16 revolution; we need much greater information. FXR is
17 undergoing an upgrade program which is starting, and
18 that's going to improve the resolution of that machine
19 up -- well, we hope it will improve the resolution of
20 that machine to maybe one and a half millimeters, so it
21 will be a little bit better than the pictures on the back
22 wall. The dose will stay approximately the same. We
23 need to get the resolution down closer to a millimeter.
24 That's the technological goal we have for
25 DARHT, and if you look at those pictures, you will see so

1 much finer detail you can see, as a matter of fact,
2 compared to where we are at the present time. Each and
3 every shot we do with DARHT will have ten times more
4 information than we get at the present time and much
5 greater detail. The FXR upgrade is an important
6 technological demonstration. It's going to help us in
7 the very -- in terms of gaining information, just like
8 the upgrade in PHERMEX was helping us.
9 In PHERMEX, we're doing two things. We
10 are doing a project and have done a project to help
11 improve the dose. That's so that we can get more
12 information through thicker material. We have taken that
13 dose out of PHERMEX from about 100 Rs to 200 Rs. A lot
14 of good work I mean or the basis of good people working
15 on this technological issue. We are also going to be
16 able to get two pictures out of PHERMEX, so we can get
17 twice as much information out of one of those -- out of
18 that machine, and that will help us in terms of
19 understanding the time evolution.
20 It's also a technology that may be applied
21 at FXR in a different way. Those kinds of technologies
22 can also be applied at DARHT, again, to be able to try to
23 get more information from this investment that we're all
24 making, and ensuring that major part of our nuclear
25 weapons capability -- this major part of our national

1 defense -- will perform as expected without underground
2 nuclear tests, because that's one of the big changes.
3 Always in the past when we wanted to know
4 about a nuclear device, when we wanted to know whether it
5 was a safe device or reliable device, or whether we
6 wanted to know if they function properly, we took them to
7 Nevada and we proved them. Now we can't do that, so what
8 we're trying to do is use the very best possible other
9 means we have, and these kinds of capabilities, being one
10 of the dominant ones, to try to get information to tell
11 us what we used to be able to find out through the
12 testing. So it is a major step in helping to support the
13 national goal, the stated national goal, of comprehensive
14 test ban probably sometime next year.
15 MS. WEBB: Do you want to add to that,
16 Jas?
17 MR. MERCER-SMITH: No.
18 MS. WEBB: And Greg also asked if either
19 one of you wanted to comment on the interagency stockpile
20 stewardship program. This is a February 27 draft, and
21 Greg asked if anyone could tell him about what the
22 current status was.
23 MR. MERCER-SMITH: I hadn't read that
24 particular draft. I've seen pieces that went into it
25 before, but that specific draft, I haven't read before

1 and haven't read now carefully. No, I don't know the
2 status.
3 MS. WEBB: Bob, do you have anything to
4 say on that?
5 MR. DAY: I have one underlying comment,
6 and that is, at the present time, the United States is
7 not developing any nuclear weapons. This is a matter of
8 national policy, and it certainly is a matter of
9 actuality at Los Alamos; developing and developing and
10 putting into the stockpile. The Department of Defense
11 asks us questions about nuclear technology. They ask us
12 questions about present devices and what they can do,
13 and ask us questions about devices that are retiring and
14 how -- and how the missions that they have can be
15 replaced. They ask us questions about what effect
16 various requirements that they have might have on future
17 shot.
18 We study those questions in great detail,
19 and some of the issues that Greg refers to are studies
20 that were done. They are not commitments to new nuclear
21 weapons. They are not developing nuclear weapons. They
22 are the Department of Defense and laboratories in support
23 of that mission, doing what is expected of us.
24 MS. WEBB: Okay. Thanks, Bob. I will
25 just note for the record that Greg -- we get that one,

1 Bob. I will note for the record that Greg has submitted
2 to us five documents -- I'm sorry -- five documents and
3 we will enter those. You have a lot of other paper
4 there. Do you want the rest of that to be submitted
5 today for the record?
6 MR. MELLO: No. Can I ask one --
7 MS. WEBB: Sure.
8 MR. MELLO: -- follow-up question? Was
9 the Phase II study completed in March on the high-
10 powered radio frequency weapon at Los Alamos and/or
11 Livermore?
12 MR. DAY: I will defer that one to Jas
13 because that's more in his area of expertise. We have
14 been looking at it.
15 MR. MERCER-SMITH: This is a holdover case
16 that study was started before the end of testing and was
17 continued through as that was followed up as long as we
18 had the sources. I don't know that it was completed in
19 March.
20 MR. MELLO: When was the scheduled
21 complete date?
22 MR. MERCER-SMITH: I don't know. It was a
23 two-and-a-half-year study. I mean, when we went into the
24 study, it was planned to be two and a half years, and I
25 don't recall the starting date.

1 MR. DAY: There is an underlying issue
2 here that is really important, and that is, the
3 laboratories don't -- nuclear weapons are an important
4 part of the nation's defense in this country, and the
5 laboratory has a series of jobs in support of that
6 mission, and that defense posture and this process of
7 better acting with the Department of Defense in terms of
8 how the present systems behave, what the issues are with
9 the present systems, and how those kinds of capabilities
10 impact various missions that they have, is one of the
11 functions that we perform for the government.
12 We also look at issues associated with
13 foreign technology, counterproliferation, technology
14 potential, that potential proliferation could be
15 building. They could be issues associated with
16 proliferation devices that might be found to be unsafe.
17 There's a whole series of questions like that that we do
18 deal with, and actually, we do some experimentation to
19 try to understand, especially in the proliferation and
20 counterproliferation, experimentation associated with how
21 technology might be disabled. Those technologies and
22 what they might mean to the security of this country are
23 really important parts of things to test. Some of the
24 issues and questions that he referred to are definitely
25 in support of that kind of thing.

1 MS. WEBB: Okay. Anything else, Greg?
2 MR. MELLO: I shouldn't take up much
3 time.
4 MS. WEBB: You can take as much time as
5 you want, but you may want to take more time later.
6 Thank you. Who would like to speak next?
7 Marilyn, would you like to speak now?
8 MS. HUFF: I have a whole lot of respect
9 for the scientific method as a way of ferreting out, you
10 know, what is true from what is not true. And my
11 understanding of it is that one of its purposes is to
12 weed out the subjectivity from the viewing of data so
13 that personal opinion and things like that can't really
14 obtrude them, and what we really want to know is the
15 object of truth, and it posits if there is such a thing
16 as objective truth, and nonetheless, I do see a few
17 thought -- flaws in this.
18 One is that, in the formulation of a
19 hypothesis, you are already making a subjective
20 projection of what is real, and the other is that
21 because -- because you placed so much faith in the
22 scientific method and the fact that it is actually
23 operating to weed out the subjectivity, you make some
24 kind of false assumption that subjectivity can be weeded
25 out. And I think this operates in two ways; subjectivity

1 intrudes itself through human ambition and greed and also
2 through prevailing modes of thought; for instance, when
3 people in general believed that the world was flat,
4 science came up with a theory of the movements of planets
5 that was in fact entirely not true until the premises
6 were changed, so that everything is based on current
7 premises and a lot of them are current perceived
8 political realities.
9 Now what has happened in Los Alamos is
10 that, to my mind -- I don't think I'm being cynical --
11 lies have been told, and this, I will state, a purpose of
12 science has been corrupted in service to things like that
13 the need for funds or the desire for funds or the -- the
14 ambition of particular people -- I think the best example
15 of this in our world is the alteration of data, when
16 people were trying to get funding for Star Wars, was
17 blatant, and I'm really surprised it didn't become a
18 major scandal, but it didn't because it was inconvenient,
19 I think, for political reality. I happen to know about
20 this because I was serving as an editor for John Manley
21 at the time.
22 John Manley, I think most of you know,
23 except maybe in the audience, was second in command to
24 Oppenheimer during the Manhattan Project, and he was very
25 concerned about Star Wars at this time, and I think

1 really upset because he was really, like, devoted to pure
2 science.
3 What John Manley said at the time, I think
4 that pertains to this, is that he really rather scoffed
5 at the idea that nuclear underground testing was
6 necessary for the stewardship of the nuclear stockpile.
7 He said, there isn't that much that needs to be known
8 about bombs that are already made, and that he did not
9 believe that that was what the purpose of a nuclear
10 underground testing was, was that it was really for war
11 in order to develop new nuclear devices, especially
12 nuclear trigger devices for Star Wars.
13 Now, I bring all of this to bear on the
14 Environmental Impact Statement of DARHT, and I begin to
15 wonder, also, then about this purpose, mission of DARHT,
16 which is once again the stewardship of a nuclear weapons
17 stockpile and cannot believe that this is an adequate
18 justification for the building of DARHT, you know, even
19 in my common sense way of thinking about. It, and this
20 is a very arcane document and isn't really accessible to
21 public understanding, and I'm wondering, you know, why
22 couldn't it have been made more accessible? Except I
23 think there is some kind of -- I'm not sure -- deliberate
24 or subconscious attempt to intimidate people from making
25 public comments because, you know, we're not scientists.

1 We don't know, but I don't believe that
2 what, you know, however many thousands of thousands of
3 bombs we have in our arsenal, that we need to devote, you
4 know, millions of dollars to a billion that will make
5 sure that they all go boom. It all defies common sense
6 to me, and I don't believe that other members of the
7 community of nations are going to believe that, either.
8 They're going to see DARHT not as something that is going
9 to promote comprehensive test ban or promote a nuclear
10 nonproliferation treaty, they are going to see it as
11 United States arrogantly and hypocritically continuing
12 with nuclear development at a time when they're being
13 asked to abstain. I don't see how that, in any way, is
14 going to help us close down the nuclear establishment.
15 So I distrust this as -- as a
16 justification for DARHT. And in that context, I see all
17 of these alternatives that you're proposing as based on a
18 prevailing premise that may be a false one, which is that
19 we should continue to maintain this nuclear arsenal, that
20 we should continue with this and that, I think promotes
21 an armory status even more dangerous than a bipolar
22 because it's an arms race that can get out of hand, so
23 that you know it wouldn't necessarily be a truck parked
24 in front of a federal building in Oklahoma City, someone
25 can come with a suitcase and lay it down and the building

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1 alternative because of the present condition of the
23 2 PHERMEX facility which needs reinstrumentation and
3 renovation.
4 DARHT is currently the most cost effective
5 and prudent way to implement the nuclear policies of the
6 United States. However, the draft EIS assumes that the
7 readers know all of this information about DARHT.
8 Rewrite the draft EIS to make clear what DARHT's mission
25 9 is, how DARHT will be used, what peaceful nonweapon uses
10 are possible. Justify the enhanced capability. Explain
11 the environmental impacts and assumptions used in terms
26 12 which can be grasped by the educated but uninitiated
13 reader.
14 While I'm sure that initial cost, not
15 life-cycle cost, was a major factor when the preferred
16 alternative was chosen, the fact that that EIS is being
17 prepared, emphasizes changed circumstances since the
18 1980s. One of the containment alternatives is probably
24 19 the more cost effective when D and D costs are considered
20 on a life-cycle cost basis. Thank you.
21 MS. WEBB: Thank you. If you would like,
22 you may submit that to me for the record. Thank you.
23 All right. Yes, Richard, please?
24 MR. DEYO: Thank you.
25 MS. WEBB: Thank you, Richard.

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1 MR. DEYO: I should say, I'm going to
2 guess, perhaps, maybe that this might be more effective
3 in stockpile stewardship management and all this other
4 stuff, but some time ago, you know, I was reading this
5 little thing about the -- there's a bunch of statements
27 6 in here from Clinton and Congress and everybody that seem
7 to me to have been taken out of context. And it's the
8 sort of thing -- well, history sort of thing. They
9 mention in this letter that's all there, too.
10 It's, like, I happen to be very critical
11 of science, as you know, psychiatry. I mean, I learned
12 about the scientists that wanted to study concentration
13 camp conditions and, you know, in this country, and beat
14 his own, beat people. And then I learned about Niels
15 Bohr and how he would testify, and not to -- it's like my
16 history of the atomic bomb. Mr. Clinton makes a lot of
17 statements about the history of the atomic bomb, too,
18 he -- I mean, he wasn't even born when they did it, and
19 neither was I.
20 I wrote this one thing that I remember
21 reading, and I can't even remember which one of these DOE
22 hearings it was in, which the former mayor of Albuquerque
23 spoke after me and after he got up. So I would like to
24 repeat that, what I had said, and maybe some of what he
25 said to me afterwards. He said it to the record, too,

Page

1 but I basically had said that -- that the atomic bomb was
2 not only ineffective against this, it was counter-
3 productive, that those people back then who tested and
4 deployed, criticized nuclear weapons implicitly, and in
5 not being deliberate, they gave weight to Hitler's schem
6 for global conquest and even warned the Pacific from it
7 because they didn't want to be called all that they
8 really are or have to answer for all the mess that they
9 swindled. I don't know if that's true or not. That's
10 what I guess would be called a scientific theory, a
11 conjecture, if you will.
12 I -- I very much believe in it, however,
13 because -- and there's not enough in this thing --
14 there's a lot of talk in here about foreign countries,
15 nonproliferation and everything. I don't think -- I
16 think this country -- for example, nuclear policies, we
17 should probably be looking at two or three countries, and
18 I would almost list them. We should be looking at Japan.
19 We should be looking at Germany and Iraq and maybe four
20 or five other countries and see what their policies are
21 for these sorts of things, whether they are even serious
22 about this sort of stuff, because I don't think that most
23 of the countries in the world want, need, ever plan to --
24 I mean, I don't know.
25 Things always change, you know. I heard

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1 Daniel Elsburg one time sit back and say, there's no
2 country in the world today that would, from a military
3 stand point alone, would build a nuclear arsenal as large
4 as the French are today. Okay? And you know the French
5 have got a lot of nuclear weapons. Most of the other
6 countries in the world that, if they have them, they are
7 not going to use them. You have here Clinton saying
8 missile systems, they are not going to use missile
9 systems. They are going to make nuclear bombs.
10 They will probably rent a room on Wall
11 Street in New York or in Chicago or a place like that,
12 and if they wanted to declare war on this country and
13 they would take it and put it in their car and drive it
14 to some place and set it off in the 300 largest cities in
15 this country, and that would totally ruin this country.
16 It would ruin any country.
17 I hold nothing against those scientists
18 that -- those and soldiers or scientists that dropped
19 bomb on Japan. I think they believed in what they were
20 doing. I think they were crazy to do it. I think Japan
21 was going to surrender, anyway. I don't think Germany --
22 I mean, I'm certain Germany didn't try to build a bomb.
23 I don't think that the conditions in Japan or Germany,
24 for example -- Japan is a country -- Japanese is a
25 language that has no past tense for verbs. I think after

they dropped the bombs on Pearl Harbor, they were ready to surrender, but this country got so angry and so vengeance full of it that we did bomb a lot of people in Japan.

The Japanese made a lot of mistakes. I think they were willing to go live with them. I don't know. That's probably not -- I don't know if that's true in Japan at that time or not. I know they're talking building nuclear bombs there. I think if they were -- if they are doing that, they're not going to do anything -- they are not going to give a damn whether they -- whether the bombs in this country are optimally designed.

I don't think they're going to drop a bomb anywhere. I think they already have learned from their World War II mistakes that the best way to -- to deal with the rest of the world is to trade with them. Japan was a very isolated country. It was one of the most isolated countries in the world. It was -- if foreigners went to Japan in the '30s before Perry went there, they killed them.

There are ways of other societies where they have a way of welcoming people. That way of welcoming people is that they take a spear and they throw it and come as close to your feet as it can without harming you, and you are supposed to stand there and say,

"Gee, that's nice." And actually, you are supposed to pick up it and throw it as close to their feet as you can.

I don't know, I heard it from a couple of places, someplace in the Pacific or someplace like that, but it's -- I mean, like I learned about science sitting back, and before they set off the first nuclear bomb 50 years ago, they were talking about incinerating the entire -- an it was their own world, they were giving way to Hitler for global conquest of the -- it was their own deeds that do that.

And it's like I know I have talked on a level about these things before, but I mean, it's like nowadays, traditionally, like in Japan, they would never call a machine personal or friendly. All of those alternatives are based on computers, things the folks up in Los Alamos and Livermore and University of California, you know, they are the ones that call machines personal and friendly. I don't know how they would even view that sort of mentality of calling something -- I mean -- I mean, it's like -- it's like those bombs are their babies and these machines are their babies. It's like you just -- I don't know. It makes me sick.

MS. WEBB: Thank you, Richard. Anything else? Anything else? Okay.

MR. DEYO: Well --

MS. WEBB: Thank you. All right. Who would like to speak now? Anybody? Yes, thank you, Maurice.

MR. WEISBERG: I'm Maurice Weisberg and my background has been in radiology. So I have a lot to do with use of radioactive materials and X-ray machines. Of course I didn't use accelerators. And I have been listening to these gentlemen from Los Alamos talking getting finer and finer detail and tomographic studies of the cause of these -- cause of these bombs, and this other previous gentlemen talking not being able to use a 155 millimeter camera to get better pictures of what's going on.

28 My concern, actually, is our public health, problems associated with the use of all this material. And just so I don't leave out some of these more relevant matters, I'll just read a few paragraphs of what I put down. The national labs are grasping for rationale to maintain their budget to higher real trends during the '70s. Thus they have to look for new enemies and new threats to justify the current and proposed projects which seem never ending and more expensive.

29 So now they come up with this DARHT thing, which is the centerpiece of the whole stockpile

stewardship, and they propose -- or have used uranium and depleted uranium previously, and this material will be used outdoors and will be bombarded -- bombard the cause which will contain this material, and depleted uranium and these toxic and radioactive particles will be scattered on adjacent plateaus together with heavy toxics present earlier which happen to be a carcinogenic material.

28 This Dr. Strange Love scenario gets more ghoulish since we have not ruled out the option of using plutonium 239 and plutonium 232. They use this, apparently, containment vessels on the PHERMEX, but they may elect to use it outdoors as well. In the press release put out several weeks ago, LANL explained the necessary to reduce the risk to its workers. Are we now getting a kinder and gentler DOE putting out a thousand dollars of light in all directions? This attitude change is new and commendable, and we all hope it is sustainable.

30 It's regrettable DOE did not show the same concern for plutonium workers in Rocky Flats or uranium workers in Ohio. The plutonium fires and spills at Rocky Flats were not reported to the people, but to the people of Denver, which were 16 miles downwind of the plant. It was independent researchers like Dr. Martel who did

1 rapidly reducing the bombs; reduce the number of our
2 bombs very shortly to a few hundred, and then phasing
3 them out completely by the year 2000, together with the
4 completion of a real comprehensive test ban treaty which
36 5 would not allow these explosions to occur in any of the
6 alternatives that are proposed today.
7 I will just submit that as part of the
8 record --
9 MS. WEBB: That you, Maurice.
10 MR. WEISBERG: -- what I feel about the
11 public health disaster which I think will occur if we
12 continue with the bombs. We never do -- we never explode
13 a bomb just to use all of this nuclear power, and the
14 efforts to get uranium by mining, milling, the whole
15 process from front end to back end will result in a
16 public health disaster.
17 MS. WEBB: Thank you. Do you want to
18 submit that written statement for the record, too, or are
19 you going to give us written comments later?
20 MR. WEISBERG: Oh, I can submit this for
21 the record.
22 MS. WEBB: That would be wonderful.
23 MR. WEISBERG: Probably get you a better
24 copy.
25 MS. WEBB: This is just fine, just fine.

1 Just to clarify one point, did you say that Greg said
2 something about the plutonium experiments in the past
3 were conducted in containment vessels?
4 MS. WEISBERG: That's what I understand.
5 MS. WEBB: That's -- yes, and that's what
6 we say in here, that in the past, plutonium dynamic
7 experiments were conducted always in double-walled
8 containment vessels, and those could be conducted in the
9 future and will always be conducted in double-wall
10 containment vessels.
11 MR. WEISBERG: Was there any safety
12 analysis that you know of, Greg, about this containment
13 vessel? Was there any release or displacement of
14 plutonium?
15 MR. MELLO: Dr. Everett, before, Beckner,
16 said that he could neither confirm or deny that any
17 safety analysis had ever been done.
18 MS. WEBB: Thank you. All right. Who
19 would like to speak next?
20 MS. WEBB: Irene asked if we would take a
21 short break for Irene to change her tape. Although this
22 meeting is advertised to run until 4:00, we are perfectly
23 willing to stay here later to accommodate anyone who
24 wants to speak, so we will take a ten-minute break. I
25 invite you to look at the information displays on the

1 other side of the wall.
2
3 (Break at 3:20 p.m.)
4
5 MS. WEBB: All right. It's a quarter to
6 4:00, and let's go back on the record. Again, thank you
7 for coming, and thank you for staying. I believe that
8 first we have Helen that would like to speak to us. And
9 if we can sort of keep the noise down a little bit, then
10 we can all hear a little bit better. And Helen, would
11 you like to go ahead?
12 MS. CORNELI: Yes, thank you.
13 MS. WEBB: And please state your full name
14 for Irene, our stenographer.
15 MS. CORNELI: My name is Helen Corneli. I
16 come here as a private citizen. I was mailed the EIS and
17 I thank everyone for the courtesy of providing it. I
18 have read it with careful attention, and I present
19 several pages of comments herewith. I'm not going to
20 read them all. I think some of them may have been
21 addressed here before, but I want to speak to something
22 that speaks to me very strongly and that is that the
23 illogical, illegal and impermissible order in which these
37 24 environmental reviews are taking place have been glossed
25 over. In the EIS there is a rather circular and muddy

1 statement on Page 2-11 and 12. It is based on assumed
2 needs.
38 3 There is no consideration of related
4 action in the PEIS. The implication there is that a
37 5 presidential directive exempts the lab from compliance
6 with EPA regulations. That may not be intended. The
7 implication is there, and as a citizen and taxpayer who
8 works hard to follow some hopeless rhetoric of federal
9 requirements, I object very strongly to that presumption.
10 I found no satisfactory explanation,
37 11 nothing acknowledging this violation of normal order,
12 anywhere in the EIS. Nothing is said in Chapter 6,
13 regulatory requirements; an interesting omission.
14 Obviously it may be, I can't imagine that that's a -- it
15 was not intended; it may be because of the untimely haste
16 in which the whole facility was started, before an
17 environmental study had been made.
18 The statement that the relationship of the
19 DARHT EIS to, quote, alternative means to conduct the
20 nation's stewardship programs, end quote, will be
21 analyzed in the future PEIS referred to in Chapter 3 on
22 Page 39. That statement violates all common approaches
23 that I know of as well as common sense. And one further
39 24 small point, I saw no consideration -- I don't think I
25 missed it -- of the fact of bringing bomb production to

1 part of the DARHT process, at the integrated test stand,
2 which has a very significant improvement and allows us to
3 bridge this time when we don't have nuclear testing
4 anymore. It is not a capability which can do everything
5 that we need to maintain and we would like to be able to
6 do everything for all time, and that ongoing look at the
7 technology is part of what we're doing in the -- I think
8 it was referred to the as advanced hydro capabilities.
9 The advanced hydro capability right now
10 is -- it's vapor machine. It exists in minds. It exists
11 in some design studies that are being done. It is
12 further in the future. It allows us to do better
13 reconstruction and get additional information. It would
14 allow us to provide some additional time steps because,
15 as we try to validate the devices that we have perform --
16 if the devices that we have perform like they did before
17 when we could test them underground, there will be a need
18 for additional information.
19 The need for additional information,
20 however, is with us right now. The DARHT and good
21 capability, demonstrated capability of getting much more
22 information out, up to ten times more information at
23 once, right now is needed. It's needed because of the
24 comprehensive test ban. It's needed because of changes
25 the advanced capability that an FXR would have in the

1 future would be very helpful to us as well, but that
2 which is needed is new data now.
3 MS. WEBB: Thanks. Jas, did you want to
4 add anything to that?
5 MR. MERCER-SMITH: No. I think that's a
6 good part of it, the issues that we're going to be facing
7 with the stockpile have to do with, say, things, age
8 generically, chips, gaps, cracks, corrosion, dents. Also
9 understanding that is an intrinsically harder problem
10 than you welcome, that is actually the case. If you
11 think about it terms of going out and turning the key on
12 an automobile, a brand new car is fairly reliable, you
13 can turn the key and expect it works out in the parking
14 lot. I have a 25-year-old Ford, I am always amazed when
15 I turn the key and it works. It's a very different
16 problem and we are required to assess the performance of
17 those devices and guarantee their safety and reliability
18 in the absence of other testing. Testing is equivalent
19 to turning the key. DARHT is equivalent -- we need to
20 get a chance to at least open the hood.
21 MS. WEBB: Thanks, Jas. I would like to
22 invite the gentlemen who raised his hand then to come
23 forward.
24 MR. VELARDE: My name is Archie Velarde.
25 I am here as a private citizen and I won't sit down

1 because there are only two lines. I was reading, you
2 know, where it says the proposed action DOE is
3 proposing -- this is a public policy question, you might
4 say. It says, DOE is proposing -- if I have been reading
5 the paper correctly -- the DOE is demised, especially if
6 republican-controlled congress gets its way. That means
7 that -- that means that possibly DOD will be in charge or
8 they're the ones that are going to be proposing this.
9 Now, has DOD accepted this alternative? Have they been
10 contacted? Have they been asked for their input? I -- I
11 think it's, you know, whatever you do in terms of public
12 policy and make a decision of grave importance, I think
13 usually it's deferred until the new incoming
14 administration takes over. And this is where DOD comes
15 in. I think maybe we don't want to rush too much.
16 MS. WEBB: That's an interesting point.
17 Those of us that work for the Department of Energy are
18 extremely interested in the rumors in the paper that you
19 referred to. The Department of Energy evolved in the
20 late 70s from a former departmental -- I'm sorry -- a
21 former department agency called ERDA, the Energy Research
22 Development Agency. Thank you very much. There were
23 NEPA reviews that were on going at the time that that
24 transition took place and I'm sure people then were
25 wondering the same things. Government agencies evolve

1 over time. They pick up functions; they drop functions;
2 functions come together in new agencies that hadn't
3 previously existed.
4 We are required by the law, the national
5 environmental policy act to state what the federal agency
6 proposed to do. In this case it's the Department of
7 Energy. If the Department of Energy were to cease to
8 exist, it is fairly well recognized with then -- within
9 the different entities that have been talking these
10 reorganizations -- that some other agency would step
11 forward, and be the steward of a nuclear weapons function
12 for the Department of Energy. Now, it could be that
13 that -- the Department of Defense -- it could be that
14 that would be some other agency. It could be that
15 there's some new agency that does not now exist --
16 As part of the transition, that agency
17 would look at the ongoing action, the ongoing proposal,
18 since you are probably aware there are many, many NEPA
19 reviews, as well as many other kinds of reviews, that are
20 going on now for the different sites within the
21 Department of Energy. So we have to work with some
22 presumptions and we work here with the presumption that
23 even if this agency were to go into another agency, and
24 yes that agency would carry forward the proposals, just
25 as in the past the Department of Energy picked up and

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1 carried forward proposal of the Atomic Energy Commission
2 and other predecessor agencies. Regarding whether or not
3 we have discussed this particular proposal with the
4 Department of Defense, I believe that we have. And I
5 invite Bob or Jas to respond to that.
6 MR. DAY: There have been -- we interact
7 with the Department of Defense on a routine basis and the
8 Department of Energy interacts with the Department of
9 Defense on a routine basis. As a matter of fact one of
10 the interactions that we have had recently is this
11 discussion of what the DOE's plan was. As a matter of
12 fact, the Department of Defense has been very concerned
13 about the fact of long-range planning stockpile
14 surveillance and stewardship. As a part of those
15 discussions there has been interaction on a variety of
16 issues associated with stockpile and mechanisms that we
17 can use to help provide assurance of safety, reliability
18 and proper function. And in those discussions, DARHT has
19 been discussed as one element of that process, and also
20 as one element of a very large set of issues that the DOE
21 and DOD deal on daily. So that has happened. Specific
22 dates? Oh, golly, I can't give a specific date just for
23 specific interaction. It's part of an ongoing routine
24 discussion.
25 MS. WEBB: Do you want to address that,

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1 Jas?
2 MR. MERCER-SMITH: The decision falls
3 neutral. Weapons programs are guided by an interagency
4 group, nuclear weapons councilors, that is, the members
5 of the nuclear weapons council sit at the deputy
6 secretary level.
7 MS. WEBB: And so yes, I can't say, Jas --
8 MR. MERCER-SMITH: Under secretary, deputy
9 secretary of, again, deputy secretary of energy.
10 MR. MELLO: I think it's --
11 MS. WEBB: Greg thinks its -- under
12 secretary, also.
13 MR. MERCER-SMITH: It'd occur at this --
14 MS. WEBB: I'm sorry, Peggy, you just -- I
15 believe you just raised your hand?
16 MS. PRINCE: When you talked about DARHT
17 being used to test the safety and reliability of the
18 current stockpile, what is the point of testing for
19 safety and reliability first of all. And that's sort of
20 a rhetorical question because the answer is, if I know
21 correctly, to be able to explode the bombs. You want to
22 test them for safety and reliability so that you can use
23 them.
50
24 In my opinion, that is an unusable
25 philosophy. We need to be moving away from the use of

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1 nuclear weapons. We need to be moving toward the entire
2 dismantlement of the nuclear arsenal, not only here, but
3 in other countries, and we need to abolish nuclear
4 weapons. There are many countries of the nonnuclear
5 states at the nonproliferation treaty hearings last month
6 who want precisely that. They want to abolish all
7 nuclear weapons, dismantle and store someplace safe.
8 Plutonium is well known to continue to become safer and
9 safer and safer, as time goes by. All you need to do is
10 watch them degrade. What you're really testing, if I'm
11 assuming correctly, is the means by which to activate the
12 implosion so that the bomb will explode. So the bomb
13 will work.
14 I think that it's unrealistic,
15 unnecessary, illogical, and dangerous to be pursuing this
16 course at all, in addition to the fact that DARHT is an
17 extremely expensive proposition, will be more expensive
18 by the time, if you have your way against them, and we
19 need to be working on the clean-up of the radioactive
20 waste that is already in the world and at the labs, not
21 creating more.
22 MS. WEBB: Thank you, Peggy. Would you
23 like to give your name for our stenographer?
24 MS. PRINCE: Peggy Prince.
25 MS. WEBB: Thank you. You asked a

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1 rhetorical question. Would you like for Bob or Jas to
2 speak to that, or do you want to just leave that?
3 MS. PRINCE: If you would like to speak to
4 this, that would be fine, Jas.
5 MR. MERCER-SMITH: The only comment that I
6 have regarding the statement was that the half-life of
7 plutonium is approximately 24,600 years.
8 MS. PRINCE: Yes, it is.
9 MR. MERCER-SMITH: It's decay probability
10 is uranium 235. The half-life is 700 million years. You
11 are disarming material long past the time when expanding
12 super -- the expanding, giant, super-red sun is upon the
13 earth.
14 MS. PRINCE: What do you plan with doing
15 with all of that disarmed material you currently have?
16 MR. MERCER-SMITH: It will have to be
17 cared for and maintained indefinitely.
18 MS. PRINCE: That's right, but it doesn't
19 require tests on safety an reliability in order to
20 babysit that.
21 MR. MERCER-SMITH: The material itself,
22 however, changes as it decays, and safety and reliability
23 does change as with the function of age.
24 MS. PRINCE: Well, I will let some of the
25 experts answer that.

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1 painful lack of holistic thinking in governmental policy
2 making in this area. The division between those who
3 consider only the technical questions and those looking
4 at the political implications of those questions, are in
5 our systems have discourse in this society. Technical
6 questions, technical considerations often are dominant
7 because they seem more solid. And in this
8 administration -- well, basically the point here is that
9 there's always more data that one can get.
10 One can always be more sure. Even though
11 we have had something on the order of 11 hundred nuclear
60 12 tests in Nevada and 10,000 hydrotests like at DARHT, or
13 more, whatever, however many there have been in the last
14 50 years, I used to hear the shots every day. You don't
15 hear many anymore, but in the early '70s, you used to
16 hear them every day here. Even with all of that data,
60 17 there's -- there's a call for more data, that we don't
18 have enough; that even though we're not designing any new
19 weapons, we -- you must have lots more knowledge and more
20 data to maintain the weapons we have.
21 At the same time there's a cost to this
22 information. DARHT is part of a suite of stockpile
23 stewardship facilities that will cost, in their actual
24 cost alone, in the order of $3 billion. If you add it
25 up, it's about three -- it's 2.6, plus the advanced

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1 strategic computing initiative and then operating costs
2 which are some large multiple times that. The other
3 countries, other nuclear powers, can't afford these kinds
4 of facilities, and they don't have the extensive test
5 data base that these facilities will be used in
60 6 conjunction with to maintain and improve the design
7 codes. As a result of, they're envious and frightened of
8 being left behind in a new kind of technological arms
9 race.
10 The French are concerned about this; they
11 are proud. The Russians are concerned; they are proud.
12 China is concerned and considers itself technologically
13 backwards to us, which it is. And in this context these
14 countries are saying we have to continue nuclear
60 15 testing. We have to actually blow them up to achieve the
16 kind of data which you people are going to be able to get
17 with your advanced stockpile stewardship facilities.
18 The result is that the comprehensive test
19 ban negotiations in general have gone a full 40 weeks of
20 active negotiation, without a treaty. There is no treaty
21 in sight. The president is about to complete in a couple
22 of weeks, with president of France -- and it's quite
23 likely that the goal of a comprehensive test ban treaty
24 that's been the goal of most Americans presidents in
25 1950s will go down in flames because of a desire for more

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60 1 data, for a desire to be perfectly sure that we can
2 maintain and improve our nuclear weapons, that we can add
3 those fire resistant pits, even though the Navy and Air
4 Force don't want them. We want to keep our people busy
5 because we're afraid they will forget how to do those
6 things.
7 There is a cost to all of this activity
8 and the Environmental Impact Statement is meant to
9 integrate these costs and benefits. There needs to be
10 analysis of the proliferation impacts of this facility,
11 we have the most critical facility in the entire science
61 12 based stockpile stewardship program for the design of
13 nuclear weapons. It will be perceived as such a facility
14 outside of the borders of the United States because of
15 its capabilities, even if you say it won't be used for
16 that, that's how people are going to look at it. We
17 never looked at Soviet armament and said we know they're
18 never going to use them. And we looked at them for what
19 it could do, and other people will look at this facility
20 for what it could do, not for what we say it will do.
21 There are important precedents for
22 analyzing the proliferation impact in other DOE actions.
61 23 There is, as you know, a special proliferation impact
24 analysis going on with the national ignition facilities
25 in Livermore, which is, some people say, almost

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1 irrelevant from a nuclear weapons design point of view.
2 There is a nonproliferation analysis going on in spent
61 3 fuel programmatic EIS, in the foreign reactors, spent
4 fuel EIS. This is a facility that has potentially great
5 proliferation impacts and it's this other side of the
6 balance scale that we need to look at in order to be
7 serious about reducing the nuclear danger which
8 Dr. Hecker has said is the primary mission of the
9 laboratory. It looks to us like this facility increases
10 the nuclear danger rather than decreases the nuclear
11 danger. That's it.
12 MS. WEBB: Thank you, Greg. Is there
13 anyone else that wants to speak today? I see no hands.
14 I would just like to mention your organization did write
15 to the Department of Energy headquarters asking for the
16 department to prepare a proliferation impact analysis on
17 the DARHT facility. That correspondence, including the
18 department's response back to you as to why the
19 department did not feel that that was appropriate, is
20 included in the information that is in the public reading
21 room. So for those members of the public that might be
22 interested in that exchange, I know that Greg knows what
23 the exchange is for. The rest that might be interested
24 in that exchange, those pieces of correspondence are
25 included in the information exchange in the Los Alamos

1 Community's reading room. I think then that it being
2 somewhat after 4:30, being somewhat after the time that
3 we advertised this session to close, unless anyone else
4 wants to come forward and speak, and unless Bob or Jas
5 want to make any final statements here, then I would
6 entertain an idea that perhaps we would adjourn until our
7 6:30 session this evening.
8 Jas, do you have anything to add?
9 MR. MERCER-SMITH: No thanks.
10 MS. WEBB: Bob, do you have anything to
11 add at this time?
12 MR. DAY: No. Thank you very much for all
13 the good information.
14 MS. WEBB: We do thank you. We know that
15 this is taking time out of your schedules to come here
16 and talk to us today; we appreciate that very much.
17 With that, this session is adjourned. We
18 will reconvene in this room this evening at 6:30.
19
20 (Hearing adjourned at 4:31 p.m.)
21
22
23
24
25

1 STATE OF NEW MEXICO)
) ss
2 COUNTY OF BERNALILLO)
3
4 I, IRENE DELGADO, New Mexico CCR 253, DO HEREBY
5 CERTIFY that I did report in stenographic shorthand the
6 foregoing proceeding as set forth herein; that the
7 foregoing pages are a true and correct transcript of my
8 stenographic notes and were reduced to typewritten
9 transcript through Computer-Aided Transcription.
10 I FURTHER CERTIFY that I am neither employed by
11 nor related to any of the parties or attorneys in this
12 case, and that I have no interest in the final
13 disposition of this case in any court; that on the date I
14 reported these proceedings, I was a New Mexico Certified
15 Court Reporter.
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17
18
19
20
21 IRENE DELGADO, NM CCR 253
Notary Public Expires: 5-1-96
22
23
24
25

Transcript Attachments
Comment Codes 46, 47, 48, 49, 50, 51, and 52

Helen Corneli 6/1/95
DARHT DEIS meeting

MEMO

TO: Diana Webb, DARHT EIS Document Manager

FROM: Helen M. Corneli

RE: Call for comments on EIS

DATE: 5-27-95

1 I appreciate the obvious effort that has been made to make this document available,
2 responsible, and understandable to the public. I did miss an Index, surely easy to construct with computers, and invaluable in the necessary cross checking through these many pages. In spite of the pages of "helpful information", the generally clear graphics and illustrations, the glossary, and the rather complete list of preparers and contributors, I'm sorry to report that a document which reportedly cost $2 million dollars and many man-years to produce still leaves me with some perplexity. I record some of it, hoping to generate more clarity.

3 Nothing mitigates the fundamental lack of this EIS: It comes in illogical, illegal, and
4 impermissible order in relation to the promised SWEIS and PEIS. The rather circular and muddy statement on p. 2-12 is based on assumed need, with no consideration of related
5 actions. It does not, for example, consider the effects of bringing bomb production to Los Alamos, as ordered by Judge Mechem. Even if it did all these things, it would leave me with other concerns, some of which I state herein.

The original Notice of Intent made the purpose, and scope of the proposed facility clear in under two pages. Somehow, in expanding those two pages to the three chapter (nearly seventy page) opus on which I intend to concentrate in these comments, clarity was lost and many
6 questions generated. Indeed, the length of the EIS, daunting in itself, may have poorly served DOE's intent. Perhaps because of the many writers, repetition abounds. The Purpose stated succinctly in the first line of the Executive Summary, was expanded into 3 short paragraphs on 2-2, and echoed numerous times, and almost exactly on 3-1 and 3-2. A certain suggestion of protesting too much was the effect, especially when combined with the lacks of congruity I discuss below.

7 I. The impression is given that the need for DARHT arose as the result of 1993 'policy changes'--an idea belied by the historical record. In fact. design of DARHT was begun in early 1980's (I-1) --twelve years before the last underground test of Sept. '92, (2-1). The facility was authorized by Congress in 1988 after a series of (unpublished?) environmental reviews. When 'science based stockpile stewardship' became a policy in Nov. 93 it was defined as an ongoing program, evolved from and based on former DOE weapons research, development and testing, and stockpile support programs. (I would like to know what, exactly, is the difference between stewardship and stockpile support.) Chapter II raises a further number of problems:

A. This EIS states that previous testing was key for certifying security, reliability, and weapons accidentally detonating during storage and handling, etc. (2-3) and that the effects of aging on weapons were well known. (It is common knowledge that we actually armed airplanes and flew them all over under SAC, presumably with safe atomic warheads.)

I wonder what underground tests actually showed about aging weapons. Even if specific data is classified, conclusions applicable to current stewardship responsibilities could surely be stated in general terms. Citizens have read reports in the paper ("Activists: LANL arms projects are unneeded" by Keith Easthouse in recent New Mexican) that aging problems have not caused the removal of any nuclear weapons from the stockpile, and only 257 defects relating to safety and reliability have been found out of 70,000 nuclear weapons (003%).

8 Moreover, the EIS begs a fundamental question. Surely a "greatly reduced" stockpile means fewer "shots," and less testing is needed with more leeway in destroying weapons which have aged beyond their "design life."

B Another major concern is proliferation. Our national stance on limiting and perhaps preventing proliferation is used constantly by lab personnel to justify activities, budgets,
9 etc. But, to my surprise and dismay, I found no discussion of the proliferation impacts of DARHT. I expected to read considerations of the following questions:

10 1) What effect will the very large sum invested in a facility like DARHT have on proliferation, especially given the very fragile non-proliferation treaty reaffirmed this month?

11 2) What is the meaning of "core intellectual and technical competencies of the United States in nuclear weapons"? I call this a 'weasel' phrase that could certainly mean very different things to different people. Indeed, if the object is to prevent proliferation, I suggest that this phrase be extirpated, since in the minds of a suspicious "unfriendly power" it could easily be translated as "the ability to build bombs how and when we want to."

12 3) How can hydrodynamic testing be used in "proliferation assessment and disablement?"

13 4) And, perhaps most importantly, as this kind of testing spreads (as it surely will), will not its widespread use make detecting proliferation essentially impossible?

14 C. This EIS leads inescapably to the fact (stated explicitly on page 3-18, that "hydrodynamic testing at DARHT, in conjunction with underground nuclear testing, was intended to assist in designing new nuclear weapons and replacement parts.") I note the past tense, but I need an explanation. Why is not a clear delineation now made
15 between the actual safety applications of DARHT and its possible design uses. Why not

15 be specific about the explosive & high velocity impact industrial uses, as well as the "diagnostics" used by LLNL (3-18)? Why not be as honest as possible? Anyone mildly science literate knows that genuine research is rarely applied in narrow ways.

16 In turn, that leads to the disturbing question: Will not DARHT and the data it generates, still be so applied? It appears that stated current aims for DARHT could not have been achieved by nuclear testing, particularly the information sought on plutonium (2-9). The weakness of other rationales (how did we previously assess weapons
17 designed by enemies or terrorists? By exploding them?) and the 18% rise in the requested weapons RD & T budget of LANL this year, suggest that the stated aims are a screen for DARHT's real purpose--weapon design.

18 D. The EIS states that the Preferred Alternative "will not affect future operations of the FXR at LLNL." (3-17) No justification is given for maintaining two of these expensive facilities in the face of a shrinking stockpile. The arguments used are circular: "We need these because we say we need them." Since the cost of one firing can reach $2 million, my concern would seem justified, particularly in these times of austerity for citizen based programs.

19 E. Moreover, the discussion of a "conceptualized" Advanced Facility, based on the "rapidly advancing state of the art accelerator technology," whose development might take "several years" (3-37) raises another question: what's our hurry for DARHT? You've stated that we have five years before many weapons get worrisomely old. Surely we can limp along until we can asses more clearly a genuine need for all this technology? (I must point out to the writers of this EIS that I have heard that funds for the AHF have already been asked for. I would be relieved to hear that his was not true.)

I appreciate your attention to these concerns.

Milton Lockhart 6/1/95
DARHT DEIS meeting

Comments on Draft DAHRT EIS, June 1, 1995
by M. G. Lockhart, 91 Mimbres Drive, Los Alamos, NM 87544

DAHRT is the first in a progression of more advanced hydrotest facilities planned by DOE to provide data for the design of later facilities and to help identify unknown problems which may not be detectable by inspection. DAHRT's data can be used to validate the results of computer simulations and (as Dr. Louis Rosen pointed out on May 31) to furnish data for training new generations of physicists and materials scientists.

1 The stockpile has reached an average age never before achieved, and the average age is increasing in spite of retiring older weapons systems. Delaying DAHRT until specific problems are identified to justify DAHRT's use is on the same logical level as deferring a treadmill test until after the patient has suffered a coronary. Safety and reliability today does not equate to safety and reliability tomorrow.

Opposition has been stated to the need for DAHRT's capability to provide 3 dimensional, time sequenced data and statements have been made that "no agreement" has been reached for this enhanced capability. Page 29 of the JASON report states "The design community has properly judged that improved hydrotesting capabilities are important in the absence of underground tests. The ultimate goal would be a tomographic movie of the late stages of the imploding pit." These other statements indicate significant,

Let us put this capability in ~~photography~~ terms. I have long been frustrated over the inability of my 35 mm camera to take good landscapes, particularly of mountains at a distance. I have been envious of friends who have 105 mm zoom capability and take great pictures. DAHRT has the capability to take great pictures of different materials under stress which no other facility on the face of this earth has. These pictures provide previously unobtainable data which aid in the design of DAHRT successors and make the scientists' job easier in modeling and evaluating the reaction of materials to different stresses. With time lapse radiography in later facilities, the movie effect would be reality.

Computer models are only as good as the data on which they are based. Can these data be used to design new weapons? Of course. Data are data. If national policy changed tomorrow, these data could be used for designing new weapons. But more importantly, the data can be used in improving safety and reliability of nuclear weapons and in other, peaceful materials research.

The alternatives presented in the DAHRT EIS are not all ~~viable~~ optimal for solving the problem. The Single-Axis alternative only provides enhanced resolution, without the 3D ~~and time lapse~~ radiography which 2 beam lines furnish. The Plutonium Exclusion alternative does not furnish data on this important weapons material while costing as much as the Preferred alternative. The Upgrade PHERMEX alternative costs more than the Preferred alternative ~~without providing the environmental protection of the Containment alternatives~~. The No Action alternative is not really an alternative because of the present condition of the PHERMEX facility, which needs re-instrumentation and renovation.

2 DAHRT is currently the most cost effective and prudent way to implement the nuclear policies of the U. S. However, the draft EIS assumes that the readers know all of this information about DAHRT.
3 Rewrite the draft EIS to make clear what DAHRT's mission is, how DAHRT will be used, what peaceful (non-weapons) uses are possible, justify the enhanced capability, explain the environmental impacts and assumptions used in terms which can be grasped by the educated, but uninitiated, reader.

4 While I am sure that initial cost (not life-cycle costs) was a major factor when the Preferred alternative was chosen, the fact that this EIS is being prepared emphasizes changed circumstances since the 1980 s. One of the Containment alternatives is probably the more cost effective when D&D costs are considered in a life-cycle cost analysis.

Maurice Weisberg
DARHT DEIS Meeting
June 1, 1995

DARHT

The National Labs are groping for rationales to maintain their budgets that are higher in real terms than during the '70s. Thus there must be a search for new enemies and new threats to justify their current and proposed projects which seem never ending and more expensive.

So now they have come up with this new generation gadget called DARHT which is the centerpiece of the stockpile stewardship. Uranium and depleted Uranium will be bombarded outdoors and these toxic and radioactive particles will then be scattered over the adjacent plateau together with other toxic heavy metals such as beryllium which is also a carcinogen. The Doctor Strangelove scenario gets more ghoulish since LANL has not ruled out the option of using PU-237 and Pu-242 as core elements as it did in previous years with an earlier machine called PHERMEX.

In a press release put out several weeks ago, LANL explains the reason for outdoor experiments as necessary to reduce risk to its workers. Are we now getting a kinder, gentler DOE, putting out a thousand points of light. The attitude change is new and commendable and in all hope it is sustainable. Its regrettable that the DOE did not show the same concern for its plutonium workers in Rocky Flats or it Uranium workers in Fernald, Ohio.

The plutonium fires and spills at Rock Flats were not reported to the people of Denver 16 miles downwind of the plant. It was an independent researcher Dr. Martell who discovered the pluton. pollution and reported the accident. It was Dr. Carl Johnson who reported the increased cancer rates in the vicinity of Rocky Flats and the Denver area. Neither the Federal Government nor the contractor responsible for operations ever informed the public; neither of them ever did any studies to determine risks to the public. In the four corners area of New Mexico, thousands of Navajo Indians were employed in the Uranium mines without proper equipment or ventilation and suffered crippling respitory ailments as well as cancer of the lung. Indian children under the age of 15 had excess cancers of the reproductive, central nervous system, and bone as well as lymph node areas.

When uranium decays it passes thru 12 radioactive forms before reaching stable lead. One of these intermediate forms is radium and everyone knows of the terrible consequences to workers who painted the dials of watches. Radon gas is another decay product. With a wind of 10 miles per hour, the gas could travel 1000 miles before half of it disintegrated into solid daughter products and then deposited on the soil, plants, water or be inhaled.

The National Labs employ physicists, chemists, engineers, with insufficient background in social science, psychology or the humanities. They think in terms of a technological fix, the beauty of chemical reactions and less in terms of the public health consequences of their bomb experiments.

1 There should be zero tolerance for all such radioactive materials for the animal and human epidemiology studies show conclusively that there is no safe dose nor any acceptable dose. We must stop making nuclear war on our own population.

2 The Lab has tried to portray Dahrt as necessary to maintain safety and reliability of its weapons. But its internal memos do no support this spurious claim. Because of the moratorium

on underground testing, it wants to continue to design new weapons and keep the jobs going for the bomb tribe. There should be no new toys until they clean up the mess they've made the past 50 years.

3 Depleted Uranium is not less toxic or less dangerous than other forms of this radioactive element. Using the euphemism depleted or spent uranium is an oxymoron. It will deplete your immune system, your life span, and the integrity of your genetic legacy. This nukespeack is to seduce you into "accepting the unthinkable" as in the "peacemaker missile" and the "peaceful atom".

Some 100 tons of depleted uranium and other toxic materials have already been scattered over the plateaus near the Lab as well as plutonium used in 1% of the experiments with PHERMEX. What possible rationale can be used to justify adding to the 10-20 million radiation casualties already produced by nuclear power, nuclear bombs, and the inappropriate use of medical and dental facilities. Dr. Rosalie Bertell, the internationally acclaimed radiation researcher, maintains that the continued design, research and production by the pro-nuclear crowd will inevitably result in the death crisis of our species. The Physicians for Nuclear Responsibility have a prescription to salvage the planet by rapidly reducing the number of our bombs to a few hundred and then phasing then out completely by the year 2000 together with completing a Comprehensive Test Ban Treaty. The only sensible alternative is to halt all work on DARHT and
4 concentrate on cleaning up the radioactive and mixed waste pollution at LANL.

Maurice A. Weisberg M.D.
[signature]
Member Physicians for Social Responsibility

4 Greg Mello 6/1/95
DARHT DEIS mtng.

No Serious Problems:
Reliability Issues and Stockpile Management

DRAFT

A Review for Tri-Valley CAREs

by

Greg Mello

February 6, 1995

No Serious Problems:
Reliability Issues and Stockpile Management

An Issue Brief for Tri-Valley CAREs by Greg Mello, February 6, 1995

DRAFT

Summary

1
- The U.S. nuclear arsenal has been extensively tested and is reliable.
- The arsenal is becoming more reliable each year as older weapon types are retired.
- The weapons which are to remain in the stockpile can be expected to last many more years if serviced. So far, age has tended to make nuclear weapons more, not less, reliable, and no weapon has ever been retired due primarily to aging problems.
- Although the nuclear arsenal is increasing in reliability, confidence in nuclear weapons is declining as nuclear weapons lose political importance. The two issues--reliability and confidence--should not be confused.

2
- U.S. nuclear weapons are adequately "robust" with respect to the minor variations in manufacture that have occurred throughout the prototyping and production processes.
- There is no serious technical impediment to remanufacturing existing kinds of weapons and weapon parts. For example, Los Alamos is now gearing up to remanufacture plutonium pits.
- Changing the design of nuclear weapons without nuclear proof-testing has been the source of serious reliability problems in the past and can be expected to cause more problems if it is done in the future.

3
- The present, effective process for monitoring the reliability of nuclear weapons places only small demands on weapons research and development personnel.
- A high level of weapons reliability can be assured with modest levels of funding and with current diagnostic facilities. New facilities, especially the $2 billion National Ignition Facility, are not needed. Engineering and production skills, rather than scientific research, are most essential to maintaining and remanufacturing nuclear weapons.

4
- The only purpose of reliable nuclear weapons is to deter a nuclear attack. Efforts to continually refine nuclear weapons conflict with U.S. nonproliferation goals and could well degrade confidence in the overall efficacy of our deterrent.

materials and parts (e.g. tritium). No U.S. weapon has ever been retired due primarily to aging problems, even though some weapons have, in the past, been in the active stockpile for more than 30 years before being superseded by new designs. (The weapons in the present stockpile are, in contrast, believed to be all between about 6 and 15 years of age.) Aggregate data show that the rate of required modifications and repairs of stockpiled weapons decreases as the years go by, reflecting continually increased reliability as the "bugs" are gradually worked out of weapons systems.

Fully half of the 300-odd problems encountered in the stockpile over the years were judged to have no effect at all on the reliability of the weapon. At least another 40% of the problems investigated would have had only a slight impact on reliability. Only a small minority--less than 10%--of the problems found would have led to a decrease of 10% or more in the probability of achieving the certified yield. All of these problems have been fixed. Many of them were caused by rushing inadequately-tested weapons into the stockpile, as will be discussed below.

Overall, among the defects found, very few have been in the physics packages, which typically are the simplest part of the weapon, comprising less than 5% of the overall number of parts in the B83, to pick one example.[9]

What is most important to realize is that the weapons in the enduring stockpile have been designed and built using all this and more accumulated experience. Design and production mistakes that occurred with earlier weapons have not been repeated. The stockpile is more reliable than ever before, and is increasing in reliability as older systems are retired.

Before examining this subject in greater technical detail, it is important to step back and look at the difference between reliability of, and confidence in, the stockpile.

Reliability is sought only for the purpose of creating a convincing deterrent.

It is important to distinguish between the reliability of a warhead and confidence in a nuclear deterrent. Reliability is a technical problem. Confidence is based on reliability, but it is also based on psychological, social, and political realities and perceptions. Confidence is not at all the same to every observer. For most decision makers, confidence in a nuclear deterrent is the genuine objective of nuclear weapons expenditures, not simply reliability. They seek this confidence in an attempt to allay fears of a nuclear attack, and they attempt to project this same confidence to would-be aggressors and potential enemies in our foreign wars.

Confidence is eroded whenever the experts at the nuclear weapons labs, who have a strong financial and institutional interest in the matter, say there is a reliability problem of any kind, no matter how trivial or even false. So the scientists at the weapons labs, along with their sponsors at the DOE and DOD and the consultants who serve them, are presently in a position of considerable influence over confidence in the U.S. stockpile, quite independent of actual weapon reliability.

In a different and perhaps more fundamental sense, confidence in the stockpile is also eroded whenever the utility of warheads to accomplish national goals--including deterring non-nuclear aggression--is questioned. This is now occurring with greater and greater regularity. Many people believe that the 49-year *de facto* norm against the use of nuclear weapons, together with the repugnance with which the nations of the world would regard their use, make that use quite unrealistic and counterproductive for any purpose other than the narrowest one of deterrence of nuclear attack.[10] In a very real sense, nuclear weapons are becoming less reliable as instruments of policy and power. They are becoming politically unreliable--which makes everyone more secure.

In this context, senior bureaucrats, members of Congress, defense officials in the executive branch, and others who have focused years of their life on the production, maintenance, and deployment of nuclear weapons resonate readily with the fretting about long-term reliability now being done by the laboratories and their sponsors. Confidence in the ability of U.S. nuclear weapons to explode is not in any serious doubt, but the funding, purpose, direction, and meaning of the U.S. nuclear weapons program is very much in doubt, and the two kinds of doubt are very easily confused.

In any case, perfect reliability is not essential to deterrence. The technical--as opposed to the political and psychological--requirements of deterrence consist only of providing any aggressor with enough confidence that U.S. weapons might explode to deter his attack.[11]

A more detailed technical analysis of the reliability question does not reveal any serious problems.

The "reliability" question was authoritatively examined in a 1987 report to Congress by Dr. Ray Kidder, a senior Livermore weapons physicist, commissioned by former Congressman (and later, Secretary of Defense) Les Aspin. Kidder's overall conclusion was,

> It is found that a high degree of confidence in the reliability of the existing stockpile is justified, and that it is sufficiently robust to permit confidence in the reliability of remanufactured warheads in the absence of nuclear explosive proof-tests.[12]

Note that this confidence was warranted in 1987, without the new facilities that are proposed for the SBSS program.

In the course of his study, Kidder found that in the entire history of the U.S. stockpile, only one weapon (the W68) experienced reliability problems after being in the stockpile more than four years.[13] The Stockpile Life Study's conclusions, as we have seen, confirm this vote of confidence and bring it up to date.

In his paper, Kidder analyzed the fourteen often-cited cases of stockpiled weapons that required nuclear tests to evaluate problems. Nine of these occurred in the 1960's--Kidder calls these the

"Sixties Nine"--as a direct result of the rush to build and stockpile weapons during the 1958-1961 test moratorium. That rush led "to a stockpile that was very poorly tested by today's standards," he notes. Kidder continues,

> Our understanding of how nuclear weapons work, our experience with nuclear tests, and our computational capabilities were all significantly inferior to that which exists today [i.e., in 1987]. There has been no rush to build the present stockpile, and it has benefitted from a quarter-century of additional nuclear and nonnuclear tests since the hectic days of the Moratorium. For these reasons, it is concluded that experience with the Sixties Nine, long ago, has little or nothing to say about the reliability of the stockpile of nuclear weapons that exists today.[14]

Five other actual or potential reliability problems occurred in the 1980's, likewise as a result of inadequate testing. In two cases, the production weapons were different than the tested prototypes and had never actually been tested at all (one worked; one didn't). In two cases, weapons had never been tested after the rugged stockpile-to-target sequence of events (one worked; one didn't). And in one case, the high explosive in a weapon was changed; the explosive--unique to that failed weapon--had never been adequately tested in the first place and didn't work properly. All these problems, and the lack of testing that allowed them to go unnoticed prior to production, are irrelevant to the current stockpile.

Carson Mark, Director of the Los Alamos Theoretical Division for 26 years, summed up the situation in 1993 by saying that the reliability argument, as it was then being used against a test moratorium, was "utter rubbish."[15] Mark links reliability and stockpile confidence to preservation of the original warhead design, without change or "improvement."

> Most important, no changes or improvements in matters which could affect the behavior of the nuclear system in an existing, certified weapon design would be acceptable [during a test ban].[16]

Mark makes the further point that the real threat to confidence and reliability of the arsenal is the historical insistence that, to quote an old policy of the DOE, "the nuclear weapons stockpile must dynamically evolve to satisfy changing threats and deterrent requirements."[17]

<u>Reliable warhead remanufacture is feasible.</u>

The concept of maintaining confidence by preservation of design is at the heart of "warhead remanufacture," to which we now turn. Kidder tabulated the results of U.S. nuclear tests, dividing them into four groups, and found that the agreement between predicted and actual yield was "remarkably" good. He concludes that

> this impressive record would not have been possible if U.S. nuclear weapons were not comfortably tolerant of the small variations in materials and manufacturing that accompany any practical production process...The test record

> indicates that the nuclear weapons in the existing U.S. stockpile are sufficiently robust to allow for future replication...This conclusion is in agreement with earlier statements by nuclear weapons authorities Dr. Hans A. Bethe, Norris E. Bradbury, Richard L. Garwin, J. Carson Mark, and Andrei Sakharov affirming the possibility of reliable remanufacture without nuclear explosive proof-tests.[18]

This conclusion is reinforced by an experiment at Los Alamos in which an intentionally off-spec pit was made and successfully tested in Nevada.[19]

Kidder appends the convincing statements of these authorities to his paper. Needless to say, when he wrote these words in 1987 Kidder did not, nor could he have, made them contingent upon the existence of new science-based stewardship facilities.

Kidder added, however, that for later remanufacture to be feasible, original materials would have to be used. If changes were made, confidence would be undermined. When I spoke to him last year about this, he did not think that material substitution would be a problem in each and every case. Some changes could, in fact, be tolerated: parts which are supposed to be transparent to radiation, for example, could be replaced with parts which are at least as transparent, and parts which are supposed to be opaque, with parts at least as opaque. He noted that since his 1987 study, there have been further classified studies of this issue, including a "Stockpile Remanufacture Study" in FY91. At the present time, he is "not aware of any problems" with warhead remanufacture, provided adequate funding is available.[20]

Mark agrees. On the materials question, he says

> it is ridiculous to suppose that substitutes would ever be needed. Nuclear weapons production has never been dependent on commercial supplies or suppliers to meet its needs for obtaining and handling separated isotopes, polonium, plutonium, or explosives. The production system can certainly be set up, or arrange, to acquire safely any needed supplies of beryllium, plastics, asbestos, or whatever else may have served effectively in past production even if in the future it should be dropped from commercial use because of hazards or lack of demand.[21]

As for the level of expertise needed to implement such a remanufacture program, Mark points out that the only real need for experienced weapons designers would arise in the determination of "whether a particular problem found in the surveillance program did or did not require replacement of the stockpiled weapons with new ones built to the original, certified, and tested specification." Mark, for one, has no doubt that if the problem were considered important enough, a body of experienced experts could be convened <u>regardless of the level of staffing at the weapons laboratories</u>. Mark goes on to say,

> Past experience casts doubt on our supposed utter dependence on maintaining a corps of scientific and engineering veterans of the Nevada test site. There were no such persons anywhere in 1943 when the effort to build an atomic bomb was

> begun; and in 1950 when official hydrogen bomb efforts were announced, the corps of seasoned experts was very small and had very meager experience in testing - now said to be the *sine qua non* of capability. Yet in each case, the United States succeeded in developing and testing a weapon based on an entirely new physical principle within two to three years.[22]

Kidder points out that the institutional arrangements needed to maintain reliability are "nothing new." It would, in his opinion, take only relatively small teams, with focused responsibility for each weapon system, to resolve stockpile questions. At present, he said, it is rare for weapons designers to receive questions regarding changes in weapons specifications. Before this happens, several levels of expertise--the inspectors and production engineers at Pantex, then their supervisors, then the weapons engineering teams from the weapons labs which regularly travel to the production plants--must be exhausted first. He believes there is no reason to change this system, which works. The highest priorities for a strong remanufacture program would probably be product and production engineering, test equipment, and so on, rather than new science *per se*, although a scientific base must also be maintained, including hydrotesting facilities.[23]

In 1987 Kidder concluded, long before SBSS, with its proposed panoply of new design and diagnostic facilities, appeared, that

> The robust character of the nuclear weapons in the present stockpile, together with the ample time available to accomplish the task, suggests that it will eventually be possible to be confident of the reliability of remanufactured nuclear weapons without requiring the services of nuclear weapon design engineers and scientists that have themselves benefitted from direct experience with nuclear explosive tests. (p. 9)

At the same time--1987--as Kidder conducted his study, managers at Lawrence Livermore National Laboratory (LLNL) were writing their own report.[24] This report--a *cri de coeur* for nuclear testing--is very useful as a compendium of problems that had been experienced in weapon design and manufacture. Based on the historical record, these managers believed three kinds of problems would occur in a future without nuclear testing: the loss of both scientific and production experience, unavailability of materials (and/or subtle variations in them) with no way to test how substitutions and changes affected performance, and inadequate documentation and specifications for many materials and processes, leading to inadvertent production changes.

Yet the official LLNL conclusions of 1987--that exact remanufacture is impossible and that nuclear testing is necessary to retain the reliability of the arsenal--have both now been widely rejected. In the end, data like that of Ray Kidder have been strongly persuasive over the attempt to extrapolate future problems from problems discovered--and corrected--in the past. For if minor variations in manufacture, materials, or specifications were indeed a serious problem, we just would not see what Kidder called the "impressive" testing record in Nevada, either for new primaries or stockpiled weapons. Especially given the near-perfect record for new primaries, why should it be so difficult to merely maintain existing designs?[25]

The JASONs believe the best approach to reliability is exact remanufacture.

In their recent report on SBSS, the JASONs--an elite group of academic defense consultants convened by the MITRE corporation--endorse exact replication of weapons, especially plutonium pits, as the best way to ensure confidence in the arsenal.

> ...the primary--if not the sole--nuclear weapons manufacturing capacity that must be provided for in an era of no nuclear testing is the remanufacture of copies of existing (tested) stockpile weapons...the ultimate goal should be to retain the capability of remanufacturing SNM [special nuclear materials] components that are as identical as possible to those of the original manufacturing process and not to "improve" those components. This is especially important for pits...[26]

The plutonium pit forms the core of the fission primary, and its function is critical to the reliability of the entire weapon. Pits are composed of various materials which must be alloyed, shaped, and joined with great precision. Even so, the JASONs point out that it is the finished pit that must be the same as the proof-tested model, and not every manufacturing detail or process along the way. To ensure this, they call for "a narrowly defined, sharply focused engineering and manufacturing curatorship program."[27] This is an excellent approach to stockpile management overall, but the point here is that they found no serious obstacles to their exact remanufacturing proposal. That is, the inevitable inexactnesses of "exact" remanufacture evidently appeared quite tolerable to the JASONs, contrary to what is often said by the laboratories.

Remanufacturing is not only practical--it is about to start.

In addition to alleged reliability problems caused by declining expertise, unavailable materials, and inadequate documentation, it has more recently been suggested that there will be reliability problems associated with the adoption of novel production methods. For example, plutonium metallurgy is complex, and the processes formerly used at Rocky Flats to make pits are different in some respects from those now being set up at Los Alamos to do the same job. But Los Alamos is remanufacturing pits.

> Associated with pit surveillance activities is the Pit Rebuild Program, which will demonstrate the capability at Los Alamos to fabricate pits of war reserve quality. Specific technology areas that must be developed or enhanced at Los Alamos include certification of the beryllium machining capability, certification of the tubulation capability, development of the capability to interface pit materials, and development and certification of joining processes. The capability for manufacturing a pit for a W88 weapon will be in place in FY 1996...
>
> Los Alamos is currently the only DOE site capable of fabricating a plutonium pit and, as such, may be the only practical near-term upgrade-in-place option for plutonium processing and fabrication. In conjunction with its plutonium research and development responsibilities, Los Alamos will maintain

24. George Miller, Paul Brown, and Carol Alonso, "Report to Congress on Stockpile Reliability, Weapon Remanufacture, and the Role of Nuclear Testing, October 1987, UCRL-53822, LLNL.

25. "During the past decade [1977-1986], new boosted primaries have been designed and developed by the weapons laboratories...performed satisfactorily the very first time they were tested, the observed yield in no case falling short of that expected by more than...The one new primary that failed was of a more complex, less predictable design than the others. This primary was subsequently redesigned, tested, and failed again. None of the primaries in the existing stockpile employ...

"This experience demonstrates that the ability of the weapons labs to predict the performance of newly designed, as yet untested, boosted primaries of the kind currently in stockpile is indeed impressive--there were no significant surprises. This could hardly have been the case had these primaries been sensitive to differences that inevitably exist between the weapon configuration calculated and the weapon tested." Kidder, op. cit., p. 25.

26. "Science Based Stockpile Stewardship," Sidney Drell et al, November 1994, MITRE, McLean, VA, p. 81. The chapter quoted proceeds from different assumptions than most of the rest of the report. That report is criticized in a paper related to the present study, available from Tri-Valley CAREs, "Ask Few Questions, Get Few Answers: A Critique of the JASONs' Stockpile Stewardship Study," Greg Mello, 1995.

27. Ibid., p. 85.

28. Los Alamos National Laboratory, Institutional Plan, FY1995-2000, pp. 50-51.

29. DARHT, like the existing Flash X-Ray (FXR) and Phermex facilities at Livermore and Los Alamos, respectively, would evaluate mock pits during implosion. DARHT, if built, is expected to be available for experiments in approximately the year 2000.

30. Dr. Daniel Kerlinsky, personal communication.

31. Los Alamos National Laboratory, op. cit., p. 51.

32. The overall outlines of the labs' proposal can be found in a presentation by Larry Woodruff of LLNL to the National Security subgroup of the Galvin Panel on August 8-9, 1994. The responsibilities of Rocky Flats, Savannah River, and the Y-12 Plant would all be moved to LANL and LLNL under this plan, with Sandia taking over for Pinellas and the Kansas City Plant. The production capacity would be 150 weapons per year, with LANL specializing in fabricating parts made from fissile materials.

33. Detailed discussion of this point will soon be available from the present writer and Tri-Valley CAREs.

34. Congressional Budget Office, "The Bomb's Custodians," July 1994, p. x; Christopher Paine, personal communication.

35. See Defense Week, 8/15/94. Dr. John Deutch, Undersecretary of Defense, and Dr. Vic Reis, Assistant Secretary of Energy, were and may still be pressing for development of a new warhead. This notion differs from the military's preferred road map for maintaining reliable nuclear weapons, which does not involve reliance on an untested weapon.

5 Greg Mello 6/1/95
DARHT DEIS notes.

Ask Few Questions, Get Few Answers: The JASONs' "Science Based Stockpile Stewardship" Study

DRAFT

A Review for Tri-Valley CAREs

by

Greg Mello

February 14, 1995

DRAFT

> Ultimately, non-proliferation can only be successful if the NNWS [non-nuclear weapons states] are persuaded that their national security is better served without nuclear weapons than by possessing them (p. 19).

How can all these countries possibly be persuaded of this when the nuclear weapons states (NWSs) assert just the opposite for themselves--that nuclear weapons are central to their national security? These NWSs are of course not just armed with nuclear weapons, but also with qualitatively and quantitatively superior conventional weapons as well. Yet still they assert that nuclear weapons are indispensable. Nowhere do the JASONs face or even acknowledge the fundamental contradiction between their statement above and U.S. plans, not just to maintain its nuclear arsenal indefinitely, but to continually "improve" it, an effort the JASONs acknowledge, approve, and seek to facilitate.

The JASONs, in their rush to bless DOE's plans, have fundamentally misread the politics of nonproliferation. After squirming their way past the clear language of the NPT and failing to address the fundamental contradiction of U.S. nonproliferation policy, they limit their concerns about the proliferation impact of SBSS to basically just one:

> One worrisome aspect of the SBSS program is that it may be perceived by other nations as part of an attempt by the U.S. to continue the development of ever more sophisticated nuclear weapons. (p. 19)

But this is hardly the entirety, let alone the root, of the problem. They compound their error with arrogance in the next sentence:

> This perception is particularly likely to be held by countries that are not very advanced technologically since they are less able to appreciate the limits on advanced weapons design that a lack of testing enforces.

Yet on the same page, the JASONs confirm this "perception":

> While the potential for future developments cannot be excluded, the SBSS activities should not be interpretable as laying the basis for the development of newer generations of nuclear weapons...(emphasis added)

It appears that the only policy consistent with all these confused statements is a policy of deception, which is the height of folly. Such deception would have to be aimed at the American people as well as other nations, and cannot succeed even temporarily. Clandestine vertical proliferation would be implicitly or explicitly used as an excuse by some horizontal proliferant some day, and would, by its very nature, threaten the integrity of the nonproliferation regime, which requires clarity and transparency to work. Such a policy would be very costly to U.S. national security.

The impacts of the SBSS program on nonproliferation efforts are certainly not confined to problems caused by the "perception" or "interpretation" that the U.S is engaged in further

weapons development. This was thoroughly discussed at the September 8 workshop mentioned above, with Dr. Drell in attendance. It is worth reviewing the whole issue briefly from first principles.

The basic goal of nonproliferation, as it is perceived officially in the United States, is one of preventing other countries from acquiring nuclear materials and, especially, nuclear weapons. Most countries, of course, have no interest in taking on the dangers, cost, and opprobrium of nuclear weapons. But it is not the Danish bomb that is of concern. To effectively prevent proliferation in every case, even the difficult ones, a variety of tools are required: international treaties, national laws, bi- and multi-lateral agreements, and unwritten norms--all of which must, to be effective, carry with them an implicit or explicit possibility of political, economic, criminal, or military sanctions, directed against countries, companies, or individuals as appropriate. Positive rewards for compliance with nonproliferation norms also can be and have been used.

These potential sanctions, in their variety and comprehensiveness, are the real deterrent to proliferation in the most important cases. They must be credible to work. They are not likely to be credible if they are not very broadly based among nations, especially among the nuclear powers. And surely it is difficult to get very broad-based cooperation in enforcing tough nonproliferation sanctions if we ourselves violate the norms we would enforce. We cannot get treaties implemented by others that we do not follow or intend to follow. Nor can we easily enforce, except at great and often prohibitive cost, provisions of treaties--like the NPT--that we ourselves do not honor.

Let's get real: we will not stop nuclear proliferation unless we have tough laws and effective sanctions, actively supported by nearly every nation involved. This requirement is incompatible with our ongoing violation of the NPT, and with the maintenance and "improvement" of our own large nuclear arsenal, especially as this arsenal is accompanied by a declaratory policy of possible first use and configured to make this threat real.

The conflict between U.S. nuclear policy, including SBSS, and U.S. interests in nonproliferation is therefore much more fundamental than the perception that we might develop more advanced nuclear weapons. This perception would, of course, simply make our nonproliferation and credibility problems even worse, while advanced weapons and weapons science would provide no deterrent against a proliferant threat.

The JASONs faulty and superficial analysis of the nonproliferation problem leads them to a questionable recommendation for relieving the well-deserved "suspicions" of the non-nuclear weapons states. The JASON approach: declassify most of the SBSS program.

This strategy attempts to remove the potential complaints of the non-nuclear weapons states--which could, after all, have negative ramifications for SBSS funding--by simply inviting them to the weapons technology table. Any problems concerning proliferation of technology out of the SBSS program would be solved, in effect, by a redefinition of proliferation. Proliferation done officially wouldn't count anymore.

DARHT

History provides a warning: in every case since 1950, programs to build fission bombs have been conceived, hidden, and matured within the womb of fission energy programs. If we follow the JASONs' advice, we may have fusion weapons being developed under the cover of fusion energy programs--using data, codes, and techniques developed and disseminated in and by the U.S.

Aside from the rationale the JASONs provide, another political motivation for the declassification they propose is that it will to create a broader user community--and hence a broader constituency--for the stewardship program and its funding. This is particularly the case for NIF.[10]

Of particular concern is the possible declassification of all but "critical" parts of the weapons codes (p. 21) in order to allay the "suspicions" of the non-nuclear weapons states. Even if these suspicions did comprehend the entire nonproliferation impact of the SBSS program, which they don't, why would the declassification of technical arcana allay anything? More to the point would be the declassification of policy and planning documents, such as the nuclear stockpile memorandum.

Looking at the problem of nonproliferation impacts of the U.S. nuclear weapons program as a whole, non-nuclear states' concerns--which are a matter of public record, not merely a possibility--could be better addressed by:

- a stronger and more successful effort toward a CTB;
- a change in U.S. declaratory policy on first use;
- the elimination of tactical weapons;
- bilateral reductions in strategic forces below START II;
- a ban on weapons-usable fissile material production;
- a limit on stockpile stewardship to the minimum that is actually needed; and
- opening U.S. weapons facilities to credible domestic and international inspectors, perhaps from Canada, Australia, or other appropriate non-nuclear-weapon states.

To succeed in its nonproliferation goals in the long run, the U.S. needs to accept the same level of transparency that it demands of other nations. Publishing major portions of U.S. nuclear weapons codes has not exactly been on the top of anybody's non-proliferation wish-list, however.

The JASONs assert that most new proliferators could derive no immediate benefit from these codes. Even if this is true, what about China, or Israel, or Japan--or India or Pakistan, for that matter? Wouldn't the knowledge that scientists from these countries get by using the NIF and its related computer codes train them to do secondary physics, just as U.S. scientists are trained? Or perhaps they could take the now-unclassified codes and modify them for weapons analysis, saving themselves person-years of work on the way to deliverable boosted fission or thermonuclear bombs. When the JASON declassification proposal was brought up in the context of NIF at DOE's September 8, 1994 NIF workshop, a senior DOE classification officer rose to vigorously contest the appropriateness of declassifying information from experiments at

temperatures and pressures at or approaching those of a nuclear explosion, data which would definitely be useful in the design of weapons.[11]

International scientific cooperation is in general a very good thing. But scientists at the weapons labs of the various countries have more in common with each other than they do with their respective governments, as Dr. Hecker at Los Alamos National Laboratory (LANL) once remarked about Russia. The U.S. weapons labs have already been the source of a great deal of knowledge for foreign weapons programs.[12] Why open the door wider?

The JASONs' Chapter 5: Stewardship Program Elements

To provide a justification for enhanced SBSS capabilities, the JASONs refer on p. 24 to the "limited" number of cases where nuclear testing was needed to remedy or validate the remedies to stockpile problems of the past. These cases--fifteen in number--are extensively discussed by senior Livermore weapons scientist Ray Kidder in his 1987 study of weapon reliability under a test ban, and his conclusions--(1) that these resulted from rushing inadequately tested designs into the stockpile, and (2) that these problems are all lessons learned, i.e. of historical, but not predictive, importance--still stand.[13] As discussed elsewhere at length, there are no known safety or reliability problems in the U.S. arsenal.[14]

7

Certainly we need to retain, at least for now, some nuclear weapons scientists, as the JASONs point out on p. 24. It is not clear that we need to retain the thousands of scientists, engineers, and technicians now working in this program. If the intent is merely to retain our existing knowledge and expertise about nuclear weapons, there are cheaper and less provocative ways to do it than SBSS, namely by emphasizing retention of unique knowledge in archives and in a relatively few staff members. The emphasis should be on uniqueness, not quantity.

The JASONs' Chapter 6: Hydrotesting

The JASONs' treatment of hydrotesting and the proposed Dual-Axis Radiographic Hydrotest (DARHT) facility at LANL provides further examples of their lack of careful analysis. The JASONs believe that this facility will provide "capabilities of importance" (p. 4) to the SBSS program. In fact, they appear to offer unqualified support for all the hydrotest upgrades planned for this century, drawing the line at the Advanced Hydrotest Facility planned for the out years. But nowhere do they say why these capabilities are important.

1

In Kidder's 1987 paper we find the following.

> During the past decade [1977-1986], new boosted primaries have been designed and developed by the weapons laboratories...performed satisfactorily the very first time they were tested, the observed yield in no case falling short of that expected by more than...(See Tables III and H2 and Fig. H1) The one new primary that failed was of a more complex, less predictable design than the others. This primary was subsequently redesigned, tested, and failed again. None of the primaries in the existing stockpile employ...

> This experience demonstrates that the ability of the weapons labs to predict the performance of newly designed, as yet untested, boosted primaries of the kind currently in stockpile is indeed impressive--there were no significant surprises. This could hardly have been the case had these primaries been sensitive to differences that inevitably exist between the weapon configuration calculated and the weapon tested.[15]

This "impressive" capability existed between seven and seventeen years ago, in the design of new primaries. It is not clear why it is not enough to simply maintain existing primaries today.

Kidder's last point, which speaks to the insensitivity of primary yield to minor variations in manufacture, was corroborated by a manager (name withheld) at Los Alamos, who told Dr. Kerlinsky of the Galvin Panel that deliberately "off-spec" pit(s) had been manufactured at Los Alamos and tested successfully at the Nevada Test Site.[16]

Then why are all these new facilities needed? The JASONs answer this question on p. 27.

> Such information [from hydrotests integrated with code development] will lead to greater confidence in our understanding of weapons and, perhaps ultimately, to a willingness to make relatively simple changes in primary design without underground tests. (emphasis added)

2 Once again, it is not simple maintenance of a deterrent through remanufacture of existing weapons that is driving the "acknowledged need" (p. 28) for increased radiography capability, but the desire to design and certify new weapons in the absence of nuclear tests. It is the "design community" (p. 29) that has this "need," not the stockpile surveillance program, and certainly not the nation. The surveillance program has never depended upon hydrotesting, let alone advanced hydrotesting, to do its job.

Overall, it is far from "clear" that "improved hydrotesting is crucial to continued confidence in the safety and reliability of nuclear primaries" (p. 32). As far as reliability is concerned, this statement is contradicted by the data collected and presented by Kidder. And in Kidder's paper, the JASON opinion is contradicted by that of Hans Bethe, Carson Mark, Norris Bradbury, Richard Garwin, and Andrei Sakharov, all of whom felt that simple remanufacturing--without advanced new hydrotesting facilities--was completely feasible.[17]

The JASONs' Chapter 7: The National Ignition Facility

The JASONs find the NIF "exciting" (p. 37). They are crazy about it. And crazy is hardly too strong a word, for they quickly gush: "Nuclear weapons operate under conditions...of great interest to astrophysics." Yes, no doubt this is true, but it is hardly the central point, and it is not reassuring to hear it put quite that way. Avoiding the "operation" of nuclear weapons is what this report is, or should be, about. In their passion for hotter hohlraums,[18] they neglect the human. It is not the JASONs' chilling objectivity which is distressing here, but their chilling lack of objectivity. Their enthusiasm is about physics, not nuclear weapons policy. And the

fact that nuclear weapons "operate" only with unimaginable horror is not a noticeably important factor in the JASONs' thinking about NIF.

Their discussion of NIF's importance as a "proof-of-principle" experiment appears overblown. Ignition of deuterium-tritium pellets has already been achieved in experiments at the Nevada Test Site. The NIF would not so much demonstrate the principle as demonstrate--what? That inertial confinement fusion (ICF) is feasible? No, not this either. Perhaps this: that ICF can be funded, papers can be published in the subject, and careers can be pursued by real people with real ambitions. ICF is, by all accounts, a remote and unlikely source of energy, one that has already been superseded by proven renewable sources that do not share its enormous costs, its environmental and social externalities, its proliferation problems, or its uncertainties.

The attainment of ignition is not the major problem in developing fusion energy, in any case. It is the engineering and materials problems in any practical ICF system that are more likely to be insurmountable at anywhere near a realistic life-cycle cost per unit energy produced.

While the JASONs downplay the uncertainty of ignition, some scientists at both LLNL and LANL do not.[19] The margin of uncertainty in the minimum energy needed to overcome instability and other difficulties may be significantly larger than the 1.8 megajoules NIF will deliver. Therefore, the statement on p. 41 that "...the attainment of ignition in NIF will demonstrate..." seems too confident and a little premature. It betrays the lack of objectivity that concerns us throughout this report.

There is no question that NIF could provide interesting experiments in several fields of physics. But a closer look at the JASONs' zeal for creating a user community for NIF (pp. 43-47) goes far beyond science to reveal the JASONs as a special interest lobby, calling for an active sales effort for the NIF project. They wrap up this four-page discussion by saying that:

> ...the growth of this nascent enterprise [user communities] needs to be further encouraged by way of the vigorous dissemination of information about the capabilities and accomplishments of the ICF program and about the scope of activities to be undertaken at the NIF...if scientific goals are to be a significant component in the justification of the construction of the NIF (as we strongly believe they should be), then the ICF community bears a special responsibility in fostering an "out-reach" program...Succinctly stated, the NIF represents a credible and powerful opportunity to strengthen otherwise disjoint efforts in the weapons, the ICF, and the university communities. (p. 47)

Why are the JASONs so interested in promoting NIF? Why are they, here and elsewhere, so preoccupied with the "credibility" of cross-linking the nuclear weapons community with ICF and university science? Why is it necessary to encourage a "vigorous" program of disseminating information about NIF--can't scientists decide for themselves whether it can help them? Why is it so desirable to recruit the ICF "community" to support NIF? The simple truth to which these questions point is that, when it comes to NIF, the JASONs themselves view their role as promotional, not objective.

DARHT

There is absolutely no reason that this excellent, common-sense approach cannot be applied to the other elements of the stewardship program as well, thus eliminating the "need" for expensive new SBSS facilities with their attendant proliferation impacts.

In fact, if this approach is to stand at all, it logically must be applied to the stewardship program as a whole. For what is the point of designing improvements in weapons if it is decided in advance not to make them? And making them would be a bad idea, for the sound reasons the JASONs articulate in this chapter. So not just the assumptions, but the conclusions of this chapter--with which we find little fault--are quite inconsistent with the rest of the report.

The JASONs' Chapter 11: Advanced Computing for Stewardship

Aside from the dangerous assumptions incorporated into this chapter on p. 89 (quoted on page 4 above) and what may be applied from our other comments to the question of the purpose and need for weapons computing advancements, we offer few additional comments.

Obviously, the proliferation dangers of weapons codes that have been brought up to date, documented properly, and translated to run on inexpensive and universally-available computers are increased in the event of any security breach. This is a specific case of a general rule: the more weapons activities that are going on, and the more open these activities are, the greater the likelihood that somebody will steal or be given something important.

Concluding Remarks

The JASONs are clearly enamored with science, and they clearly want to see the weapons labs fully funded to do work they consider interesting. Their approach to the issues surrounding stockpile stewardship is too narrow and too vague, however, to be of much use in evaluating even the technical questions, let alone the policy and nonproliferation questions. It is hoped that the DOE will seek further clarification of these issues before continuing its marketing of science-based stockpile stewardship, based as it is upon specious assumptions and the questionable goals of keeping weapons scientists busy and producing new weapon designs. These activities are costly and dangerous to this country and others.

Endnotes

1. Personal communication with Dr. Victor Reis, October 1994.

2. This history is from Gregg Herken, Counsels of War, expanded edition, Oxford University Press, NY, 1987. Quote is from p. 211.

3. Christopher Paine of the Natural Resources Defense Council made this point in a conversation with the present author.

4. This exchange occurred at the DOE workshop on NIF, Washington DC, September 8, 1994; Joe Ciriucione, personal communication.

5. Jonathan Medalia, "Nuclear Dilemmas: Nonproliferation Treaty, Comprehensive Test Ban, and Stockpile Stewardship," Congressional Research Service, December 1994, 94-1107F.

6. See "Redefining Stockpile Stewardship," Greg Mello for Tri-Valley CAREs, Livermore, CA.

7. Ibid.

8. The actual language of Article VI of the NPT is: "Each of the Parties to the Treaty undertakes to pursue negotiations in good faith on effective measures relating to cessation of the nuclear arms race at an early date and to nuclear disarmament, and on a Treaty on general and complete disarmament under strict and effective international control."

The JASONs paraphrase this as "The NWS (nuclear weapons states) will reduce their nuclear weapons stockpiles and will reduce, over time, the reliance of their national security policy on nuclear weapons, thereby decreasing the discriminatory nature of the non-proliferation regime" (p. 18). The legal commitment made by the U.S. and the other nuclear powers to nuclear disarmament is entirely discounted by the JASONs.

Aside from this, the JASONs' "interpretation" is illogical: if a NWS like the U.S. decreases its arsenal to only 1000 or even 100 nuclear weapons, as versus zero for a non-nuclear weapons state, this does virtually nothing to "decreas[e] the discriminatory nature of the non-proliferation regime."

9. Denise Fort, personal communication.

10. It is not just the JASONs that recognize the importance of expanding the political constituency of the nuclear weapons program. In 1993, Dr. Immele of LANL waxed glowingly about the new corporate "sponsors" of the LANL weapons program in his "State of the Nuclear Weapons Program" address in December, available in video from LANL. Numerous other examples could be provided.

11. Marylia Kelley, personal communication. In the case of the NIF, and the inertial confinement fusion (ICF) program in particular, the Arms Control and Disarmament Agency (ACDA) recognized these direct proliferation dangers as early as 1980 in their FY 1981 Arms Control Impact Statements (written for the committees on Foreign Affairs and Foreign Relations of both houses of Congress). As they put it then, "If an advanced non-nuclear weapon state with an ICF research program undertook a nuclear weapon program, it might subsequently be able to move more quickly to develop boosted fission and thermonuclear weapons than would otherwise be the case."

The subject of direct proliferation impacts is discussed more fully in Mello, op. cit.

12. For examples, see William E. Burrows and Robert Windrem, Critical Mass: The Dangerous Race for Superweapons in a Fragmenting World, Simon and Schuster, NY, 1994.

13. Ray Kidder, "Maintaining the U.S. Stockpile of Nuclear Weapons During a Low-Threshold or Comprehensive Test Ban," LLNL, 1987, UCRL-53820, p. 25.

14. Mello, op. cit.

15. Kidder, op. cit.

16. Dr. Dan Kerlinsky, personal communication.

17. These men all speak with great authority on this issue. Nobel Laureate Hans Bethe directed the Theoretical Division at Los Alamos during the war and has consulted at LANL up to the present day; Carson Mark was his successor and directed that Division for 26 years; Norris Bradbury was Oppenheimer's successor and directed Los Alamos for 25 years; Richard Garwin has been a consultant to Los Alamos since 1950 and is highly regarded for his analysis of a range of defense issues; and Andrei Sakharov, preeminent among Soviet weapons designers, was responsible for the independent development of the Soviet thermonuclear bomb.

18. *Hohlraum* is a German word which means to physicists what "black body" does in English: an idealized non-reflective cavity which radiates energy in accordance with its temperature. The interior of a nuclear weapon, and the hollow target cylinder at NIF, resemble and are called hohlraums.

19. It is best not to say who, because even so senior a scientist as Dr. Steven Younger at LANL has already been called on the carpet by Assistant Secretary Reis for his true statement that NIF has nothing to do with safety of nuclear weapons, made at the September 8, 1994 DOE NIF workshop.

20. The original design specifications of Building PF-4 of TA-55 at LANL were reported by John Fleck of the Albuquerque Journal on December 8, 1993. In 1978, PF-4 had a capacity of 100 kg Pu per month for casting and machining, or about 20 weapons/month. Since then, occupational radiation exposure limits have decreased from 5 rads/yr to 2 rads/yr, and PF-4 has been reconfigured, both of which decrease this capacity, according to LANL.

A presentation by Larry Woodruff of LLNL to the Galvin Panel on August 8, 1994 entitled "Downsizing the Capacity of the Nuclear Weapons Complex" shows a capacity for making 150 pits/yr in the downsized complex, i.e. at LANL. While LLNL now has the capacity make pits, the presentation to the Galvin Panel, along with interviews with LLNL personnel by Dr. Kerlinsky of that Panel, make it clear that LLNL anticipates transferring its pit manufacturing technology to LANL.

The LANL FY1995-2000 Institutional Plan says on p. 51 that LANL's Pit Rebuild Program will be capable of building pits for W88 warheads "by FY1996."

21. The statement of Dr. Harold Smith, Assistant Secretary of Defense for Atomic Energy, to the House Appropriations Subcommittee on Energy and Water Development, March 15, 1994 contains the following.

> The Nuclear Weapons Stockpile Plan, which outlines specific requirements for the nuclear weapons program...requires an active nuclear stockpile that supports the START I limits through 1999 and then transition to START II in subsequent years. ...[The Plan requires the U.S.] to retain the capability to reactivate weapons from the inactive stockpile if necessary, to maintain a policy that provides an assured supply of tritium...
>
> In the absence of a new source, in [deleted] the U.S. may not have sufficient tritium to support the nuclear weapons stockpile and required reserves consistent with START I commitments...The current goal is to make a decision on a new source for tritium in FY95 with initial funding for the development of that source beginning in FY96." (pp. 737 and 741, Vol. 6, Energy and Water Development Appropriations for 1995, emphasis added)

In his oral remarks that day, Dr. Smith emphasized that the U.S. must be able "to return to START I in the 21st century" (Ibid, p. 415). This cannot be done without a tritium supply consistent with a START I arsenal.

Dr. Victor Reis, Assistant Secretary of Energy for Defense Programs, shed additional light on the subject during that same hearing in response to a question:

> If one assumes...that a new [tritium] facility is to be built, then based on the current stockpile plan and the conservative view that a new tritium production source could take as long as 15 years to produce new tritium, a funding decision would be necessary in FY1996. That would allow the facility to be in production 3 years before strategic reserves of tritium are exhausted. (Ibid, p. 458)

Congressman Myers was hearing different dates from DOE and DOD regarding the acquisition of a new source of tritium, and asked for clarification. Reis gave an enigmatic reply, then Smith said, "There is plenty of discussion going on between the two Departments, between Dr. Reis and myself. The driver here is the assumption on whether or not we want to have the ability to maintain or return to levels consistent with START I." (Ibid, pp. 423-424, emphasis added)

It appears that there is adequate tritium to support a START I arsenal until 1996+15 years for construction+3 years, i.e. until 2014. The "START II arsenal" appears to include the capacity to bring enough reserve weapons back into the active arsenal to reconstitute a START I force level.

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Nuclear Weapons Safety: No Design Changes Are Warranted

DRAFT

A Review for Tri-Valley CAREs

by

Greg Mello

February 14, 1995

I am pleased to report the stockpile today is safe, secure, reliable, and meets current military requirements. We make that statement with confidence today and for the immediate future....Our stockpile is becoming safer and more reliable simply because we are retiring older weapons...Thus, we should enter the 21st century with a modern, safe, and reliable stockpile consistent with the demands of START I and with anticipated military requirements.

--Dr. Harold Smith, Assistant Secretary of Defense for Atomic Energy, to Congress on March 15, 1994

[add Smith March 1, 1995 testimony]

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questioned. Of the "safety, security, and reliability" trinity, it is the quest for endlessly "safer" nuclear weapons that has retained the most political cachet, pandering as it does to existential fears whose solution entirely transcends further technical adjustments in weapons design.

The central theme of this paper is that nuclear weapons safety, as a technical problem for weapons designers, has been solved. Additional operational changes offer some further reductions in risk, but risks from nuclear weapon accidents are already orders of magnitude lower than in the recent past. Not only will further efforts to improve weapons safety be expensive and lead to greatly diminished returns in risk reduction, but when the safety issue is placed in its overall context, such "improvements" are shown to decrease overall nuclear safety.

At the same time, replacing selected weapons in the arsenal to "improve" safety will inevitably decrease reliability if the new weapons are not proof-tested. For these reasons, nuclear weapons safety is not an absolute good. The proper goal is an optimum level of nuclear weapons safety, not a maximum.

In some respects, the problem of "How safe is safe" is similar to the problem of "How clean is clean"--completely safe and clean are not the right answers. But there are differences: the nuclear weapons problem is relatively easy to solve politically, technically, and managerially; it has been a central goal since 1944; and it has been accomplished. None of these apply to the cleanup problem.

Often nuclear weapons safety and security are spoken of together, the two concerns being combined in the term "surety," which sometimes includes reliability concerns as well. With the planned addition of permissive-action links (PALs) to submarine-launched ballistic missiles, adequate use-control over the entire U.S. nuclear arsenal will in time be achieved.[1] Security will not be discussed in this paper.

The Drell panel

In December 1990, the Report of the Panel on Nuclear Weapons Safety, usually called the Drell Report after its chairman, Dr. Sidney Drell, published its strong recommendations for a greater emphasis on safety in nuclear weapons design and deployment and in the institutional arrangements governing weapons.[2] In brief, the Drell panel found that some weapons in the U.S. stockpile were not as safe from accidental detonation as had been thought (the particular weapons systems involved were kept vague). The panel also observed that most of the weapons in the stockpile were not equipped with state-of-the-art features to prevent plutonium contamination in the event of an explosion or fire.

To remedy these problems, Drell called for operational changes, some of which were quickly implemented, and the incorporation of the most modern safety features into all stockpiled weapons. To fully implement this latter recommendation for the large and diverse 1990 stockpile would have required dozens of underground nuclear tests and tens of billions of dollars

in appropriations for weapons design and manufacturing. It would have required the construction of a new nuclear weapons manufacturing complex and the operation of that complex over an extended period of time, and it would have required the costly modification of some delivery platforms.

Thus, although the scope of the panel's investigation was ostensibly technical, its recommendations called for an enormous amount of new work (and new funding) for DOE's nuclear weapons program and its laboratories, just as the Cold War was winding down. Fortunately, Drell's most expensive and controversial recommendations were mooted by events which led to the retirement of some weapon systems and the stand-down of others.

The first of these events was the START I treaty, signed by the United States and the Soviet Union in July of 1991, followed by the "joint understanding" in June 1992 which led to START II in January of 1993. Major reductions in the deployment of tactical nuclear weapons were announced by the U.S. and Soviet Union in the fall of 1991, together with the removal of nuclear weapons from bombers on alert. In 1992, President Bush announced that there was no need for further U.S. nuclear weapons tests to develop new weapons, and in July of 1993, President Clinton joined the Russian-led moratorium on nuclear testing.

In addition to improving nuclear weapons safety, all these changes collapsed the central mission of the DOE weapons labs, which had been the design of new weapons. The result has been that, even though the nuclear arsenal has become markedly safer, the labs and DOE are all the more vociferously clamoring for "more" safety as a new mission. "Safety" has thus become more and more of an empty slogan as it expands into the vacuum of purpose that characterizes large portions of the laboratories.

All authorities agree: U.S. weapons are safe

Are U.S. nuclear weapons, in fact, "safe?" The unequivocal and unanimous conclusion of the nuclear weapons establishment is affirmative. In his testimony on March 15, 1994, Dr. Harold Smith, Assistant Secretary of Defense for Atomic Energy, told Congress,

> I am pleased to report the stockpile today is safe, secure, reliable, and meets current military requirements. We make that statement with confidence today and for the immediate future....Our stockpile is becoming safer and more reliable simply because we are retiring older weapons...Thus, we should enter the 21st century with a modern, safe, and reliable stockpile consistent with the demands of START I and with anticipated military requirements.[3]

This statement was made in the presence and with the approval of Dr. Victor Reis, Assistant Secretary of Energy for Defense Programs, who added,

> Right now, as Dr. Smith said, that stockpile is safe and reliable.[4]

These two authorities together comprise two-thirds of the three-person Nuclear Weapons Council. There is no higher or more integrative authority on this subject. And what they said has been a consistent theme over the past few years. Smith's predecessor, Robert Barker, told the Senate in March of 1992,

> The Air Force and Navy, in cooperation with the Office of the Secretary of Defense and the Energy Department, evaluated the safety of all ballistic missiles that carry nuclear warheads. It was determined that there is not now sufficient evidence to warrant our changing either warheads or propellants.[5]

John Deutch, now Deputy Secretary of Defense, reiterated Barker's general conclusion for the specific case of the W88 warhead on may 3, 1993 when he told the House Panel on the Military Application of Nuclear Energy that incorporation of insensitive high explosive (IHE) into that warhead would not be worth its considerable cost (more than $3 billion).[6]

A few days later, Rear Admiral John T. Mitchell, Director, Strategic Systems Programs Office, U.S. Navy, was even more blunt. On May 11, 1993, he told a Senate committee that, for the W88 warhead, "We believe that there would be no gain in safety in changing to insensitive high explosive."[7] These comments by Deutch and Mitchell signalled that the safety questions that had been raised by the Drell Report regarding the W88 (see below) had been resolved, at least to the satisfaction of the DOD and the Navy.[8]

Deutch, a strong advocate of nuclear weapons design and testing, recently reiterated the government's consensus on the safety of U.S. nuclear weapons. On October 5, 1994, Chairman Hamilton of the House Foreign Affairs Committee suggested to Deutch, following the latter's presentation of the Nuclear Posture Review, that safety concerns might be a reason to resume nuclear testing. Deutch demurred, saying unequivocally, "It is my judgment that all the nuclear weapons that we have are adequately safe."

[add 1995 Smith and Deutch testimony here; reiterates same points]

The repeated testimony cited here was offered by the highest responsible sources after careful review of those portions of the Drell Panel's recommendations that remain outstanding. This testimony states with abundant clarity that no safety problem currently exists in the nuclear weapons stockpile. Yet, since the weapons labs still hawk greater "safety" as a mission, many decisionmakers conclude that nuclear weapons safety is an unresolved issue.[9]

What is the nuclear weapons safety problem?

Those responsible for designing, building, and maintaining U.S. nuclear weapons do so with a keen appreciation of the dangers inherent in these weapons and in the materials they contain. It is their job to make the protection of public safety a paramount concern in every aspect of their work. Their real goal is to effectively protect the public, not simply to build safer weapons

at any cost. These two goals are not the same, as can be seen from the following outline, which supplies a common-sense context for analyzing the safety problem and maximizing the safety benefits of federal spending.

The Overall Goal: Protect the public[10]

- A. from dangers other than those from nuclear weapons
- B. from nuclear weapons dangers (DOE: "reduce the nuclear danger"[11]), including
  - 1. nuclear attack
    - a. by an existing nuclear-weapons state
    - b. by a proliferant nation or group
  - 2. risks to workers from nuclear weapons testing, manufacture, waste management, deployment, decommissioning and decontamination, and cleanup
  - 3. risks to public health from the nuclear weapons operations listed above
    - a. risks to current populations
    - b. risks to future generations
  - 4. any environmental risks not included in 3, such as loss of tribal lands and sites, environmental damage that is not human health damage *per se*
  - 5. other, indirect, nuclear dangers (e.g. threats to democracy from counterterrorism activities)
  - 6. nuclear weapons accidents
    - a. unintentional nuclear detonation
    - b. dispersal of plutonium

Based on this outline, there are three relevant hierarchical levels of safety goals. The most fundamental goal is maximizing overall public safety. This means to minimize morbidity and early mortality, from whatever cause. Since it is clear that there is a finite amount of money available to the federal government to do this, it is certain that seeking to maximize safety from one type of danger without regard to cost, e.g. nuclear weapons, would damage overall public safety, not to mention impede other important goals of government. Choices will have to be made, then, and an optimum, not a maximum, level of safety chosen for each particular program, nuclear weapons included.

A subset of public safety is safety from nuclear weapons. Optimizing this--which is called by DOE "reducing the nuclear danger"--means to minimize morbidity and mortality from nuclear weapons operations taken as a whole: the production, storage, processing, and manufacturing of weapons materials, and the design, production, maintenance, deployment, and disassembly of the weapons themselves. It includes the public health aspects of waste management, as well as environmental restoration or the lack of it. It includes safety from any intentional use of nuclear weapons, and from nuclear accidents.

But since only a very limited amount of money is available for this task, it is possible, even certain, that seeking to reduce any one aspect of the nuclear danger without regard to cost--either cost in dollars or in environmental or proliferation risks--could well increase, not decrease, the overall nuclear danger.

Finally, a subset of safety from the dangers of nuclear weapons is safety from nuclear weapons accidents, which is served by the incorporation of safety features into the design of nuclear weapons systems. It is also served by operational changes that decrease the likelihood of accidents or the public health exposures from accidents, should any occur.

Thus the technical or design aspect of weapons safety is an important goal, but it is a subservient one. A sense of proportion is required. An optimum, not a maximum, amount of nuclear weapons safety is the inevitable and proper goal.

At present, however, the DOE weapons labs are promoting the quest for greater nuclear weapons safety as if it were an absolute good--as if it had no conflict with the other goals of the agency or with the other goals of the government as a whole. The damage that this quest could do to those larger goals is discussed briefly below, following a summary of the technical aspects of nuclear weapons safety.

Design aspects of nuclear weapons safety

In a nutshell, the nuclear weapons safety problem as it affects the design laboratories consists of minimizing the probability of two general kinds of untoward events:

1) unintentional nuclear detonation of a weapon, either from

a) accidental activation of the firing circuits (e.g. by lightning or other electromagnetic pulse) or from

b) accidental detonation of the high explosive (HE) in the primary from an impact, fire, or other non-electrical cause; and

2) dispersal of plutonium due to an accident of any kind.[12]

The following discussion reviews each of these safety concerns in turn, and concludes with an overview of problems related to aging of weapons.

Accidental activation of the firing circuits is a problem that has been solved

Electrical safety in U.S. weapons is addressed by means of a protection policy known as Enhanced Nuclear Detonation Safety (ENDS), which is achieved by a technology called Enhanced Electrical Isolation (EEI). The Drell Panel describes this system in detail.

> The ENDS is designed to prevent premature arming of nuclear weapons subjected to abnormal environments. The basic idea of ENDS is the isolation of electrical elements critical to detonation of the warhead into an exclusion region which is physically defined by structural cases and barriers that isolate the region from all sources of unintended energy. The only access point into the exclusion region for normal arming and firing electrical power is through special devices called strong links that cover small openings in the exclusion barrier...Detailed analyses and tests give confidence over a very broad range of abnormal environments that a single strong link can provide isolation for the warhead to better than one part in a thousand. Therefore, the stated safety requirement of a probability of less than one a million...requires two independent strong links in the arming set, and that is the way the ENDS system is designed...both strong links have to be closed electrically--one by specific operator-coded input and one by environmental input corresponding to an appropriate flight trajectory--for the weapon to arm.
>
> ENDS includes a weak link in addition to two independent strong links in order to maintain assured electrical isolation at extreme levels of certain accident environments, such as very high temperature and crush. Safety weak links are...designed to fail, or become irreversibly inoperable, in less stressing environments than those that might bypass and cause failure of the strong links.
>
> The ENDs system provides a technical solution to the problem of preventing premature arming of nuclear weapons subject to abnormal environments...ENDS was developed at the Sandia National Laboratory in 1972 and introduced into the stockpile starting in 1977.[13] (emphasis added)

While there are some older weapons in the U.S. arsenal that do not contain ENDS, these weapons are currently being retired.[14] With these retirements, the problem of electrical safety of U.S. nuclear weapons has been solved.

Note that the one-in-a-million standard applies in the case of accidents, which are themselves infrequent, and not in routine operations. The applicable specification for the probability of an accidental explosion during normal operations, including all environments in the stockpile-to-target sequence, must be less than 10^{-9} per warhead lifetime.[15] Since the probability of a highly abnormal environment, i.e. an accident, is now much lower than it was during the Cold War with its intensive airborne transport of nuclear weapons, projects to develop firing circuits with still greater isolation possess only very small benefits.

Such work is, in any case, unlikely to affect the nuclear components--the physics package--of the warhead. It is primarily Sandia which designs and maintains the arming and safing systems of warheads, not the two physics labs. Modifications to these electrical systems are relatively routine and need not trigger major stewardship expenses.

The possibility of an accidental nuclear explosion due to impact or fire has been the subject of intensive study and is extremely unlikely

The second aspect of preventing an accidental nuclear explosion consists in ensuring that impacts, fires, explosions, and any other causes not covered by the electrical safety system cannot set off any weapon's high explosive in such a way that any significant nuclear yield results. Recognition of this danger led to the adoption of the so-called "one-point-safety" standard in 1968. This quantitative standard requires all weapons in the stockpile to be "one-point safe," which is defined as achieved if the probability of a nuclear explosion with a yield of four pounds TNT-equivalent or greater from detonation of the HE at any single point is less than one in a million in an accident.[16] And this safety performance must be intrinsic to the design, i.e. it must obtain in the absence of any mechanical safing device.[17]

Using more detailed computational analysis than had previously been available, the Drell Panel found that "unintended nuclear detonations present a greater risk than previously estimated (and believed) for some of the warheads in the stockpile."[18] To solve these problems, the Drell Panel recommended a major competitive effort at the weapons laboratories to design new warheads. Yet other than an implicit recommendation to quickly retire the SRAM-A system[19] and make sure the entire stockpile has ENDS, the unclassified Drell Report contains no specific recommendations for improving the nuclear detonation safety of the U.S. arsenal.

However, the report did recommend a broad and in-depth review of the safety of the Trident II (D5) missile system, given the fact that the W88s used there do not contain IHE and are mounted in a ring around the third-stage rocket motor, which contains a detonatable propellant. Kidder concurred with this recommendation and suggested that the Trident I (C4) W76 system be closely examined as well.

The results of the examination, which set these worries to rest, were provided to Congress in the testimony quoted above. Meanwhile, operational changes in the way Trident missiles were loaded into submarines were immediately implemented. Trident missiles are no longer loaded into their launching tubes with their warheads in place, which means, according to Drell, that there is now "no worry" about a dockside warhead explosion.[20]

To prevent plutonium dispersal, operational changes are most effective

Plutonium--capable of causing cancer deaths from doses in the microgram range--can be dispersed into the environment in any accident in which the conventional explosive in a nuclear weapon burns or explodes. If the explosive involved is IHE, an explosion is highly unlikely, since IHE is remarkably difficult to detonate. In the case of a fire, the plutonium will burn

along with the IHE. Warheads made with HE may also burn in a fire rather than explode, and in fact this happened six times at U.S. Air Force bases between 1958 and 1965 when nuclear warheads were involved in fires.

The only good news here is that, in the absence of an explosion, the mean particle size of the plutonium oxide produced is larger and less likely to be inhaled, and is dispersed over far less area, resulting in many fewer potential casualties.[21] The Air Force in fact claims that these six accidents resulted in only localized contamination, which was cleaned up in some fashion in each case.[22]

All in all, between 1950 and 1980 there were 32 serious nuclear weapons accidents ("Broken Arrows"). None have occurred since 1980. During that 30-year period there were two accidents that involved explosions with plutonium. These were airplane crashes at Palomares, Spain in 1966 and at Thule, Greenland in 1968. Luckily, these occurred in relatively unpopulated areas, and no major public exposures resulted. It seems likely, however, that significant danger was experienced by the cleanup crews, which were probably not well trained or equipped, both in these cases as well as in the six accidents in which weapons burned.

Can the possibility of nuclear weapons accidents in which plutonium is dispersed be eliminated? The answer, of course, is no. Even with IHE, with fire-resistant pits (FRPs, which have a refractory shell[23] surrounding the plutonium), and with speculative "super-safe" designs in which the fissile material is somehow kept separate from the HE or IHE until the arming sequence--there will always be a finite chance of plutonium dispersal in the event of a fire or other accident. And this finite chance will continue to be much greater than the one-in-a-million standard adopted for electrical isolation and for one-point safety.

Still, the dangers from plutonium dispersal, while quite serious, are far less than those from a nuclear detonation. Claims by lab officials that a plutonium dispersal accident could be "worse than Chernobyl" are at least two orders of magnitude off base.[24] [add direct cite]

In order to prevent plutonium dispersal, the Drell committee recommended that "all nuclear bombs loaded onto aircraft--both bombs and cruise missiles--[be built] with both IHE and FRPs." On its face, this had some appeal, since some 84 percent of serious nuclear weapons accidents have involved aircraft.

Unfortunately, equipping all airborne U.S. weapons with IHE and FRPs would require redesigning and rebuilding thousands of nuclear weapons, entailing dozens of nuclear tests and the construction of new nuclear weapons factories, such as a replacement for Rocky Flats. Kidder's more practical recommendation was, instead, to implement cost-saving operational changes that would reduce the risk of accidents which could result in plutonium dispersal to near zero. These changes basically consist of not putting nuclear weapons on aircraft in peacetime. Carson Mark, Director of the Theoretical Division at Los Alamos for 26 years, had argued a month before Drell that operational limitations on warheads (e.g. no routine deployment for

effects degrade a warhead's reliability rather than its safety. (The sensitivity to impact or fire of the HE used in nuclear warheads does not increase significantly with age.)

A severe case of aging was the deterioration of the HE in the W68 Poseidon warhead, which produced a harmful, chemically reactive effluent. This resulted in a potential loss of warhead reliability that necessitated a complete rebuild of all W68 warheads in stockpile. The reliability, but not the safety, of the warhead was affected.[12] (emphasis added)

Dr. John Immele, Director of Los Alamos National Laboratory's (LANL's) Nuclear Weapons Technologies Program, spoke to this same point on December 8, 1994 at a public hearing in New Mexico.

> Audience: I have one more question...in a deleterious way, they may age or crack. What do you mean, is there a risk to the public?
>
> Immele: No, there's not a safety risk. There's a performance problem...because insensitive high explosive is so insensitive that sometimes if it's cracked it won't light on the other side when it's supposed to, so it's basically a performance problem.
>
> Audience: A reliability problem?
>
> Immele: That's right, it's a reliability issue. We have not found aging problems that affect safety, that make the explosive more sensitive.[33] (emphasis added)

This testimony is very important, since the long-term behavior of IHE is not understood as well as that of HE, and it is sometimes mistakenly implied that this uncertainty extends to questions of safety, which it clearly does not.

The impression should not be left that once weapons are put into the stockpile they are forgotten. The stockpile surveillance program coordinated by the laboratories, especially by Sandia, routinely inspects weapons and their components and ensures, among other goals, that safety problems do not develop. Thus safety throughout the aging process is ensured by both the current weapons' inherent safety features and a coordinated surveillance program.

DOE's proposed new facilities have nothing to do with weapons safety

As part of its proposed SBSS program, DOE is planning to build a number of new experimental weapons science facilities with a total cost running into the billions of dollars.[34] The largest of these is the National Ignition Facility (NIF), a laser fusion machine with a currently-estimated capital cost of about $1.2 billion. The role of NIF in the SBSS program is to simulate the implosion process that occurs in the thermonuclear "secondaries" of nuclear weapons.

Throughout the 40-year history of the thermonuclear arsenal, no safety problems have ever been identified with secondaries, which contain neither plutonium nor high explosives. Nor are any expected. It is therefore patently obvious that NIF has nothing to do with nuclear weapons safety. Dr. Steven Younger, who was at the time Deputy Program Director of the LANL Nuclear Weapons Program, made statements to this effect at a DOE-sponsored workshop on NIF on September 8, 1994 in Washington.[35]

For the same reason, other facilities for simulating secondary implosion, like ATLAS (LANL's proposed new pulsed-power implosion facility) have nothing to do with nuclear weapons safety either. The only facilities with potential relevance for nuclear weapons safety are those being built or planned for the simulation of nuclear weapons primaries. These are the hydrodynamic testing facilities: the $124 million Dual-Axis Radiographic Hydrotest facility (DARHT), under construction at LANL but halted for environmental review, and the $422 million Advanced Hydrotest Facility (AHF), planned for the early years of the next century.

Hydrotest facilities cannot test either the high explosives or the plutonium pits of stockpiled weapons. The former cannot be separated intact from the pit they embrace, and the latter cannot be tested without a nuclear explosion. Therefore, these facilities test mock weapons assemblies. There is very little point in conducting hydrodynamic explorations of the safety of existing weapons. These weapons are already known to be one-point safe and their plutonium-dispersal properties are already clear--either they have IHE and FRPs or they do not.

The only purpose of these facilities, as far as safety is concerned, is that they can be used to design new primaries that have IHE and FRPs, either primaries for new weapons with new military characteristics or to retrofit into existing warheads and bombs. This can be done either directly, by testing mockups of these new primaries, or indirectly, by conducting precise hydrodynamic tests on existing designs for which nuclear testing data is available ("benchmarking"). Benchmarking allows the nuclear testing database to better inform the nuclear weapons codes, which can then be used to design new weapons.

Actually, DARHT may be inadequate either to design new weapons with IHE and FRPs or to benchmark some stockpiled systems, with or without these features.

> Recognizing the importance of continued research in radiography, the Laboratory [LANL] cites DARHT as its top construction priority...For a number of stockpile systems, particularly those that are designed with insensitive high explosives and fire-resistant pits, planned radiography upgrades [i.e. DARHT] do not provide resolution adequate to observe the gas cavity configuration of the primary stage late in the implosion process. For effective monitoring of stockpile weapons [sic] of this type, a next-generation hydrodynamic testing capability will need to be developed. Such an Advanced Hydrotest Facility (AHF) will include multiple beams that produce X-rays from four to six directions at various times to characterize the physical state of the pit more thoroughly.[36]

Fewer deployments and further retirements are virtually the only way greater overall nuclear weapons safety can be achieved

Given that upgrading and replacing nuclear weapons is likely to create serious countervailing risks--risks which, on their face, are considerably greater than those gained from any purported safety "improvements"--the search for greater nuclear safety must be directed elsewhere. Clearly, all other factors being equal, the probability of a serious weapons accident is proportional to the overall size of the arsenal. A minimum deterrent force--however one may define "minimum"--is also, therefore, an optimum safety arsenal. It is a minimum cost arsenal as well. A smaller arsenal would assist U.S. nonproliferation objectives, and would cause fewer dangers to the environment, to worker safety, and to public health. A smaller arsenal, to the extent that it corresponds to smaller arsenals abroad and especially in Russia, reduces the number of missiles which could be targeted at the United States.

Indeed, given comparable reductions in other nations' stockpiles, it can be persuasively argued that the optimum safety arsenal is one that is extremely, if not vanishingly, small. Many military and senior civilian defense leaders, past and present, have come to adopt this view.[42]

In addition to reducing the size of the arsenal, the movement of additional weapon systems away from active deployment and into safe bunkers would also reduce risk from accidents, as would the movement of nuclear weapons away from bases located in populous areas (e.g. Hickam Field in Honolulu). Further restrictions on the airborne transport of nuclear weapons should also be considered.

Increasing safety will decrease reliability

The quest for "increased" safety has a very marked cost in terms of weapons reliability. That is, if weapons are changed to make them "safer," they will be less reliable--unless we are able to proof-test the new designs. Resuming nuclear testing, however, would conflict strongly with nonproliferation goals and our treaty commitments. Thus the quest for "safer" weapons, if accepted at face value, could keep the weapons labs in a booming business for a long time by eroding the reliability of the weapons.[43]

Public safety, not nuclear safety, is the goal

So far we have examined nuclear weapons safety issues from a narrow technical perspective and in the broader context of reducing the nuclear danger as a whole. From the still broader vantage point of public health and safety as a whole, further investments in safer designs for nuclear weapons have vanishingly small returns.

Further investments in nuclear weapons safety have a very low benefit/cost ratio compared to other public safety investments

Would upgrading to IHE and FRPs be worth the expense? Analysis--not to mention common sense--shows that investments in other government programs (e.g. highway improvements, cancer screening) yield orders of magnitude greater safety benefits to the general public.

Steve Fetter and Frank von Hippel estimate that a worst-case accident involving explosion of the HE in ten W88 warheads at the Bangor Trident base directly upwind from Seattle would involve on the order of 1,000 plutonium-induced cancer fatalities in the long run.[44] They suggest, for the sake of argument, that the risk of this accident can be assumed to be on the order of 0.1% per year, in which case the expected fatality rate from this type of nuclear weapon accident is 1 death per year. The prevention of this accident by the spending of about $1 billion to equip some 3000 submarine missile warheads with IHE would represent a cost on the order of $100 million per fatality avoided.[45] This accident has, subsequent to their paper, been made very unlikely by loading the missiles and the warheads separately, lowering the expected fatality rate by probably at least one, if not two or more, orders of magnitude and correspondingly raising the cost per fatality avoided.

Fetter and von Hippel cite cost estimates in the range of $20,000 to $140,000 per life saved by cancer screening, $400,000 per life saved by kidney dialysis, and $30,000 to $300,000 per life saved for various highway safety improvements. Thus the IHE warhead upgrade program, even by their highly conservative calculations, would cost on the order of 250 to 3,000 times more than these other prevention programs per life saved--or, given the operational changes already put in place by the Navy, at least 10 to 100 times as much. This great disparity of benefit--at least 3 if not more than 5 orders of magnitude--signals that the overall sense of their conclusion is robust with respect to large changes in their assumed accident rate.

What is more, the government and private programs cited by Fetter and von Hippel are almost certainly not the most effective ones offered by government or private sources, either in terms of average cost or marginal cost per life saved. Programs targeted at populations at risk like the Women, Infants, and Children (WIC) program, for example, are arguably at least one order of magnitude more effective per dollar spent than highway improvements in preventing deaths. And, on average, WIC and other perinatal programs address a younger population--one young adult and one infant--than do the programs Fetter and von Hippel cite, giving more years of life saved per person in these cases.

It would be interesting to compare Fetter and von Hippel's numbers to the benefits of investments in strictly military health and safety. The military environment is a dangerous place, and large numbers of military accidents occur annually, sometimes with accompanying civilian deaths. It is highly likely that it would be more cost-effective to use a billion defense dollars to prevent unnecessary military mortality--through, for example, more complete training--than it would be to use this sum to upgrade Trident missiles and their warheads, for which purpose it would probably not be adequate in any case.

dispersing accident elsewhere than the Trident docks has not entirely vanished, of course, despite the fact that all of these non-Trident weapons have IHE and some of them have FRPs as well (see Table 1). Assume, arguendo, that these changes have reduced the expected annual deaths by a factor of 10 to 100, i.e. to about 0.01 to 0.1.

It seems therefore plausible that the *a priori* expected number of annual deaths from a nuclear weapons accident is on the order of 0.1 or fewer persons/year, or roughly one million times less than the expected number of deaths from other accidents. The probability of dying in any accident is, in turn, about 50 times less than dying of a disease, which is about 0.98. Our rough estimate of the probability of any given person in the U.S. dying from a nuclear weapons accident in a given year is thus about 4×10^{-10} or less, or less than 3×10^{-8} in a 75-year lifetime. These numbers are very low, and errors in them of up to three orders of magnitude will not affect the conclusions which follow in the text.

48. "The Containment of Underground Nuclear Explosions," Office of Technology Assessment, 1989. The OTA team drew heavily on weapons laboratory expertise, as the list of contributors shows.

49. See Stewart Udall, The Myths of August: A Personal Exploration of Our Tragic Cold War Affair with the Atom, Pantheon, 1994. Dr. Hugh DeWitt of Lawrence Livermore has recently drawn attention to the continued classification of historic fallout data and called for U.S./Russian bilateral release of this data.

50. Radioactive Heaven and Earth, Apex Press, 1991, available from the Institute for Energy and Environmental Research, Takoma Park, Md.

Table 1: The Projected U.S. Stockpile After Implementation of START II

Weapon	Use	Yield (kt)	Number	Design Lab	Produced	IHE	FRP
B61-7	Strategic bomb	10-350? (Hansen: 500)	450	LANL	1985-? (pits 1966-1971)	yes	no
B61-mods 3/4/10	Tactical bomb	1-150? (H: 300)	100	LANL	1979-1990	yes	no
W76	SLBM C4/D5	100	1,280	LANL	1978-1987	no	no
W80-0	SLCM	5 & 150	350	LANL	1984-1990	yes	no
W80-1	ALCM	5 & 150	400	LANL	1982-1990	yes	no
B83	Strategic bomb	low to 1,200	500	LLNL	1983-1990	yes	yes
W87-0	ICBM	300	500	LLNL	1986-1989	yes	yes
W88	SLBM D5	475	400	LANL	1989-1990	no	no
Reserve Stockpile After START II (estimate of Norris and Arkin)							
W76	as above		1,000	as above			
W78	ICBM	335	1,000	LANL	1979-?	no	no
B53-1? B61 & B83 W80-1	gravity bombs and ALCMs	5 to 1,200; 9,000 if B53-1	1,500	both	B53: 1962-1965	B53: lacks IHE, FRP, and full electrical safety	
Total weapons after START II: about 8,500 (includes spares)							

IHE: insensitive high explosive
FRP: fire resistant pit
LANL: Los Alamos National Laboratory
LLNL: Lawrence Livermore National Laboratory
ICBM: intercontinental ballistic missile (Minuteman III in this case)
SLBM: submarine-launched ballistic missile
ALCM: air-launched cruise missile
SLCM: submarine-launched cruise missile
C4: Trident I C4 missile
D5: Trident II D5 missile

Sources:

Tom Zamora-Collina and David Albright, ISIS Report, October 1993; Christopher Paine, "CTB Negotiating Issues With Implications for Nuclear Nonproliferation," Natural Resources Defense Council, April 1994; Stanley Norris and William Arkin, "Nuclear Notebook," Bulletin of the Atomic Scientists, Jan/Feb. 1995; Chuck Hansen ("H" above), U.S. Nuclear Weapons: The Secret History, Orion Books, 1988.

Transcript 4: Comment Code 53
Santa Fe Public Hearing – Evening Session

Multi-Page™

SANTA FE PUBLIC HEARING
for the
DRAFT ENVIRONMENTAL IMPACT STATEMENT
DUAL AXIS RADIOGRAPHIC HYDRODYNAMIC TEST FACILITY

THURSDAY, JUNE 1, 1995
6:30 P.M.
HIGH MESA INN
3347 Cerrillos Road
Santa Fe, New Mexico

REPORTED BY: Irene Delgado, NM CCR 253
Joe Jameson Court Reporters
Suite 800, 320 Gold, S.W.
Albuquerque, New Mexico 87102

ROUND-TABLE APPEARANCES

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MS. WEBB: Good evening. My name is Diana Webb. I'm with the Department of Energy, Los Alamos area office. I would like to welcome you here tonight, ask you to come in, sit down, come as close to us as you would like. These seats at the table are for you, the public. We invite you to sit here with us or in one of these other chairs around the room.

This is the evening session in Santa Fe of the public hearing on the draft environmental Impact Statement on the dual axis radiographic hydrodynamic test facility, which I will refer to tonight as DARHT. With me tonight are Bob Day, who is the director of the Dynamic Experimentation Division at Los Alamos National Laboratory, and Jas Mercer-Smith who is deputy program director for the Nuclear Weapons Technology at Los Alamos National Laboratory.

Our court stenographer tonight is Irene Delgado. And we have our rotating scribe, Don McClure, who will be taking short bullet statements of the comments that are given here tonight. When we take a break, you might be interested in reading the summaries of the statements that were made this afternoon which are the similar looking sheets that are hung there on the wall behind you.

We are here tonight to listen to your

comments on the draft DARHT EIS. We are interested in your comments regarding the accuracy and adequacy of the environmental analysis document and any other comments you would like to make on the Environmental Impact Statement, the hydrodynamic testing program or any other matter relating to the environmental analysis.

The format tonight is such that we have three separate areas for you to get information and for us to hear your comments. This is the round-table discussion. This is the round table. We invite you to come and sit with us here and share your concerns with us tonight.

This session is being formally recorded. Irene is making a verbatim transcript which will be available for public review in the Los Alamos Community Reading Room. These transcripts should be available within a week or so.

In the back behind the portable wall there, we have an information area. There's a lot of technical information related to the DARHT project, the different alternatives that are analyzed in the Environmental Impact Statement and other information regarding environmental programs and other information regarding Los Alamos National Laboratory.

Across the hall, out across the atrium and

up to the side, we have a comment room or what I call the quiet room. That's a room where there is a tape recorder, if you wish to go in there and make spoken statements for the record. There are forms, if you wish to go in there and make written comments for the record. The transcription of that tape and those written comments are also part of the formal record of the proceedings here tonight.

We also have tables in the atrium out here that have additional information. There is a table where we have a lot of information regarding this Environmental Impact Statement, other related Department of Energy National Environment Policy Act reviews or NEPA reviews.

In addition to that table, there is a second table that has information that presents alternative points of view regarding this project and other matters pertaining to whatever is out there. We are here to listen to you tonight. We are willing to make this format your format. We will sit here and listen to your spoken statements, accept written comments. Bob, Jas and myself will answer questions or we will entertain an open discussion amongst the members of the group here tonight, whatever would be the wishes of this group.

A little bit about what the Environmental

1 Impact Statement is about. The Department of Energy has
2 proposed to provide enhanced high resolution radiographic
3 capability to perform hydrodynamic tests and dynamic
4 experiments in support of the department's historical
5 mission near-term stewardship of the nuclear weapons
6 stockpile.
7 The department's preferred alternative
8 would be to complete and operate the DARHT facility at
9 Los Alamos National Laboratory. The department is
10 preparing this Environmental Impact Statement to weigh
11 the environmental impact or the environmental
12 consequences of what would happen if we went forward with
13 our preferred alternative, measured against what would
14 happen if we maintain the status quo or the no action
15 alternative, and what would happen if we pursued several
16 other alternatives.
17 The Environmental Impact Statement process
18 has many steps. We are sort of here in the middle right
19 now. A Notice of Intent for this Environmental Impact
20 Statement was published in the Federal Register of
21 November last year. That was followed by a public
22 scoping period. In December and January, we had public
23 scoping meetings. Many of you attended those meetings
24 the first week of December last year.
25 At the end of January, we finished our

1 implementation plan which documented the results of that
2 scoping process and shows the road map that we would
3 proceed to complete this environmental review. We have
4 now issued the draft environmental Impact Statement. The
5 date on that is May. We are now in a formal public
6 comment period of which this hearing is a part to receive
7 your comments again on the accuracy and adequacy of that
8 review. That formal public comment period will extend
9 until June 26. We will, however, accept written comments
10 after that date to the extent that we are able, as long
11 as possible.
12 After we consider the comments that we
13 have received through this process, we will then finalize
14 the document and issue a final Environmental Impact
15 Statement on DARHT. We anticipate that that will take
16 place in mid August.
17 No sooner than 30 days after that final
18 EIS is issued, the department will issue then its Record
19 of Decision. This will document the final decision that
20 the department makes on whether or not to proceed with
21 the preferred alternative to construct and operate DARHT,
22 whether or not to follow one of the other alternatives
23 analyzed, or whether to take no action and proceed with
24 the status quo.
25 That decision will be accompanied by

1 Mitigation Action Plan, which is a short document that
2 will explain the mitigating measures that the department
3 will take to mitigate or lessen the adverse impacts that
4 might occur as identified in this Environmental Impact
5 Statement.
6 The DARHT Environmental Impact Statement
7 has analyzed six alternatives. As I mentioned, the no
8 action alternative is to continue the status quo, to
9 continue to use PHERMEX, the existing hydrodynamic test
10 facility at Los Alamos National Laboratory. Under that
11 alternative, we would not complete construction of DARHT
12 as a hydrodynamic test facility, but we would complete
13 the structure for some other use.
14 The second alternative analyzed, as I
15 mentioned, is the department's preferred alternative, to
16 complete and operate the DARHT facility. Under this
17 alternative, the department may choose to delay
18 completion and operation of the second axis of the
19 two-axis facility until after the accelerator and X-ray
20 equipment in the first axis has been installed, tested
21 and proven.
22 The third alternative would be to upgrade
23 the existing PHERMEX facility at Los Alamos National
24 Laboratory. Under this alternative, the existing single
25 axis, fairly short axis machine, would be enlarged: a

1 second axis would be built, and the enhanced capability
2 would be provided at that facility, similar to the DARHT
3 equipment under the preferred alternative.
4 The enhanced containment alternative looks
5 at ways to contain most or all of the experiments and
6 tests that are planned for the facility. It is similar
7 to the preferred alternative in that it does use the
8 DARHT facility. There are two options that are looked
9 at. One would be to construct a containment building in
10 which all types of experiments would be performed. This
11 building, then, would contain all tests.
12 The other option is an enhanced vessel
13 containment option. Under this option, the department
14 would conduct most tests and experiments in containment
15 vessels. I would like to point out that the department
16 now conducts some tests and experiments in contained
17 vessels.
18 Under the plutonium exclusion alternative,
19 the department would conduct essentially the same
20 operations as under the preferred alternative, but would
21 not conduct any experiments using plutonium at the DARHT
22 facility. This alternative is analyzed to provide a
23 comparative look at the difference of environmental
24 impact if DARHT were used to perform -- I'm sorry -- to
25 perform dynamic experiments with plutonium measured

1 against not using the DARHT facility to perform dynamic
2 experiments with plutonium.
3 Under this alternative, however, the
4 department would meet its need to conduct dynamic
5 experiments involving plutonium at PHERMEX or some other
6 facility. Under the single axis alternative, the
7 department would complete and operate only one axis of
8 the DARHT facility to conduct hydrodynamic and dynamic
9 tests.
10 The other accelerator hall would be
11 completed for other uses, but would not be used as a
12 hydrodynamic test facility. Under all of the
13 alternatives analyzed in this document, the department
14 would continue to use the flash X-ray for FXR facilities
15 at our sister laboratory, Lawrence Livermore, in
16 California.
17 Dynamic experiments involving plutonium
18 are planned for the future, and the department would
19 continue to conduct its hydrodynamic testing program.
20 The infrastructure involving research, waste management,
21 security, maintenance, environmental monitoring or other
22 support services would be the same or would be very
23 similar under all of the alternatives analyzed. And the
24 department would continue, over time, working towards the
25 eventual decontamination and decommissioning of both

1 facilities.
2 This is a picture of the DARHT
3 construction site as it appears today. This picture was
4 taken on May 19, very recently. This picture is taken
5 looking almost straight north. This eastern accelerator
6 hall would be the hall that would be first finished under
7 the preferred alternative. And under the single axis
8 alternative for DARHT, it is the eastern hall that would
9 be finished for hydrodynamic test facility.
10 This is a map of Los Alamos National
11 Laboratory. The Los Alamos townsite is here. White Rock
12 townsite is here. The Rio Grande river is here. The
13 DARHT facility site is located here in the middle of
14 Technical Area 15. The PHERMEX facility is located about
15 a half mile away, very close to the same technical area.
16 Those are in the middle of the existing explosive testing
17 area.
18 The Environmental Impact Statement
19 provides a comparative analysis of the environmental
20 impacts that might occur under any one of those six
21 alternatives. This chart shows a summary of those
22 impacts, and there is another copy of this chart in the
23 back in the information area, and I invite you to look at
24 these during one of our breaks.
25 Although it's a little hard to see from

1 the back, the type on this is color coded. As I said, it
2 is a comparative analysis. The environmental impacts
3 that would be expected if we continued with the status
4 quo, the no action alternative, are showed in the first
5 column.
6 In the other five columns are the
7 environmental impacts expected that would be under the
8 other five alternatives. The environmental impacts that
9 are shown in black type are those that would not change
10 when compared to the expected impact if we continued with
11 the existing situation.
12 The impacts that are shown in red are
13 those that would be expected to have a greater adverse
14 impact when compared with the impasse of the no action
15 alternative. And those shown in green are those that
16 would be expected to have a greater beneficial impact
17 than those that would be expected under the no action
18 alternative.
19 This is a copy of the Environmental Impact
20 Statement that we are discussing tonight. If you would
21 like a copy, would you please leave your name and address
22 with the staff at the front desk and we will make sure
23 you get copies of that and put you on our mailing list
24 for any other information that we will be preparing under
25 this project.

1 This is an unclassified analysis. In
2 addition, the department has prepared a classified
3 supplement that includes analysis and other information
4 pertaining to this Environmental Impact Statement. The
5 department has prepared an unclassified summary -- an
6 unclassified summary of the impact analysis that is
7 included in the classified document. This summary is
8 available for you. It is out on the information table
9 that I just mentioned.
10 The department has put in the public
11 reading room at Los Alamos, the some 200-plus references
12 that are -- were used to assist with the development of
13 this draft environmental Impact Statement. In addition
14 to that material, we have placed a lot of other related
15 material in the public reading room. We have again, on
16 the information table outside, a list of some 60-odd
17 documents that are available there for your information.
18 You may find them to be of interest when reviewing this
19 material or to get a greater understanding of what the
20 project is all about.
21 Tonight we would invite, first, people who
22 represent the state, tribal governments, or local
23 governments, people from those types of government
24 entities who represent a constituency.
25 We are prepared tonight to have Bob Day

1 here give us a five-minute chalk talk, and I think Bob is
2 prepared to give us a five minute chalk talk on the DARHT
3 project and hydrodynamic testing program in general, if
4 you would like for him to. If you would prefer that he
5 not give that, then we will go right into the gathering
6 of public comments. And again, I'm going to ask you,
7 this is your meeting, what would you like? You can nod
8 your head, shake your head or -- I see a nod. I see a --
9 that's fine.
10 Bob, I think then it would be appropriate
11 for you to give a five-minute Bob Day chalk talk.
12 MR. DAY: This is a chalk talk with no
13 chalk. What I would like -- I would like to do a couple
14 of things. I would like to introduce DARHT in the
15 concept of the broader vision of the laboratory.
16 We hear a lot of about nuclear weapons and
17 nuclear weapon stewardship and that is indeed a key to
18 the DARHT project because it comes out of the -- it's an
19 evolution of the lab's mission. And the stewardship and
20 the ongoing maintenance of the nuclear weapons stockpile
21 is an important mission for DARHT. But the lab's mission
22 has evolved, and the lab's mission has been changing
23 significantly, and DARHT plays a role in a number of
24 areas, so I thought I would put that in context.
25 The other thing I thought I would do is

1 introduce some of the terminology. You will hear a lot
2 about plutonium. And you will hear a lot about
3 conventional weapons and nuclear weapon technology and
4 hydrodynamic testing. I will put in context a little bit
5 of some of the terminology so we can talk about some of
6 that as well.
7 But at the heart, Los Alamos has been
8 picky about who it is and what its core capa --
9 capabilities are and key missions are. And at the heart
10 of the laboratory, in the changing role that we have
11 reducing the nuclear danger, is the key mission of the
12 laboratory.
13 And there are five major components there.
14 There are pieces that don't relate directly to DARHT or
15 pieces that related in very strange ways. One of the
16 pieces is environmental stewardship. This is the issue
17 associated with the legacy of 50 years of production, not
18 a big issue vis-a-vis DARHT, some D&D issues, but not a
19 big issue because for over 50 years the complex, weapons
20 complex, has a number of environmental problems that have
21 to be addressed.
22 There are key capabilities out of Los
23 Alamos that allow us to be able to address on the basis
24 of the underlying science that's needed to address those
25 problems efficiently and quickly, the capability to do

1 that, the people have a core to do that quickly and
2 efficiently. So that's a part of what we are at the
3 laboratory; not a big issue with DARHT, but an important
4 part.
5 Another is materials management. We at
6 the laboratory have seen the evolution of materials,
7 nuclear materials of all kinds, evolve in our 50 years.
8 Part of that evolution has been in the nuclear weapons
9 program. Actually, right now that's only a small part of
10 that evolution of material, strongly dominated by nuclear
11 materials in the commercial power sector. But again, a
12 great deal of the expertise associated with maintain --
13 how to properly maintain, how to properly control and
14 what possible disposition of this material could evolve
15 is also a key part of what Los Alamos knows how to do.
16 A growing concern, a concern that's
17 actually been in the news a great deal in the last months
18 because of the renewal of the Nonproliferation Treaty is
19 the issue of proliferating nuclear weapon technology and
20 the ways we can counter that proliferation. Again, much
21 of the expertise and capability in people that know that
22 technology is important in this arena reside at the
23 laboratory, and it's a key part of what we do.
24 But it's also a place where DARHT plays a
25 role, and that's because -- because terrorist devices or

1 proliferant devices are devices where we don't -- we
2 haven't developed those. That kind of technology
3 evolves. We learn new things about what might be done or
4 possibly be done, and that kind of system needs to be
5 investigated. We need to understand what is possible.
6 We also need to understand ways to counter those kinds of
7 systems.
8 Frequently they employ complex geometries
9 of very thick materials, and that's what DARHT is all
10 about, understanding, in detail, the interior workings of
11 things you can't see inside. It's a radiographic machine
12 just like an X-ray machine that you have in the medical
13 business, only this is to look through very thick things
14 and to get very good detail. So in the counter
15 nonproliferation arena, the DARHT technology is a major
16 improvement in terms of what we can know, what we can
17 understand and how well we can impact that mission and
18 capability in the laboratory.
19 There's also stockpile surveillance. We
20 are not, as a country, certainly not as a laboratory,
21 developing new nuclear weapons, but a large part of
22 maintaining the stockpile is understanding the nature of
23 the nuclear weapons we have at the present time and
24 watching how they evolve in age. They are built of
25 complex materials which evolve. They are built of

1 plastics. They are built of nuclear materials which
2 decay and create radiation environment. They are
3 built -- all of these objects are packed inside a
4 relatively small volume and expected to last for very
5 long periods of time.
6 Anybody who has a car knows that your
7 dashboard decays. The plastics change. The very nature
8 of the interaction of the radiation with material, it
9 changes the very nature of the material. So that part of
10 understanding what changes have occurred is again an
11 important part of the laboratory. Understanding the
12 nature of those parts is again a place where DARHT can
13 play a role. It can look inside some of those parts and
14 understand how they behave.
15 Another very important part of what we are
16 doing is stockpile stewardship. This is different than
17 surveillance. Surveillance is looking. Stewardship is
18 much more related to understanding. As we see these
19 changes, we see changes in the metallurgy, and we see
20 changes in the material. What effect does that have? In
21 a lot of cases there are no changes. Changes are seen
22 all the time. Are the changes big or the changes small?
23 Do they have a significant effect or insignificant
24 effect?
25 We do a significant amount of work to

1 understand the basic nature of the material. This is
2 what an awful lot of our dynamic experimentation is
3 about. Usually when we use that term, it will mean the
4 interaction of high explosives with various materials.
5 It can be surrogate materials like steel, tantalum,
6 depleted uranium. It can be plutonium. They can be any
7 one of a variety of other materials that one might find
8 in these kinds of geometries.
9 There's another term and that's
10 hydrotesting. Hydrotesting is where you take a surrogate
11 for the material that's actually in the nuclear weapon
12 and understand its dynamics in detail. The interior
13 parts are moved by high explosives and hydrotesting is
14 understanding how that behaves in detail.
15 Again, it results in very thick, complex,
16 highly-detailed parts. And it's the DARHT capability
17 which allows us to understand the nature of the
18 materials, where it is, and how it has evolved because
19 it's those details which tell us whether or not the
20 stockpile is reliable. And that's one of our major
21 missions is to understand the reliability in the long run
22 of materials of systems that were designed to last
23 perhaps 20 years, which, at the present time, many of
24 which are approaching their lifetime, and for which we
25 expect and need them to last for much greater periods of

1 time.
2 So understanding what we have at the
3 present time, that's called baselining, making sure we
4 understand where we are now, because right now we are
5 tightly tied to the data that we achieve from underground
6 nuclear testing, and the last time we did a nuclear test
7 on any device, we are sure that device works as expected
8 to. As time goes on and changes accumulate, our
9 confidence decreases, so understanding where we are now
10 is important. Then going on and understanding how
11 changes that we are seeing, that we have seen affect the
12 devices, is also important.
13 Also nuclear weapons that -- issues
14 associated with nuclear weapons -- issues associated with
15 changes that we do in order to enhance the safety, to
16 make sure that the safety -- safety is not affected, or
17 changes for safety do not affect the reliability of the
18 device, are again issues which we address with this
19 capability.
20 So stockpile stewardship is the key to
21 understanding the devices we have and the parts that they
22 are made of. But why DARHT? We have capabilities at the
23 present time. A couple of important reasons. We have
24 had a 50-year evolution of this technology. It has
25 allowed us to understand better. One the facts that it

1 allowed us to do more with -- with fewer underground
2 nuclear tests and better uses and more efficient uses of
3 resources.
4 The evolution of this technology has let
5 us understand more quickly, and with aboveground
6 experiments, how nuclear weapons work. And because of
7 that, we've been able to have fewer underground nuclear
8 tests. But now we're asked for something quite
9 different. Now we are asked to maintain this capability
10 for a long period of time without underground nuclear
11 testing. And that's a sea change in terms of what we
12 need to do. As a matter of fact, whether or not it is
13 even possible is not completely known.
14 We need to understand what -- how these
15 devices behave. We need to understand the inner working
16 and materials, position, locations and shapes with much
17 greater detail, and DARHT lets us do that. As a matter
18 of fact, the information that we achieve on each and
19 every one of the tests is about ten times larger than we
20 achieve at the present time aboveground, and it has a
21 resolution which is about three times better -- as a
22 matter of fact, there's some very interesting pictures in
23 the back that I highly recommend you go look at them.
24 It's an interesting image. You are
25 looking at things as through a glass darkly, and as you

1 to hear from you tonight is as to whether or not you
2 think it would be a good idea to incorporate any of the
3 additional information, including that piece of
4 information, into the final Environmental Impact
5 Statement. So I guess one of the things I would like to
6 hear from you is, do you think that would be a good
7 idea?
8 MR. LOCKHART: Yes, I do.
9 MS. WEBB: Thank you. We will take that
10 under advisement. Who else would like to speak? Again,
11 the final Environmental Impact Statement, we'll consider
12 all of the comments that are made, whether they be a
13 spoken comment at these meetings, whether or not they be
14 written comments or other forms of information that you
15 give to us.
16 We will consider all of those comments
17 and we will make changes in the final Environmental
18 Impact Statement in response to those. That's why we're
19 having these meetings and why we have this comment
20 period. And feel free; there's chairs, lots of chairs
21 over here. There are some chairs here, and feel free to
22 join us here at the table. Who would like to speak
23 next? Mary, would you like to speak next?
24 MS. RISELEY: Okay. I will speak next.
25 My name is Mary Riseley. I am with the Los Alamos Study

1 Group, and I believe you, Chris, were at the meeting on
3 2 December 8 when Dr. John Immele said there has been no
3 question of safety that has been due to aging.
4 MS. CHANDLER: I don't recall that.
5 MS. RISELEY: I would be glad to send you
6 the testimony. I will make sure to do that tomorrow.
7 It's a flat statement.
8 MR. DAY: I think it would be inter-
9 esting -- would you like a confirmation of that?
10 MS. RISELEY: I would rather have it from
11 Dr. Immele.
12 MR. DAY: Well, John and I have talked
13 about it. And I can tell you, the issue is, there are in
14 stockpile, issues of reliability. There are issues of
15 safety. There are issues of aging. There are issues of
16 surety.
17 MS. RISELEY: I would like to suggest
4 18 there are also issues of ethics and morality.
19 MR. DAY: Okay. In relation to your
20 question and the statement you made this afternoon as
21 well, there are issues of reliability which come from the
22 fact that the devices have aged, issues of reliabilities
23 associated with their intrinsic nature. There are issues
24 of safety related to the way it works, whether they have
25 insensitive high explosives or conventional high

1 explosive.
2 Where there are issues related to --
3 there's also a combination of issues associated to the
4 safety related to development over time. John's comment
5 refers to the fact that of these combinations of about
6 six or seven things, aging and reliability, aging and
7 safety, reliability and safety, of those sets of
8 combinations -- of those sets, the combination of aging
9 and safety, those safety issues that we have seen because
10 the devices have aged, we presently don't know of any
11 such circumstances. So it's specific to that one case,
12 not to the issue of whether there are questions of
13 safety, not to the issue of whether there can be
14 questions of reliability, but directly to the question of
15 whether or not any safety issues we have seen because of
16 this.
17 MS. RISELEY: I believe that Sandia
18 National Laboratory did a rather elaborate study which
19 was referred to as the Sandia Stockpile Life Study, and
20 that study found that the number of problems that were
21 found at all was extremely small, and I think Dr.
5 22 Kerlinsky can probably give you the exact numbers and
23 most of the ones that related to reliability, only point
24 4 percent had a reliability difference of more than 10
25 percent.

1 MS. WEBB: Mary, for your information,
2 Mr. Greg Mello entered that study this afternoon.
3 MS. RISELEY: Excellent, excellent. Very
4 good. While we are on the subject of issues about the
5 stockpile, I would like to bring up something that is
6 going to happen next year, which may have a very extreme
7 effect -- I hope, because I hope I belong to a
8 law-abiding country -- on the United States nuclear
6 9 weapons posture. And that is the opinion that will be
10 issued next year by the World Court at the request of the
11 United Nations General Assembly on the legalities under
12 international law of the threat, the use and threat of
13 use of nuclear weapons.
14 And I think that that's very relevant to
15 the DARHT project because DARHT does have to do with
16 making changes in nuclear weapons. It has to do with
7 17 designing new weapons, at least it was justified that way
18 for every year of its existence of the proposed project
19 until two years ago, and if nuclear weapons are declared
20 illegal under international law, I hope my country will
21 proceed as quickly as possible to abide by the Article 6
22 obligations under the nuclear Nonproliferation Treaty to
23 disarm.
24 Now, I would like to return to the DARHT
25 EIS. And first, I want to say it is extremely impressive

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that you were able to, Diana, coordinate the number of people you did and come up with a document, which, as far as it goes, is really a very commendable effort.

MS. WEBB: Thank you.

MS. RISELEY: I'm not a technical person, but I'm assured of that by the people who advise me on technical matters. But there are some things wrong with the DARHT EIS and first or foremost of them is it ignores the upcoming Stockpile Stewardship and Management programmatic EIS by assuming that there is a need for a particular type of enhanced radiographic hydrotesting. That need has not yet been analyzed and will not be analyzed until the Record of Decision of the Stockpile Stewardship and Management, PEIS, so it is a premature document. And it is insufficient by definition because it is not -- you know, it ignores this other process which is ongoing.

The other thing that it doesn't consider is all related actions. And that's a quote from Judge Mechem's ruling in the DARHT lawsuit which my organization and CCNF filed last fall. And there are a number of related actions. Having DARHT here would very much influence the Department of Energy in its decision of whether to bring nuclear weapons manufacturing here and many of those decisions should be considered as part

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of the decision as to whether to go forward with DARHT.

It also seems to me that since DARHT is one project among many in the plans for the future of LANL, that it is also out of order to do the DARHT EIS before the LANL sitewide was done. It would make a lot more sense to do first the Stockpile Stewardship and Management PEIS, since that is the core mission of the whole Department of Energy now, and then do the LANL site wide EIS, and then do the DARHT EIS.

There are some areas in which it seems to us that there's inadequate environmental data. And I know that other people have said these things, but since you talk up what people say and have tables that say how many people say what, I just want to go over these points.

It does not contain enough environmental data. There is no information on the geology on the DARHT site, hence, there is no analysis for the potential for migration of heavy metal and radioactive materials which will be spewn onto the ground by the outdoor explosions.

A very important omission; it has been implied strongly that there will be plutonium experiments in containment vessels at the DARHT site, perhaps as many as 10 percent of the total number of experiments. There's no information in this document about

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reprocessing plutonium 242 at Savannah River and transporting it to DARHT for contained experiments there. And since that is going to happen and that is going to be a planned activity there, those environmental impacts should be considered in this EIS.

There is no analysis of potential breaching of these containment vessels, and there is no analysis of the clean-out of what would be the effects of the cleaning out of the containment vessels in which the plutonium experiments will take place.

I would like to say that I was very confused by the upgrade PHERMEX alternative because it reads in this document as if what you really mean by upgrade PHERMEX is move DARHT to PHERMEX after you've already halfway built DARHT at DARHT. And it seems to me that it would be better to consider simply upgrading PHERMEX than moving DARHT to PHERMEX. And in this connection, I would like to say that I understand that there was an experiment which took place at FXR at Livermore sometime I believe in April, that produced images which are better than anything that is anticipated from DARHT, and I would just like to remind the people, we are talking taxpayer money here, and they spent $5 million upgrading FXR, and they got a result which is better than a one-armed DARHT.

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The other possibility that we think should be considered is that, since LANL planning documents already consider or already propose building something called the advanced hydrotest facility, which would have five or six X-ray beams, and that the planning documents indicate that this facility would be commenced only one year after DARHT's second axis is on line, I really feel that you should consider the alternative of canceling DARHT and simply pushing harder for the advanced hydrotest facility and see if you can get that brought forward in time. And I sincerely hope if you do build the advanced test facility, it is not within 1,000 feet of the Pajarito plateau.

The other thing that is sorely missing from the analysis is proliferation impacts. And since the Department of Energy has spent a lot of time and effort analyzing the proliferation impacts of NIF and the proliferation impacts of the initiative to bring spent fuel rods from other countries to the United States, I think that proliferation impacts from DARHT should be considered. There's no mention of the possibility of any kind of international oversight, and there's also no analysis of a programmatic constraint on the types of experiments that would be done at DARHT.

And of course, our concern here is that we would have

1 much less objection to experiments which actually had to
21 2 do with analyzing existing weapons than we would have
3 objections to experiments that were clearly designed to
4 look at new types of weapons. And if there were some
5 kind of programmatic constraints and some kind of perhaps
6 oversight from our allies, from, you know, members of the
7 Nonproliferation Treaty or whatever kind of international
8 oversight of the kind of experiments that were done
9 there, we would be happy to see that kind of change.
10 I really want the construction of DARHT to
22 11 stay on hold until the SS&M PEIS is finished. And I
12 think it should also be on hold until the LANL plan is
13 completed. So those are formal requests that we would
14 make. Many experts do not believe that our weapons need
15 any more than physical inspection, and so it is very much
16 the burden of LANL to prove that aging weapons do need
17 additional high-tech study.
18 Also, I just throw in here to the pot,
19 that before LANL built any new weapons facilities, it
20 should come into compliance with all relevant
23 21 environmental laws; that means the Clean Air Act, the
22 Clean Water Act and RCRA, and LANL has serious problems
23 under all of those laws, and I think a moratorium on
24 construction of the facility should be in place until
25 LANL can be shown to be in compliance with all of these

1 environmental laws.
2 I spent the day today with one of the most
3 eminent experts on nuclear weapons policy in the world.
4 He reminded me that a building of the AGEX facilities, a
5 suite of them of which DARHT is the flagship, followed by
6 NIF and Atlas and Jupiter and so forth or so on, is a
7 deal struck between the labs and Hazel O'Leary,
8 basically; that the lab will give up their opposition to
24 9 the comprehensive test ban in exchange for getting these
10 new toys with which to design new weapons. And I would
11 submit that the comprehensive test ban is not in hand.
12 Comprehensive test ban is a long way from now, and it is
13 threatened by many forces within and without this
14 government, and I think that DARHT should not be built
15 until we have a comprehensive test ban in hand. So thank
16 you very much.
17 MS. WEBB: Thank you, Mary. Mary, you
18 made reference to your group, and I don't remember if,
19 for the record, you specified your group.
20 MS. RISELEY: It is the Los Alamos Study
21 Group based in Santa Fe, New Mexico.
22 MS. WEBB: Thank you. Also, as I
23 mentioned earlier this afternoon before you were here,
24 when Greg Mello spoke, your group did make a request to
25 the Department of Energy to prepare a proliferation

1 impact statement as you just mentioned. The
2 correspondence -- exchange of correspondence on that
3 issue is in the public reading room if any other members
4 of the public would like to review that exchange.
5 I would also like to point out, there was
6 an issue -- a question as to what was said at the scoping
7 meeting in December. The verbatim transcripts of those
8 meetings are available again in the Los Alamos Community
9 Public Reading Room, as are all the written comments that
10 were received on scoping. We will follow the same
11 procedure for these meetings during this comment period.
12 These verbatim transcripts will be made available, as
13 soon as Irene can get them finished, in the public
14 reading room in Los Alamos, along with all of the written
15 comment and written statements that we receive during
16 this period of time. Chris, you already spoke. The
17 gentlemen next to you raised his hand.
18 MR. CUNNINGHAM: I would like to respond.
19 MS. WEBB: If you would not mind telling
20 us your name.
21 MR. CUNNINGHAM: My name is Greg
22 Cunningham, and I am a citizen of Los Alamos, and I also
23 work for the labs, but I am here today representing
24 myself. Mary had about, I think, 13 different comments,
25 if I categorized them correctly. The first thing I would

1 like to point out is that Mary said that, I think, she
2 and her group don't object to experiments on existing
3 weapons.
4 MS. RISELEY: No, we said we would have
5 less objection.
6 MR. CUNNINGHAM: Less objection?
7 MS. RISELEY: Yes.
8 MR. CUNNINGHAM: The point I would like to
9 make is that, in fact, that your group's position and
10 another's group's position referenced the legal
11 foundation with which you worked, at least last fall, was
12 essentially to try and force the stockpile to become so
13 unreliable and potentially unsafe, that reliability is a
14 big issue, to become so unreliable that the military
15 leaders and political leaders would essentially mistrust
16 them and would unilaterally disarm, and I have some
17 testimony if you dispute that.
18 MS. RISELEY: That is Jackie's position,
19 but not the Los Alamos Study Group.
20 MR. CUNNINGHAM: I think I have your
21 statement from last fall. Let me read it. Let me see if
22 I have it.
23 MS. RISELEY: I know Jackie said that very
24 strongly, but that is not our position. We simply have a
25 position that the world would be a safer place if no one

1 important issue. And particularly one-point safety which
30 2 needs continual testing to discover inherent design flaws
3 that may have been undiscovered at the time of
4 moratorium.
5 I would like to read a couple of quotes to
6 substantiate what I'm saying. Basically I came up with a
7 response to a set of questions that I thought the public
8 might be interested in getting answers to. The questions
9 are, why does the stockpile stewardship need to involve
10 hydrodynamic testing? Aren't the weapons safe and
11 reliable? Can't we just remanufacture them and encounter
12 the design needs? Is reliability really that important?
13 Is safety really affected that much by small factors? I
14 have a long list of responses that I will submit for the
15 final EIS.
16 I would like to read a couple of things
17 from the Miller Report which was a response to a request
18 from Congress. Congress, basically in the late '80s, was
19 involved in a number of treaty negotiations and was
20 highly concerned about the safety and reliability of our
21 stockpile. They requested a report from Dr. Ray Kidder,
22 Livermore, who was a theoretical physicist. He is not a
23 weapons physicist. And Congress felt he was a very
24 objective reporter of what the real needs are to ensure
25 the stockpile.

1 The Miller Report was a companion to that
2 report that was prepared by a weapons physicist that had
3 day-to-day dealing with the problems encountered with
4 weapons and there was a lot more detail in the Miller
5 Report than Kidder Report, but it may be somewhat biased
6 due to the fact that it was prepared by a weapons
7 physicist.
8 The Miller Report said that -- and I think
9 these are facts. I can't imagine them being disputed --
10 "One-third of all the weapon designs introduced into the
11 stockpile since 1958 have required and received post
31 12 deployment nuclear test resolved problems related to
13 deterioration or aging or to correct a design that's
14 found to not work properly under various conditions."
15 And that's a quote from the Miller Report.
16 A report from the Kidder Report, which I
17 presume to be more objective since Congress specified
18 this individual exactly to give them an objective
19 analysis of the situation said, "Safety in the designing
32 20 of the warhead -- safety problems with nuclear warheads
21 are generally inherent in the design of the warhead
22 itself, not the results of aging or other problems. Such
23 problems may not be identified until long after the
24 warhead and the stockpiles were there to begin with."
25 Then you question the -- let's see. On a

1 safety issue -- let's talk quickly about that, I guess,
2 accidents. There was a 1984 DOD report entitled
33 3 Narrative Summary of Accidents Involving US Nuclear
4 Weapons 1950 to 1980. And the list includes a variety of
5 accidents involving nuclear weapons. And I think this is
6 important for the public to know about because they have
7 to know that this is a real issue, that accidents can
33 8 happen; safety is important, and that there are -- there
9 can be safety issues that we need to continually address,
10 but some type of program has to replace the nuclear
11 testing that we have a moratorium on.
12 The list of accidents includes crashes,
13 accidental jettisons, missile fuel explosions and fires.
14 In 11 of those accidents, the HE was detonated and there
15 was radioactive contamination from plutonium disbursed.
33 16 The threat of accidental detonation is real, and if the
17 weapons were not one-point safe, a major nuclear accident
18 might have occurred. The necessity to aggressively test
19 weapons for one-point safety under many circumstances,
20 should thus be clearly seen as a real mission, but not as
21 a covert mission.
22 Furthermore, the one-point safety mission
23 for hydrotesting has been and is an ongoing mission.
34 24 Hydrotesting has been a vital part of discovering
25 one-point safety problems. And Ray Kidder talks about

1 that also in another report in 1991. He basically talks
2 about the very recent ability of the weapons laboratories
3 to be able to do 3-D computational predictions of the
4 behavior of a weapon.
5 The reason that this is a relatively new
6 capability is because the computers, essentially, were
7 not capable enough to be able to handle the complex
8 information that a true 3-D model may, and it's only been
9 since 1988 that we have been able to attempt to try to
10 predict the behavior of a one-point safety kind of issue.
11 MR. COGHLAN: I want to state a procedural
12 objection. The purpose of NEPA is for --
13 MS. WEBB: Irene needs to change out her
14 tape, and then you can make your comment again.
15
16 (Break taken.)
17
18 MS. WEBB: All right. Irene now has her
19 paper back in. Jay is talking. Dan is raising his hand.
20 Greg you have talked for quite a few minutes.
21 Jay, would you like to repeat, now that we are back on
22 the record?
23 MR. COGHLAN: Yes. 30 seconds. I want to
24 preface this with the fact that I feel ambiguous about
25 stating the problem because I want to promote the

1 informed, but having said that, the purpose of NEPA at
2 these hearings is to provide the public with the
35 3 opportunity to provide comment on the entire project and
4 on alternatives, et cetera, et cetera. It is not a forum
5 for the laboratory and DOE to effectively offer rebuttal.
6 I respectfully remind DOE and LANL that they are under
7 order from a federal judge to follow credibly the NEPA
8 process, and I respectfully suggest that they better do
9 exactly that.
10 MS. WEBB: Thank you very much, Jay.
11 Greg has made it quite clear that he is speaking tonight
12 as a private citizen, and although he works for the
13 laboratory, he is speaking here tonight as a private
14 citizen.
15 Any of you that are familiar with the Los
16 Alamos Area Office Department of Energy Stakeholder
17 Involvement Policy in the NEPA process, should be aware
18 of the fact that the Department of Energy employees,
19 laboratory employees, and other federal employees may
20 take place -- may take part as stakeholders in this NEPA
21 process, but we do ask that they identify whether they
22 are speaking on behalf of the laboratory or whether they
23 are speaking on behalf of themselves as individuals.
24 Greg has made it quite clear tonight he is
25 speaking on behalf of himself as an individual. Also,

1 before you came in, we did mention for the record that
2 the forum tonight would be flexible; that we would be
3 willing to either entertain comments directly related to
4 this Environmental Impact Statement, or we would be
5 willing to entertain a discourse amongst the people here.
6 You are the first person that has
7 suggested that perhaps that this discourse has gone on
8 long enough between Greg and Mary. If I understand that
9 is what you are suggesting, you are suggesting that we
10 return more strictly to the, quote, "typical," quote,
11 format of giving spoken comments for the record.
12 I'm willing to entertain that suggestion,
13 but before I do, we did interrupt Greg. And Greg I would
14 like to know if you are finished speaking.
15 MR. CUNNINGHAM: I got through 3 of Mary's
16 comments out of 12, so --
17 MS. WEBB: The reason, Greg, I do remind
18 you that you have spoken for some 15 minutes and there
19 are quite a few people here tonight.
20 MR. CUNNINGHAM: Maybe -- I believe I can
21 split it up and talk later.
22 MS. WEBB: I would sort of prefer if you
23 didn't mind if we did it that way because there are a lot
24 of folks that haven't spoken here tonight. And if we
25 have time later, we will be glad to have you continue,

1 and on the other hand, we always entertain written
2 comment. There are several hands that have gone up.
3 MR. MECHELS: This is just a procedural
4 comment. I'm Chris Mechels, retiree of Los Alamos. I
5 think you've got the makings of a real unequal contest
6 here. You've got lab people that can say "I'm speaking
7 on behalf of myself, but because I'm working for Los
8 Alamos National Laboratory, therefore I have a lot of
9 expertise in this area, therefore my expertise overrides
36 10 your scope." That's an effect that you are setting up
11 here with Los Alamos people.
12 However they disqualify -- however, they say,
13 I'm speaking on my own behalf and then they proceed to
14 take up the technical issues. They are in the position
15 of presenting expert witness, albeit as a private citizen
16 to override citizens who don't have access to that kind
17 of information.
18 MS. WEBB: Thank you.
19 MR. CUNNINGHAM: I'd like to --
20 MS. WEBB: Just a second. Thank you for
21 your comments, Chris. Greg, I think perhaps it's time to
22 go on to another speaker.
23 MR. CUNNINGHAM: One five-second comment?
24 MS. WEBB: Five seconds.
25 MR. CUNNINGHAM: I got all of this

1 information -- all of these are reference documents in
2 the DARHT draft EIS. None of this information came from
3 my workplace. I took a day of vacation to type this up.
4 MR. MECHELS: Thank you for the
5 clarification.
6 MS. WEBB: Thank you very much. We have
7 several people raising their hands. There are people in
8 the back. There's people in the front. I'm willing to
9 entertain whoever would like to speak next, and
10 apparently it's the consensus -- is it the consensus of
11 the group at this time to kind of cut back on the
12 interactive dialogue and stick with the straight comments
13 at this time? We can return to a different type of
14 format later. All right. Dan, I believe you had your
15 hand raised before the gentleman in the back or before
16 Jay came up to the table.
17 DR. KERLINSKY: That's okay. Would it be
18 okay to make a few replies to some of Greg's comments and
19 then go on to my comments, or would that be considered
20 out of order at this point?
21 MS. WEBB: I would be perfectly willing to
22 entertain that. I would appreciate it if you would keep
23 your remarks somewhat brief.
24 DR. KERLINSKY: Okay. My name is Daniel
25 Kerlinsky. I'm the president of the New Mexico

40 1 in fact successful.
2 In my comments last fall, I suggested an
3 alternative be considered, that is represented on 3-39 in
4 Chapter 3, weapons design. Unfortunately the language
5 that was summarized from my comments got it totally
6 backwards, and the alternative reads now, "An alternative
7 to operating DARHT to ensure weapons safety and
8 reliability, operate DARHT to design prototype weapon..."
9 In fact, my comment and suggestion was that DARHT be
41 10 specifically restricted from designing nuclear weapons
11 and only be used to study weapons safety and reliability
12 problems that might evolve.
13 In fact, that was the position of the
14 Galvin Task Force. When we looked at hydrodynamic
15 testing in general, the hydrodynamic testing was
16 important only to resolve safety and reliability
42 17 problems -- low probability that they might or if they
18 arise, not to be developing new weapons. And they're
19 really only useful confirming that a re-engineered weapon
20 really works as expected.
21 The comment and why this was dismissed was
22 that the number of test shots, the size of the explosive
43 23 charges, et cetera, is what makes the difference to the
24 environment, not the intended application of test
25 results, in fact, that's not so. When nuclear weapons

1 are designed, typically half a dozen, a dozen underground
2 tests, big nuclear weapons explosions were done and
3 hundreds of hydrodynamic test shots. So if you're
4 designing a new nuclear weapon, you may need dozens or
43 5 hundreds of hydrodynamic experiments. If you are
6 confirming that a fix to a weapon problem that arises
7 really works, you only need a couple of shots.
8 So the environmental impact of DARHT will
44 9 vary significantly depending on whether it is used for
10 new nuclear weapons design or just to confirm changes
11 that are made. In fact, I believe the likelihood of
12 weapons really being required is significantly low.
13 The problem of reliability -- I mean,
14 people talk about reliability -- the way Greg discusses
15 it, it makes people feel nervous. In fact, what
16 reliability means, if you have a nuclear weapon that
45 17 isn't reliable, it means it doesn't explode. Right?
18 Which, for most people, is considered safe.
19 And since we are no longer in a nuclear-
20 war fighting situation where we want to launch thousands
21 of weapons against an opponent to try to knock out his
45 22 missile silos, if we are only going to use nuclear
23 weapons for deterrence, in a situation where we really
24 need to use nuclear weapons, not just for deterrence but
25 for retaliation, which is not really the United States'

1 policy, if the first weapon didn't work, you can send the
45 2 second one and it really wouldn't make any difference in
3 the outcome.
4 So reliability is not what it sounds like.
5 It's not that your car isn't going to start and you're
6 going to be stuck in the middle of nowhere. The
7 likelihood of a problem occurring in the stockpile where
46 8 all the weapons go bad at once is extremely low, and I
9 really ask that the EIS look at trying to get some
10 quality, quantitative estimates of what that likelihood
11 really is.
12 I appreciate Bob's comments, you know,
13 underlying that there's been no problem found in safety
14 in aging, in the interaction of the aging process in
15 weapons and I appreciate that honesty and direct
16 discussion.
17 Again, the statement in S-1 executive
18 summary that says "Uncertainty in the performance of the
19 enduring stockpile will continue to increase with the
47 20 passage of time," is not correct. The Sandia Stockpile
21 Life Study shows that these weapons actually become more
22 reliable with age. Most of the problems are found
23 before the weapon goes into production. And after the
24 weapons are in production, most of the problems are found
25 in the first three years of the weapon's life.

1 From years 3 to 10, the frequency of
2 finding problems in the stockpile goes down. And from
3 years 10 to 15, the probability of finding weapon
4 problems goes further down. And in fact, data currently
5 exists for nuclear weapons out to about 32 years of age,
6 and they do not show a significant rise in weapons
7 problems being discovered as weapons get to be 28, 29 or
47 8 30 years.
9 People need to understand that this
10 proposed nuclear weapon design lifetime is an arbitrary
11 number, and Dr. Hecker has been quoted as saying that
12 nuclear weapons can last 30, 40, 50, 60, 70 years just by
13 maintaining them on a regular basis.
14 What Victor Reis said in the Programmatic
48 15 Environmental Impact Statement Prescoping Invitation is
16 the following: "The primary goal of the Stockpile
17 Stewardship and Management Program is to provide high
18 confidence in the safety, security and reliability of the
19 nation's stockpile and to ensure the effectiveness of the
20 nuclear deterrence while supporting arms control and
21 nonproliferation policy."
22 This is really the very first time that
23 the department has acknowledged that arms control and
48 24 nonproliferation impacts of new weapons design facilities
25 are actually significant. And by providing this opening

1 in the Programmatic Environmental Impact Statement, I
2 think, as Mary said, we have to consider the PEIS before
49 3 we look at the EIS, because the environmental impact of
4 starting up a whole new arms race, another 20 years of
5 the arms race without realizing it, that's happened in
6 the 1950s. That's happened when we developed hydrogen
7 bombs. That's happened in the 1960s when we designed
8 multiple warheads. It happened when we went into Star
9 Wars and antiballistic missiles. And the likelihood of
10 starting another arms race and having to go back into
50 11 nuclear weapons production, which in this country is a
12 300-billion dollar environmental impact for the cleanup
13 of the last generation's cleanup of nuclear weapons
14 facility has to be considered very significant.
15 MS. WEBB: Dan, are you almost done?
16 MR. KERLINSKY: That's it. Let me see if
17 I have anything I desperately have to -- that's enough.
18 MS. WEBB: Thank you. Both of you have
19 your hands raised. You have both spoken before. There's
20 a gentleman in the back who hasn't spoken who has had his
21 hand raised for quite some time. I recognize you, but --
22 MR. WATSON: My name is Scott Watson. I'm
23 responsible for PHERMEX operations. I speak on my own
24 behalf tonight. People's comments previously, I just
25 wanted to comment on these issues which I have firsthand

1 knowledge. Mary has asked the question why PHERMEX
2 itself is not being upgraded and that the PHERMEX upgrade
3 option was basically just to rebuild DARHT in a PHERMEX
4 building.
5 PHERMEX is a different technology than
6 DARHT. It's a 30-year-old technology and runs up against
7 physical limitations which are -- we basically are up
51 8 against as we speak today. PHERMEX will not see future
9 upgrades that will improve its performance nature, and
10 that's because of the physical nature of the problems
11 involved in that type of facility. That's exactly the
12 reason why DARHT is a new, different type of technology.
13 Another comment I would like to make, Mary
14 also made a comment that FXR has recently produced data
15 which is superior to that which will be produced by
16 DARHT. That is incorrect. I have a copy of that data
17 and have offered a number of reports on the radiographic
52 18 quality of images obtained by these machines, and I can
19 give you a lot of details and reasons why that particular
20 data is not superior to what DARHT could produce, but
21 suffice it to say that's not the case.
22 MS. WEBB: Thank you, Scott. And you said
23 you were speaking on your own behalf tonight. I would
24 also like to mention that in the description of no action
25 alternative in Section 3.4, it specifically states that,

1 "Under this alternative, the facilities would be
2 upgraded, would be maintained, would be kept up," but the
3 alternative does not imply that there would be a static
4 PHERMEX -- that it would never change. We did
5 specifically state that, and I just wanted to point that
6 out that, yes, we do take care of PHERMEX. We have to;
7 that's our facility.
8 Both of you still have your hands up. Jay
9 has been here for a while. You have also spoken before,
10 so let's let Jay speak. I believe that that was why he
11 wanted to come up here.
12 MR. COGHLAN: My name is Jay Coghlan. I
13 am a research analyst with Concerned Citizens for Nuclear
14 Safety. For the record, I would like to state that, I
15 think my main criterion tonight is whether I'm bored or
16 not, and based on this criteria, I already judged this
17 hearing right here a resounding success.
18 I got a prepared statement. It will take
19 me about three minutes, I guess, to read.
20 MS. WEBB: That would be great.
21 MR. COGHLAN: It's roughly divided into
22 two subjects; that on possible hydronuclear testing at
23 DARHT and on the need for programmatic review in advance
24 of DARHT. I will state as well that I certainly plan on
25 offering detailed comment before the comment period is

1 over, but I'm just going to stick to these two little
2 subjects right now.
3 Now, with respect to hydrodynamic or, I
4 mean, hydronuclear experiments possibly being conducted
5 at DARHT -- first of all, I appreciate Bob Day being here
6 and Jas --
7 MR. MERCER-SMITH: Mercer-Smith.
8 MR. COGHLAN: Jas, yes. I wish Dr. Immele
9 was present as well, but I understand he's at Moffet Air
10 Force Base right now talking on this particular subject
53 11 of hydronuclear testing. It's clear to me that DOE and
12 the weapons labs want hydronuclear testing. For example,
13 a publication just during the month of May of this year
14 on stockpile -- what was it? -- stockpile management,
15 states that our plan is to gather baseline hydrodynamic
16 and hydronuclear data on all stockpiled weapons systems.
17
18 The 1995 LANL Institutional Plan
19 essentially echoes the same. And the 1995 Draft
20 Interagency Stockpile Stewardship Plan has six references
21 to hydronuclear testing, and in that plan described as a
22 planned activity for fiscal years '96 and '97, is the
23 performance of these baseline hydronuclear experiments.
53 24 In all of these documents, hydrodynamic and hydronuclear
25 experiments are often mentioned in some kind of

53 1 combination to each other.
2 It's well known that LANL conducted
3 underground hydronuclear experiments during the testing
4 moratorium of '58 to '60. And in their 1988 publication
5 on hydronuclear experiments, the LANL authors Thorn and
6 Vestervelt, state that in the late '50s it was recognized
7 that contained hydronuclear experiments were
8 theoretically possible.
9 The operating procedure of CREPA, which
10 involves the graduated addition of fissionable materials
11 until a subcritical nuclear reaction becomes detectable
12 makes contained hydronuclear experiments feasible.
13 In fiscal year '92, it can be documented that
14 work was being done at LANL on "CONVEX" projects.
53 15 "CONVEX" is an acronym for contained nuclear explosions
16 and vessel experiments. The 97 LANL CAMP states that the
17 LANL physics division is significantly involved in CONVEX
18 projects. In early 1993, LANL took possession of a
19 vessel that contained up to 22 pounds of TNT blast
20 equivalent.
21 DOE presently states that up to 10 percent
22 of experiments at DARHT will be contained plutonium
23 experiments. All of these experiments are described as
24 being hydrodynamic. Under the present US proposals for
25 the comprehensive tests ban treaty, nuclear experiments

1 with fission yields of four pounds TNT equivalent would
2 still be permissible.
3 Given all of this and the general
4 feasibility that hydronuclear tests at this level could
5 be contained, I would like to know if DOE and LANL can
6 categorically state that no experiment at DARHT will ever
54 7 be hydronuclear experiments? Can DOE categorically state
8 that no experiment at DARHT will ever result in fission
9 yield? I would like a direct response from present LANL
10 and DOE people.
11 But in addition, should that answer be no,
54 12 I ask that that be explicitly stated in the DARHT final
13 EIS and its record of that decision. DOE would then be
14 obliged to recognize that a decision to perform
15 hydronuclear tests at DARHT would constitute a
16 significant change of mission, which in turn would
17 require public notification and due NEPA process.
18 On the other hand, if the answer is
54 19 hydronuclear testing could be performed at DARHT, I
20 suggest that the section on nonproliferation in the draft
21 EIS be rewritten. That section states that our country's
22 commitment to nonproliferation is evidenced by our goal
23 of achieving a CTBT as soon as possible.
24 The main obstacle that I know of presently
25 in place towards achieving a CTBT is the weapons states'

1 intention to retain various levels of permissible
2 testing. If there are to be hydronuclear tests at DARHT,
54 3 an analysis needs to be performed on the facility's
4 possible impacts on CTBT negotiations, in addition to the
5 usual environmental impact. I don't think it's
6 sufficient to hide behind classification barriers on this
7 subject. DOE needs to completely rule out hydronuclear
8 testing at DARHT or alternatively open up the NEPA
9 process to a discussion of its implications.
10
11 Second half of my comments on DARHT
12 mission and the need for programmatic review. First of
13 all, I think that the draft EIS is pretty well written,
14 remarkably free of typos, and I assume that, in large
15 part, that was due to your efforts and you are to be
16 complimented, but from here I will go on to blast the
17 EIS.
18 MS. WEBB: Thank you, Greg.
19 MR. COGHLAN: But it is a good piece of
20 work. I think you are doing very well in attempting to
21 impress a federal judge. The draft EIS -- excuse me --
22 the draft EIS is inherently prejudiced in that it assumes
55 23 that enhanced radiographic hydrotesting is immediately
24 needed regardless of alternatives analyzed or actions
25 selected in future programmatic review. Furthermore, DOE

1 contends that a Record of Decision on DARHT will not
56 2 prejudice the outcome of the future Stockpile Stewardship
3 and Management Programmatic EIS.
4 The premise that undermines these dubious
5 suppositions that there is some kind of safety and
6 reliability crisis in the nuclear weapons stockpile that
7 justifies proceeding with a decision on DARHT in advance
8 to programmatic review, as DOE knows, while granting a
9 preliminary injunction, a judge ruled or stated, rather,
10 that ample evidence points to the fact that the nuclear
11 weapons stockpile is at this time safe and reliable. He
12 was referring to testimony in March of 1994 by Assistant
13 Secretary Victor Reis who reported that the stockpile was
14 indeed safe and reliable.
57 15 In addition, Dr. Immele, at the DARHT
16 scoping hearing last December, stated no safety problems
17 related to aging have yet been found. It's interesting
18 that the judge ruled without knowledge of the 1993 Sandia
19 Stockpile Life Study. The life study states that while
20 nuclear weapons age, they do not wear out and are not
21 allowed to degrade. They essentially last as long as the
22 weapons communities wants them to.
23 Defects have, of course, been discovered,
24 but they've been fixed with existing surveillance
25 programs and existing facilities. Historically, defects

1 involved in primaries, which DARHT would ostensibly
2 study, have been a very small percentage. If there is no
3 real crisis in safety and reliability since these reports
4 and testimony, what's changed since then?
5 DOE cites the termination of full scale
6 underground testing as justifying the urgent need for
7 DARHT. The life study explicitly shows that no safety or
8 reliability defects have first been discovered through
58 9 full scale underground testing; hence, the loss of
10 underground testing is not justification for the urgent
11 need for DARHT in advance of programmatic review.
12 In addition, the study states that, based
13 on historic data, only one actionable defect will be
14 discovered each year, and for the sake of emphasis, I
15 repeat, that what defects have been discovered, have been
16 fixed with existing programs and existing facilities. So
17 what's the real need and purpose of DARHT? That purpose
58 18 and need should be analyzed and justified in programmatic
19 review.
20 The DARHT implementation plan shows that
21 the largest single category of scoping comment was on
22 this very subject. The public clearly stated that the
23 programmatic review should precede the DARHT EIS. DOE
24 effectively demonstrates its prejudice by disregarding
25 this category of comment and falsely asserting that there

59

1 is a safety and reliability crisis.
2 Am I doing okay on time?
3 MS. WEBB: Well, you're moving on there.
4 MR. COGHLAN: Okay. I will just sum up.
5 MS. WEBB: That would be good.
6 MR. COGHLAN: Okay. To sum up, DOE
7 doesn't have a reasonable basis for justifying its
8 decision on DARHT in advance of programmatic review.
9 There is not now, nor is there likely to be in the next
10 couple of years, the urgency for DARHT, but DOE contends
11 that there is. There is not a crisis in the safety and
12 reliability of the stockpile. There is no study of
60 13 interconnected actions and reasonably foreseeable actions
14 in the draft DARHT EIS.
15 That's part of my comment I just cut out.
16 That was in reference to Reis' remark in February on
17 potential weapons remanufacturing at LANL.
18 The programmatic Record of Decision is
19 expected only one year after the DARHT's Record of
20 Decision. It still puts the programmatic ROD two years
21 in advance of completion of the first axis. DOE first
22 committed to programmatic review in 1989. There is still
23 nothing to show for it. I submit to DOE, that the
24 department still has time to get it right. The
25 department can still complete a bona fide programmatic

1 review that objectively considers the nature and content
2 of the genuine stockpile stewardship.
3 DOE should let DARHT rise or fall on its
58 4 own merits based on programmatic justifications and not
5 on false pretenses.
6 MS. WEBB: Thank you, Jay. You asked some
7 direct questions of Bob and Jas. And before they answer,
8 Melvin and Christine have both had their hands up for a
9 long time. Before they speak again, is there anybody
10 that has not spoken that would like to speak --
11 MR. LOCKHART: Point of procedure.
12 MS. WEBB: And I'm sorry, Melvin has a
13 point of procedure.
14 MR. LOCKHART: My name is Milton
15 Lockhart. In view of the ruling to change the format,
16 are direct questions allowable?
17 MS. WEBB: That was one of the reasons I
18 didn't entertain it at this time.
19 MR. LOCKHART: So we're still in the
20 dialogue?
21 MS. WEBB: At this moment, we are just
22 sort of having people talk. We will collect questions
23 here as I am writing them down. Then if people would
24 like, a little bit later we will let Bob and Jas answer
25 all of them at once.

1 MR. LOCKHART: Next point, since
2 apparently most of the comments are coming back to the
3 need to establish safety and reliability of the weapons
4 systems and since Greg has been asked to furnish written
5 comment, I would suggest that any comment on safety and
6 reliability be submitted written rather than verbally --
7 MS. WEBB: I will --
8 MR. LOCKHART: -- now.
9 MS. WEBB: I will accept comments either
10 way, and if after we have a few other people talk, then I
11 will be glad, after we have -- everybody has had a chance
12 to speak, to reopen the floor to Greg so he can finish
13 reading his statement if he would like to do it that
14 way. But thank you, Melvin, for your point of order.
15 MS. CHANDLER: Milton.
16 MS. WEBB: Milton?
17 MS. CHANDLER: Milton, yes.
18 MS. WEBB: Sorry.
19 MR. LOCKHART: Mervin --
20 MS. CHANDLER: Melvin, Martin --
21 MS. WEBB: And I called you "Greg," Jay.
22 All right. First then we will let Chris say something.
23 Then we will let Susan say something. And then we'll let
24 Christine say something. Then if you have more to say,
25 we will do it in that order. Chris?

1 MR. MECHELS: I'll stand up so people can
2 hear me. I'm Chris Mechels, retiree of Los Alamos. What
3 I noted about the DARHT was I thought that the -- two of
4 the alternatives that I thought was a better alternative
5 were not considered, and they had to do with the FXR
6 facility out in Livermore. One of the alternatives which
7 is on Page 34 was the preferred alternative, a single
8 site.
9 There's some quotes in there which I think
10 are pretty disingenuous and there's no supporting
11 documentation or data provided. One of the, you know,
12 the reasons for not considering the single site when you
13 consider the alternatives was, quote, "The number of
14 shots that could be scheduled to support both programs
15 could be a problem -- could be a problem." "This could
16 be detrimental to both sites -- could be detrimental."
17 There is no supporting data as to what kind of test
18 schedules they have or shots or anything like that. It's
19 just a conjectural statement, and that's a pretty weak
20 reason to dismiss that alternative.
21 The other comments under the same
22 alternative is that DOD would have to continue to operate
23 PHERMEX to support smaller tests for dynamic
24 experimentation which would not be cost effective to
25 transport to other sites. There is nothing else to

1 support that. It's just another convenient statement, in
2 my opinion, to justify not considering the alternative.
3 A third statement in that same alternative
4 is that this would not meet the need to replace PHERMEX.
5 Well, I suggest that FXR, from my understanding, is quite
6 capable of being used in place of PHERMEX. The issue is
7 where it's located.
8 On Page 338, the other alternative
9 concerning FXR is dismissed, as the dual axis upgraded
10 FXR in Livermore was not considered, as DOE does not
11 conduct dynamic experiments with plutonium in Livermore.
12 Well, we know they don't conduct dynamic experiments in
13 Livermore; they conduct them in Los Alamos. That doesn't
14 mean they couldn't conduct them in Livermore. If you are
15 doing a fully contained experiment, they specifically
16 ought to conduct them in Livermore. Again, this is just
17 a statement that's made, they dismiss them because they
18 don't conduct them in Livermore. Well, of course, they
19 conduct them at Los Alamos. That is a very weak reason
20 for dismissing an otherwise interesting alternative. So
21 I think that the alternatives, both of those alternatives
22 were incorrectly dismissed on very weak reasons, no
23 supporting numbers.
24 Another comment concerning FXR, there is a
25 paper in the reading room, unfortunately I don't have it

1 with me tonight, which is analysis -- I'm sure Bob has
2 it -- analysis by an outside panel looking at some
3 problems with DARHT. Some of their conclusions were that
4 for right now, that DARHT is currently envisioned as
5 having some problems running it under full voltage, and
6 they are talking about hoping to raise that up to their
7 design voltage. Right now they can't run it full
8 voltage. They are operating at 300 KV. That's very
9 clear from that report.
10 It's also very clear from that report that
11 the spot size that's offered is one of the big reasons to
12 build DARHT. It's a big improvement, a hope -- they hope
13 they can achieve that spot size. When DARHT comes on
14 line, it won't have that spot size. They may be
15 surprised. It's very clear in that paper. They hope
16 some day after operating it 50 years, they'll gather
17 enough data finally in the process to finally achieve the
18 design spot size. That's very unclear.
19 None of this -- I mean, it's all presented
20 that we're going to turn this sucker around when it's
21 built, when in fact you won't get a sucker on there
22 built. You're going to sucker us running reduced voltage
23 for a spot size that's optimal. That's very clear in the
24 report. The other thing that's quite clear in the report
25 is their analysis of the FXR, when upgraded, is at least

1 as capable as DARHT. Again that's no reason not to
2 dismiss FXR alternatives. I suggest that FXR, that the
3 whole complex needs to be looked at in total. What you
4 have is an excellent prospect to upgrade DARHT. Then you
5 can upgrade FXR. Then Sandia can upgrade their stuff and
6 basically you have a testing race going on between three
7 laboratories.
8 Mary has spoken to the fact that they
9 should do sitewide or stockpile stewardship evaluation
10 before they do all of this craziness. I totally agree,
11 because what you have here is an arms race going on
12 between the weapons labs. Thank you.
13 MS. WEBB: Thank you, Chris. All right.
14 Susan, I believe you had your arm up. Susan, and if you
15 wouldn't mind, if you would come a little closer to our
16 stenographer.
17 MS. HIRSHBERG: I do have a quiet voice
18 and for that reason I will also stand. I'm Susan
19 Hirshberg. I'm the nuclear waste and contamination
20 director for concerned citizens for nuclear safety, and
21 my comments at this point are quite brief, but I probably
22 will have some more at some point and be submitting
23 written comments as well.
24 I do not in any way want to undermine what
25 has been said by my colleagues, Jay, Mary, Dan and

1 various other folks here, but I will be concentrating
2 particularly on what I do believe are the environmental
3 effects of the PEIS as mentioned here, and -- I'm
4 sorry -- the EIS as mentioned here, although I do also
64 5 believe that programmatic planning should take place
6 first.
7 One of the things that concerns me is that
8 I don't believe PHERMEX is as good a facility as it was
9 perhaps intended to be, not in the sense of not being
10 able to carry out programmatic requirements but in the
11 sense of environmental contamination. There -- there is
12 considerable amounts, I believe, I am hoping I'm not
13 wrong, of this much depleted uranium around the PHERMEX
14 site.
15 Also recently at PHERMEX there was a fire,
16 which released both high explosive residues which are --
65 17 do contain several toxic components and lithium hydride
18 into the air, and this fire caused seven firemen to be --
19 to end up going to the hospital for possibility of
20 serious injuries. That fire burned for nine hours. And
21 since this was an accidental fire, that was not included
22 as a kind of thing that would be considered part of
23 normal operations of PHERMEX. And my fear is that you
24 could have a similar kind of accident occur at DARHT,
65 25 which would cause considerable amounts of environmental

1 contamination that are not being considered here. I
2 don't believe you have sufficient worse-case scenarios
3 for the facility as it stands.
4 Some other environmental concerns that
5 have been raised to you right now is that you have a
6 situation where both DARHT and PHERMEX are located near
7 the edge of the mesa top, so that in high-rain
66 8 conditions, I would imagine that it would be quite simple
9 for there to be fairly contaminated runoff into the
10 canyons. And I think, in general, that that's a not
11 great place to put these kind of things, and obviously
12 you have a problem at Los Alamos because Los Alamos is
13 mostly mesa tops, but I do think that has to be kept in
66 14 mind and made a little more clear of what exactly the
15 effects of being on top of the mesa would have.
16 That brings me to my next point which is
17 that there -- presently at Los Alamos there is a problem
18 which is that the extent to which the laboratory has
19 contaminated the deep aquifer is unknown, and that's why
67 20 I have the situation where you have the State of New
21 Mexico engaging with the laboratory to try to find out
22 really what has been the effect on the deep aquifer.
23 There is some evidence that suggests that
24 the deep aquifer has been recharged more recently than
25 has been previously associated -- assumed by LANL

1 scientists and that in fact you may very well have some
2 contamination from facilities that are ongoing. I don't
3 believe it's appropriate to say that facilities such as
4 PHERMEX or DARHT have not contaminated -- have not caused
68 5 significant environmental problems before you know
6 whether the laboratory in general has affected the deep
7 aquifer. Now obviously it would be difficult to say it
8 was PHERMEX as opposed to something else, but I think it
9 is a very important issue that needs to be brought up.
10 Also, we are facing, through the
11 administration and Congress, some considerable cuts in
12 environmental restoration and waste management, and I
69 13 think that it's extraordinarily important that those cuts
14 be included as a scenario for what we're really facing
15 with DARHT if you're going to, for instance, affect the
16 ability of DARHT to -- or would it increase contamination
17 from the DARHT facility if those cuts were to go through?
18 And I think it's a very real possibility. People may
19 know that our organization is fighting hard against some
20 of those cuts, but we are -- there's a limit to what we
21 can do.
22 The other thing that I think is important
23 and it's somewhat of a different tack, is the fact that
70 24 the Pajarito Plateau is such a very rich archeological
25 reserve, and that you have some -- an incredibly huge

1 number of archeological sites within 200 kilometers -- I
2 can't offhand recall, but it's well over a couple of
3 hundred -- within --
4 MS. RISELEY: A thousand.
5 MS. HIRSHBERG: It's a thousand?
6 MS. RISELEY: A thousand.
7 MS. HIRSHBERG: I know that's within the
8 4,000 meter range, so -- now, a large majority of these
70 9 archeological sites are eligible for the national
10 register for historical places. Partially because of the
11 protection they have received from the laboratory, so far
12 they are in quite good condition. This is something that
13 needs to be considered if archeologists are ever to get
14 to those archeological resources. It needs to be very
71 15 clear that the ground will or will not be contaminated,
16 so that they can dig in the future.
17 So I have been told by the national
18 registry of historic places that it must be considered an
19 effect of the facility if the facility was making it so
20 that archeologist cannot get to those resources in the
21 future through fear of contamination or whatever.
22 At this point, that's the end of my
23 comments, and as I said, I may have some more later.
24 MS. WEBB: I appreciate that and I expect
25 to receive your comments later. Christine, I told you

But of course any system, most reliability -- any reliable engineer knows the -- the feature -- there are criterion known as bathtub curves where a system that goes on-line, in its first few months or years, may have a high grade and so what's called
75 infant mortality takes place. And then there's a long period of reasonably steady reliability, and when aging of the components takes place, the system begins to become unreliable again.

The people who design such systems as this work with bombs, as well as any other engineering systems, try to estimate what that period of steady reliability is. It's a very difficult process, and then there is a huge effort in the engineering community to try to make these predictions more accurate. These predictions have been made in the weapons in the stockpile; however, on the people at Sandia who would like to toss off some of these things rather briefly would acknowledge, there is no way to predict when that bathtub curve starts to turn up again and all the components in it.

It's constantly cited by the LASG CCNS, the safety record of the stockpile. If it's been so safe, why do we need to worry about it? The fact of the matter is, the stockpile doesn't just sit there. It's

75 kept safe, it's maintained safe by a constant surveillance and testing of those components, and problems are turned up in testing. And that testing has to continue. There's no way for that safety record for that 10 to the minus 6 -- that you like to quote -- to be maintained without an ongoing test program. You cannot. So I will stop there. Thank you.

MS. WEBB: Okay, thank you, George. Some other people want to talk and, Kip, I see your hand; however, I'm getting frantic notes from people that we have been sitting here for a couple of hours and we would like to take a break. If you have a very short thing, I will entertain it, otherwise we will take break. You have something short?

MR. CORNELI: I'm sorry; I don't know your definition of short, but it's one page.

MS. WEBB: That's short.

MR. CORNELI: And I will try to stick to the script as close as I can. My name is Kip Corneli. And I live here in town. I'm not associated with any particular group, but concerned about the old nuclear program starting back. Long ago when I was told as a vet of World War II that I could throw away my electric meter because the nuclear system was going to take care of everything instead, I have -- in fact I became a little

skeptical about some of the things I read, and the EIS did not particularly settle my mind at ease regarding the skepticism.

I appreciate the opportunity to speak. I'm going to address just one particular item in the draft EIS, although there were quite a few things that puzzled me, the redundancy, the shallowness of it, but it was very nice that you spoke of my item because that's what I have on my page. I was a farmer for 30 years back in Wisconsin, and we maintained our own machinery or I supervised the people who maintained it. And I'm not impressed with analogies that have come down to me about comparing the maintenance of the stockpile or safety of the stockpile, the aging of the stockpile, to old cars that don't start after 25 years. If you saw what Woody Allen in Sleeper, you know that Volkswagens are very reliable.

I recognize that farm machinery is not nearly as complex by a long shot as the systems and the products that come from the weapons programs and from LANL, but I suggest, there are certain parallels. I feel
76 strongly that the EIS does not, in any way, prove that aging weapons need additional high-tech -- and I underline -- high-tech study.

I was also a private pilot for a number of

years and when my airplane needed an overhaul, they were able to detect cracks in the engine block by various examinations, Magnaflux and some others that did not require an ADA million-dollar machine or I wouldn't be flying. Here are some of my reasons; some experts have
76 said that thorough physical inspections will reveal most problems, as I just mentioned, and would suffice stockpile stewardship. My own experience about machinery deterioration leads me to give way to this view, at the same time, even examining or testing every component regularly, let alone on a sampling basis, will not prevent all breakdowns or accidents.

Number two, the EIS provides no summary of
77 results from the several years of existing radiographic tests. I have read reports in a recent New Mexican paper that aging problems have not caused the removal of any nuclear weapons from the stockpile and only 257 defects relating to safety and reliability have been found out of I believe the entire 70,000 nuclear weapon stockpile. That's three-tenths of one percent.

We currently are able to have 8,000. To get down to 8,000 nuclear weapons, three-tenths of a percent of that, if my calculation is right, 24 weapons would have those -- might have those defects. Surely when we attack Bagdad, we're not going to go there with

1 just one weapon, anyway.

77 2 I would like to know, for example, how --
3 how many cracks have been found, where they were, whether
4 we are talking metallic fatigue, cracks, or problems like
5 in the Challenger episode, or what these cracks were.
6 The EIS was very uninformative on that. I don't quite
7 see what this kind of information should be classified as
8 especially when we are talking about an 88 million-dollar
9 facility where depleted uranium will be exploded, and we
10 all know that depleted uranium does not mean it is not
11 dangerous.

78 12 Number three, if the design life of an on
13 atom bomb is 25 years, when is it considered to be aging?
14 There's the bathtub curve. When does it kick in? You
15 asked that question yourself. I would like to know. As
16 I recall, bombs and nuclear growth around the world, it's
17 really not many years apart from the SAC strategy where
18 the bombs used at that time. At what ages were they
19 discarded or reworked or were defects found before
20 discarding?

21 What's happened to the information that's
22 been derived from underground testing, from retesting the
79 23 SAC weapons, all the others that have come and gone
24 through the testing. Can't we perhaps work on good --
25 haven't we been able to develop good computer models that

1 would tell us where these things are? I'm not sure if
2 the EIS explained to me that every one of the weapons
3 that's out there in the stockpile that's going to be
4 dismantled and tested, I expect it will be on a
80 5 statistical sampling basis, and what happens with the
6 other ones that are not checked?

7 In short, we need a great deal more
81 8 information where I'm convinced that the task of
9 stockpile stewardship actually requires a facility like
10 DARHT and unfortunately the EIS did not convince me of
11 that, either. Thank you very much.

12 MS. WEBB: Thank you, Kip. What I would
13 like to do at this time is, it's ten minutes until 9:00.
14 I would like to take a 20-minute break to allow everyone
15 time to disburse, reassemble, have a look at information
16 in the other room. And as Bob Day said earlier, it's
17 extremely good and, I think, interesting. After that, we
18 will reconvene. Greg, you've been wanting to talk again.
19 Jay --

20 MR. COGHLAN: I have one other response of
21 a question.

22 MS. WEBB: And we'll readdress those when
23 we reconvene, so until ten after.

24 (Break taken at 9:47 p.m.)

25 MS. WEBB: All right. Let's reconvene.

1 Thank you, we ran a little bit long on that break, but I
2 think I needed it. And it's 20 after the hour. There's
3 a few people I think that wanted to speak but haven't
4 spoken. But before we took the break, what we said we
5 would do next is let Bob and Jas answer a couple of
6 questions they have been itching here to answer, and then
7 we will let you speak. You haven't spoken yet, and Greg
8 we had promised you that you could have the floor again
9 tonight, also. So first of all -- where are my notes?
10 Here are my notes. First of all, Bob was asked the
11 direct question by Jay that he would like to answer.

12 MR. DAY: The -- I don't have a quote.
13 The question related to hydronuclear experiments in front
14 of DARHT, plans and expectations for that, I believe is
15 the question. Is that correct, Jay?

16 MR. COGHLAN: Yes, and I was looking
17 essentially for a categorical answer as to whether or not
18 they may occur.

19 MR. DAY: I think a number of people may
20 not know what a hydronuclear experiment is. There is a
21 report; you have it obviously, and it may be in the
22 public reading room by Vestervelt and Thorn, which talks
23 and defines nuclear experiments. And the definition
24 there is hydronuclear experiments are experiments where
25 you have some nuclear yield. And it talks about yields

1 up to four pounds, four pounds of high-explosive
2 equivalent.

3 There are no plans for such experiments in
4 front of DARHT, no preparations, no plans for that kind
5 of experimentation, and -- and no requirement on the part
6 of DOE for such experiments. There would have -- DOE, in
7 order to do such experiments, would have to have all the
8 appropriate documentation that would be necessary to do
9 that, involving all the plans necessary to do that, if
10 that was a requirement. There are no plans, no
11 expectation for that now or in the future.

12 DR. KERLINSKY: Could it be done? Could
13 four pounds be contained within a vessel?

14 MR. MERCER-SMITH: Of course. The yield
15 of the high explosives is significantly higher than four
16 pounds and, yes, you could well contain that. However,
17 the question is whether it is a good idea to conduct an
18 experiment which, if it got out of hand, was in a double-
19 walled container right next to a 100-million-dollar
20 machine. It does not seem to me to be a particularly
21 wise idea.

22 If you were going to do a hydronuclear
23 experiment, the Nevada test site would be the obvious
24 site to do it, where you have a variety of containment
25 techniques. But again the issues of hydronuclears are

1 addressed at DARHT.
2 DR. KERLINSKY: Issues related?
3 MR. DAY: Related to surveillance can and
4 are addressed at DARHT, because frequently as a result of
5 surveillance, you find it. We find the dents and cracks
6 and holes and changes and those kinds of activities. And
7 as part of fulfillment of the -- of that program, we
8 investigate those kinds of issues in a dynamic sense.
9 DR. KERLINSKY: Right.
10 MR. DAY: Because it's not the fact that
11 they are static that's the issue. The issue is what
12 effect do they have dynamically.
13 DR. KERLINSKY: Right.
14 MR. DAY: So if -- so DARHT is related in
15 a very tight way, in some cases, to issues related to the
16 surveillance program. It is not the first thing you do
17 in a surveillance program. The first thing you do is you
18 look at the static radiographs, look and take things
19 apart and -- but it is a piece of how you handle
20 surveillance issues.
21 DR. KERLINSKY: Let me see if I've got it
22 right. Do you expect to find flaws in an aging weapon
23 by -- in DARHT, or once you find a defect, are you going
24 to use DARHT to analyze?
25 MR. DAY: You actually do both. The

1 baselining that we talk about is part of that where you
2 actually look to see what you have, and then compare, in
3 the future, dynamics, because it's the dynamic part of
4 the process that's part of the key. Can they or can you
5 see all such issues in static pictures? And the answer
6 is, no, you can't see all such issues.
7 DR. KERLINSKY: You see, the major issue
8 that I was asking for resolution is, how, using mock
9 materials, you know, not the real plutonium, but a mock
10 material to simulate the pit, you know, and compressing
82 11 that with the explosion and taking a picture of that
12 explosion really tells you about either the current
13 status of the real pit, or tells you about an aging
14 effect of an aging pit, because the material you are
15 compressing is not the real material. That's where I
16 have been stuck. If you guys could help me clarify what
17 that is, really what was initially described as
18 benchmark.
19 MR. DAY: Let's step back one step from
20 that, because this is also the issue related to nuclear
21 testing. In order to ensure that the devices work, we
22 have one sure way of doing it, and that's to take them to
23 Nevada and see that they perform as we expect.
24 That technique is not available to us.
25 There is a moratorium on comprehensive test bans, and

1 that's full of high fidelity. Highest fidelity
2 experiment is not available, so we do -- our job is to do
3 the highest fidelity experiment that we can do under the
4 constraints that we have, so the surrogate materials
5 are -- provide some of the highest fidelity information
6 that we can get in a routine -- in a routine way. And
7 that information can be key to understanding some
8 problems. I don't think we propose that it will
9 understand all problems in the stockpile, but there are
10 pieces and parts that we may not be able to sample, and
11 the answer to that is yes.
12 DR. KERLINSKY: There is a wonderful
13 discussion in 3-3 where you talk about surrogate
14 materials and describe the difference between tantalum
15 and weapons with plutonium, higher strength, higher
16 melting point; the difference between lead that's
17 sometimes used that has lower strength and lower melting
18 point, you know. Do you currently have a simulated
19 material that is described that acts as current status of
82 20 these various weapons, and do you currently have a
21 simulated material to -- to simulate, you know, for an
22 aging effect?
23 MR. DAY: We do many experiment to
24 understand aging effects. We try to accelerate the aging
25 process. Sometimes we heat something and that

1 accelerates the aging process, and there are other things
2 you can do that can help you understand how things might
3 age. And we do those -- we do those kind of experiments,
4 and we try to use materials which have as high a fidelity
5 as we can achieve. And there are -- there are no --
6 there's no way of addressing all of the issues without a
7 full scale test.
8 DR. KERLINSKY: So --
9 MR. TRAPP: Can I put an example in here?
10 MS. WEBB: Could you please identify
11 yourself for the record?
12 MR. TRAPP: Yeah, T. J. Trapp, nuclear
13 materials program manager from Los Alamos. Let me just
14 give him a good example of the kinds of things we do.
15 Plutonium is an alloy, and that alloy seems to me -- it
16 does things all the time. It changes, and some of the
17 things that can change are like the grain structure,
18 things like microstructures; it might be cracks or
19 something. Now doing things like DARHT gives you the
20 capability to take one material with small grain
21 structure, look at that, take another case with a larger
22 grain structure, see the difference in behavior. Then
23 even though it's not the same material, you can
24 extrapolate that material to see how you would expect any
25 issues of -- any safety issues, any reliability issues

1 and other operative issues from the basic material and
2 have an understanding of knowing a change happened, and
3 someone doing a test can be given material that relies on
4 a surrogate, if you do stability tests because that's an
5 aging effect, that's a real life aging effect.
6 DR. KERLINSKY: So let me ask, looking at
7 the grain structure change, have people constructed a
8 surrogate material for that and carried out a
9 hydrodynamic test to see what the compressibility of that
10 surrogate material was to be able to see if they could
11 extrapolate that to the plutonium?
12 MR. TRAPP: There is no surrogate that
13 behaves in every sense like plutonium. So what you have
14 to do is take a material and mimic one particular piece,
15 and sometimes another material can mimic another
16 particular behavior pattern. And in between doing all of
17 those, you can put together something that's somewhat of
18 a representation of plutonium. And yes, people have done
19 that. That's the kind of thing that people are doing.
20 One of the things that people are trying to do in the
21 surveillance area is moving from what I call a
22 retrospective surveillance, looking at something to see
23 if it's gone wrong, to something that's predictive. We
24 can look and make sure nothing is going to happen in the
25 future, and that's where the question becomes very

1 important, how do we know whether or not anything is
2 going to happen in the future? This is predictive
3 capability when you start looking forward.
4 DR. KERLINSKY: So if you want ballpark,
5 how many shots were done in the last year for simulation
6 of the current status of plutonium?
7 MR. TRAPP: I don't know the answer to
8 that.
9 MS. WEBB: Dan, in the interest of not
10 trying to cut this off, Mr. McCorkle had raised his hand
11 quite some time ago, said he wanted to say something, and
12 now I see him packing up his materials and looking to
13 dart out, and I would like to give him the opportunity of
14 saying something.
15 MR. McCORKLE: I have something that I
16 wanted to say to Jay, and I think there's probably room
17 to say it in private, and I don't want to make a public
18 statement and I, yes, I was getting ready to leave.
19 MS. WEBB: Thank you, and we appreciate
20 you coming here tonight.
21 DR. KERLINSKY: Let me wrap up. I didn't
22 hear the answer on how imploding a surrogate material
23 really tells you about the current status about aging,
24 future status.
25 MR. DAY: They can tell you a lot about

1 the hydrodynamics. It can tell you a lot about the
2 complexion. You can follow density. Because the nature
3 of the materials are different and the nature of the
4 materials in the devices, you then have to compare how
5 well you can predict those with what you predict in the
6 devices that we have in the stockpile. And there's a
7 computational part which is always part of what we do.
8 You've got to understand that -- that -- you have to
9 understand, there's an issue here.
10 MR. MERCER-SMITH: There are a variety of
11 computational issues. If you think of the simplest
12 possible geometry and impose a hole in it, you know, I
13 drill a hole in it and impose geometry, that gives rise
14 to a shape change. That is something that is addressable
15 by some types of calculations. And part of what we do
16 is, by using surrogate materials, follow the
17 hydrodynamics of that sort of process, computationally,
18 and then see how well we have done. And then we can
19 consider extrapolating to those materials.
20 DR. KERLINSKY: And are there currently
21 any holes in pits, I mean, that you would be simulating
22 the status of? I mean, that's -- or is this just a
23 hypothetical exercise?
24 MR. DAY: I think there is another point
25 that we need to go after here and that is the process is

1 not just data. A process is the relationship between the
2 data and the calculations. And then taking that data and
3 those calculations and extrapolating to conditions in a
4 full up device. And so what you do is, you take a set of
5 data -- and this is also true in the underground test
6 program in terms of understanding. You can validate most
7 of the military requirements with real experiments, but
8 in the case of trying to understand how the device works,
9 and the data tells you how well the code works. And so
10 there is this -- there is this constant process, part of
11 the scientific process of having data, comparing it with
12 calculations, using those calculations to drive what you
13 don't understand to go back to create additional data
14 which better illuminates the code, and it's through that
15 process of calculating and experimenting that you get a
16 better understanding.
17 DR. KERLINSKY: One last one from a
18 comment.
19 MS. WEBB: All right. Your last one was
20 your last one. So is this one your last one?
21 DR. KERLINSKY: This will be my last one.
22 There is one sure that way you knew weapons would work;
23 that is underground testing. Isn't it true they stopped
24 doing underground experiments over a decade ago because
25 every time they set off an old one, it went off as

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1 predicted. So this argument about the only sure way of
2 knowing it's going to work is by blowing it up. It was a
3 question that had been resolved within a laboratory
4 community quite some time back.
5 MR. DAY: No, that's not true.
6 Reliability tests have been done routinely, and of our
7 systems that have been in the stockpile, and those --
8 those were being done throughout the -- throughout the
9 program.
10 DR. KERLINSKY: And were there yield
11 effects that were significantly different than were
12 predicted on those older weapons?
13 MR. DAY: We have seen effects of systems
14 that have been in the stockpile that gave us new
15 information about how they work and that would cause us
16 concern about how well they would work in the future.
17 DR. KERLINSKY: Is that a yes or no?
18 MR. DAY: Again, it's the issue of
19 understanding. Also there's another point I think should
20 be clarified. And it seems to be the point that gets
21 made a number of times that somehow the only way you can
22 address aging issues is by actually aging it for a long
23 period of time, and a lot of aging issues are related to
24 changes. When you test a new system, you are testing a
25 system or looking at a system -- in a way you are testing

1 a system in a way where there are changes. Those changes
2 are what you see as you age so that every experiment that
3 we have done in Nevada and in our experiments have helped
4 to give us information on aging because, again, it's
5 experiment in comparison with the calculation that gives
6 us the confidence in both the aging issues as well as the
7 other issues that we had. So it's not -- the situation
8 is not quite as straightforward as you would -- as we
9 might believe from that kind of a statement.
10 MR. MECHELS: A clarification. I think
11 when you talk about doing full up tests in Nevada, you
12 must not be talking about testing 150 kiloton warhead
13 because I don't think Nevada has announced any testing.
14 So what are you testing? Are you taking testing --
15 testing primaries?
16 MR. MERCER-SMITH: He's referring to a
17 time when we did test, in the past, in the past tense.
18 MR. MECHELS: He was in the past? But I
19 thought Dan was saying you hadn't tested full up since
20 ten years. I don't know. I don't see you testing big
21 things in Nevada, so you could not be testing unless you
22 are dropping in holes.
23 MS. WEBB: Suffice it to say that we are
24 not conducting underground nuclear tests in Nevada.
25 MR. DAY: And have not in 1994.

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1 MR. MECHELS: What I'm saying, I didn't
2 see you dropping 150 kilotons. I saw you test the small
3 stuff so that's the best guess. I'm wondering if you
4 were talking about testing primaries. Are you really
5 telling us, if you are talking about ICBM and throwing
6 them in holes and shooting them.
7 MR. MERCER-SMITH: Those were called
8 stockpile confidence tests.
9 MR. MECHELS: And those were --
10 MR. MERCER-SMITH: And they were systems
11 that had been in the field.
12 MR. MECHELS: And they were taking real
13 systems and dropping them in, because I am very unclear.
14 MR. MERCER-SMITH: Real systems under the
15 constraints of 150 kiloton threshold test bans.
16 MR. MECHELS: So if you had a system any
17 bigger than -- like if you had some 300, you just can't
18 do that; right?
19 MR. MERCER-SMITH: You could not test it
20 at full yield --
21 MS. WEBB: Not under the constraints.
22 MR. MERCER-SMITH: -- under the
23 constraints.
24 MR. MECHELS: Since that wasn't a full
25 yield, that means you had to modify if you were going to

1 test it.
2 MS. WEBB: Chris, you said you had a brief
3 comment.
4 MR. MECHELS: I thought it was brief, but
5 it's more complicated than I thought. I am still
6 unclear.
7 MS. WEBB: I would like to note for the
8 record, during the break, Kip informed me he would like
9 to correct his testimony and he will be providing me with
10 a written correction to that. So I just want to note for
11 the record that we will be looking for that.
12 We have promised Greg a long time ago that
13 he could talk. And Greg, it's been a long time, and we
14 appreciate your patience.
15 MR. CUNNINGHAM: I just wanted to try and
16 answer some of the questions in the two and a half hours
17 since I last talked.
18 MS. WEBB: And we appreciate your
19 patience.
20 MR. CUNNINGHAM: One of my questions that
21 the gentlemen back here asked was the average age the
22 weapons that were retired back when there were B-52s, and
23 I think you are referring to maybe '50s, '60s, '70s, that
24 time frame. And up until 1958, the average age of
25 retiring a weapon was 4.5 years. During the 1960s, the

84 average age was approximately 11 years, and we now are going to have weapons in stockpile for much, much longer than that, just to answer that question.

MR. CORNELI: What was done with the weapons after 11 years?

MR. CUNNINGHAM: They were retired from stockpiles. They have been out of the stockpile for many years.

MR. CORNELI: Were they refabricated?

MR. CUNNINGHAM: I don't know how to answer that question.

MR. DAY: The components would be disassembled. Usually the special nuclear materials would be reprocessed and used again, but the device itself would be disassembled.

DR. KERLINSKY: And you use data from the '70s and '80s to compare with the '50s and '60s?

MR. CUNNINGHAM: I don't recall what was compared. This is out of an old report.

The next question that I wanted to answer was in terms of access to documents. Jay made a comment that since I work for the laboratory I have special access to documents, special access to knowledge. One document that I don't have is the Sandia Stockpile Lifetime Survey because it's not being made available to

the public is my understanding.

MS. WEBB: Thanks to you --

MR. CUNNINGHAM: That's one document that Dan, Jay, everybody else seems to have except the representatives from the laboratory.

MS. WEBB: Thanks to the fact that Greg Mello earlier this evening submitted it for the record, we will now have it in the public reading room along with the transcript of this as soon as we have it.

MR. CUNNINGHAM: I would like to ask Greg Mello about that a week ago when I was in the office gathering all of this information, but I guess I will research --

MS. WEBB: I don't think Greg Mello is here. I don't see him.

MR. CUNNINGHAM: I question the special access to information at any rate. The next question is relative to something that Elizabeth -- I think it is? -- she's not here. She talks about shared intent, and I think I volunteered that one of the things that came out of the meeting that citizens of Los Alamos have in

85 response to the forum last fall was that we didn't think there was very good justification for why containment vessels should not be used. It seems like containment vessels solved some of the problems in terms of

environmental impact.

85 And we think that if containment vessels aren't going to be used, we need a stronger justification for why their use is not justifiable. It's too costly. I think the operating cost I saw indicated the operating cost would double by using containment vessels from 6 million to 10 million per year. And so I think that needs to be made clear that by using containment vessels, it's going to cost an extra $4 million a year. Is that

85 worth the advantage you gain in terms of not contaminating the environment any more than it already is?

My last -- or not last question, but fourth response, is with respect to the Galvin Commission. Dr. Dan Kerlinsky served on the Galvin Commission, which I hope allows everybody to realize that a lot of the commissions that I'm citing, review committees that I'm citing, were independent commissions. And Dan, obviously, is an independent thinker.

The Galvin Commission was headed up by Robert Young, a CEO at Motorola. And there was a variety of industrial, academic, and what I would call activists, for lack of a better term. That Galvin Commission came up -- the first recommendation in the list of recommendations was to implement DARHT. The first

86 recommendation of the Galvin Commission was to implement DARHT.

And another recommendation that the Galvin commission came out with was to eliminate the stockpile stewardship activity in Lawrence Livermore which presumably is enough justification to not consider alternatives that would locate a very central part of those science based stockpile stewardship activities at Livermore, which answers Chris Mechel's comments.

Jay made a comment about hydronuclears. He said that he wanted a categorical exclusion on hydronuclear and Bob and Jas tried to answer that question, and I would just like to add my view on that. I think that obviously it depends highly on the comprehensive test ban being negotiated and hopefully implemented. And that it depends on the threshold of the comprehensive test ban, and we should take advantage of whatever that threshold is, and it just depends on what that threshold ends up being. Jay also stated that --

MR. COGHLAN: Can I correct one thing, though?

MR. CUNNINGHAM: One more comment and you can comment. Jay also stated that it's the quote, unquote, weapons states that are pushing for higher thresholds on the comprehensive test bans, and I

1 would like documentation made available for that, if you
2 have a document that supports that.
3 MR. COGHLAN: The correction -- I didn't
4 ask for a categorical exclusion; I asked for a
5 categorical answer to the question.
6 MR. CUNNINGHAM: Your words were
7 categorical exclusion.
8 MR. COGHLAN: I did not say that. I asked
9 for a response to the question of whether or not there
10 will or will not be hydronuclear tests.
11 MR. CUNNINGHAM: Either you or Dan said
12 categorical exclusion.
13 MS. WEBB: Perhaps we will have to wait
14 for Irene to get her transcript typed up, and then we can
15 see who said what because, to tell you the truth, I don't
16 remember the verbatim quote. Please let Greg finish.
17 MR. CUNNINGHAM: Three more points.
18 Dr. Kerlinsky indicated that most of the safety problems
87 19 have been solved in the 1960s. The one-point safety
20 criterion was not even established until 1968, but the
21 one-point safety criterion indicates that you have to
22 have a one in a million, only a one in a million or less
23 chance of getting nuclear yield out of a device, out of a
24 device that's accidentally detonated. That criterion was
25 not established until the 1960s and computer counts

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1 didn't have the predictive capability to predict
2 one-point safety until 1988, according to Dr. Kidder in
3 one of his reports to Congress.
4 And I would argue that one-point safety is
87 5 a -- is a very vital mission that we serve, because
6 one-point safety is not related necessarily primarily to
7 aging. It's related to inherent design flaws that
8 potentially take years and years of testing to decide
9 whether or not that it is a design flaw that could cause
10 a one-point safety failure. The reason is, the
11 sensitivity to various points on the outerexplosive where
12 the one point would be initiated is not well understood
13 and needs to be multiple tested, multiple different
14 points in a code that can reliably predict such
15 performance. And we don't have a 3-D code that can
87 16 reliably predict such performance because we don't have
17 the 3-D information that would be provided by DARHT to
18 benchmark that kind of a code.
19 Last comment on Dr. Kerlinsky's statement.
20 He said that the Sandia Report indicated that high
21 maintenance is needed, and I have a very long statement
22 here that I won't read, but to summarize, there are many
88 23 problems with just having an inspection, maintenance,
24 replacement kind of strategy as your entire science based
25 stockpile stewardship program. That's called

1 surveillance. That's not science based stockpile
88 2 stewardship.
3 One problem is that materials can become
4 unavailable. A very explicit example of this is, the
5 Rocky Flats Production Plant was the only plant producing
6 the pits that formed the central core of a primary of a
7 nuclear device. Rocky Flats stopped producing pits, and
8 for that reason, two of the weapons that remain in our
9 stockpile, according to the recent Nuclear Posture Review
10 headed by the Secretary of Defense, two of our weapons do
11 not have insensitive high explosives. They have the old
12 style high explosive, which makes them more susceptible
13 to one-point safety hazards.
14 That is to say, if they have a one-point
15 safety problem, the fact that they have old high
16 explosives makes them more susceptible to accidental
17 detonation and potential nuclear disaster. Those devices
18 were not upgraded to devices that could have IHE,
19 insensitive high explosives, because there was no vendor
20 to produce substitute pits that would not have required
21 the experiments and testing that would be required to
22 solve the problem otherwise.
23 And the other solution was to essentially
24 take used pits from the stockpiles, and the weapons
25 experts decided that it would be more testing and more

1 costly and there would be underground testing and they
2 did not do it.
3 So for that reason there has not been a
4 safety upgrade. So in effect, not having done this whole
5 concept of inspection, maintenance, replacement is
6 seriously affected. Vendors do go out of business.
7 Materials do disappear. Furthermore processes include
88 8 undocumented capabilities and styles of individuals who
9 retire or just leave. You can't fully specify every
10 aspect of a production process. We don't fully
11 understand the production process in enough detail to
12 know whether or not there are certain missing
13 documentation of production processes.
14 I think I -- I have two more areas that I
15 would like to comment on and maybe I will comment on them
16 if other people comment on them; that is, with respect to
17 the Nuclear Posture Review, which is available in the
18 community reading room, and that declares why we need to
19 have nuclear weapons. What our objectives are in having
89 20 nuclear weapons and gives very explicit figures on how
21 many weapons we have taken out of the stockpile, how much
22 we have reduced the stockpile, what kind of capabilities
23 we have eliminated to save money, how many personnel now
24 have access to weapons. It's been reduced by 70 percent.
25 70 percent fewer people have access or control of nuclear

1 speak for the lab. I frankly think that the preferred
2 approach should be, people who are clearly designated to
3 speak for the lab -- people who are not clearly
4 designated, the presumption should be that they speak in
5 their own capacity until such time that they identify
92 6 themselves in the official capacity. I would request
7 that that be the approach for all the PEIS that DOE is
8 going to be conducting. I know you only have control
9 over this one or some authority over that, but I would
10 suggest that is a proper process.
11 I think by calling out people, where they
92 12 are an employee, is inappropriate and I would request
13 that that process be stopped.
14 MS. WEBB: Okay. I appreciate that
15 comment. It is true that Bob and Jas, if they would care
16 to comment on the Environmental Impact Statement, I would
17 have suggested to them that probably they should be
18 speaking as private individuals since they are here in
19 their official capacity. We have several other folks
20 here, such as the people who are staffing the information
21 room. It's little bit less clear, if they wanted to
22 speak tonight, if they would be speaking as an individual
23 or in the capacity in which I asked them to come and help
24 out in the information room.
25 MR. DAY: Let me clarify that. They are

1 here as representatives of the laboratory, with materials
2 presented and prepared by the laboratory, so people in
3 the other room are here as representatives of the
4 laboratory, not in their individual private citizen
5 capacity.
6 MS. WEBB: And there's a lot of other
7 people who work at the laboratory but they are here
8 tonight because I presume they are interested in being
9 here, either that or their spouse made them come, and
10 they are here in their capacity as private citizens.
11 I don't make a habit of asking people on the record where
12 they work, and I hope I did not do that.
13 I, quite frankly, am not really
14 interested, too much -- I mean, sometimes it's really
15 interesting where people work, but for the most part, I'm
16 sorry if I left the --
17 MS. CHANDLER: I didn't mean that as a
18 criticism, Diane. I think it's inherent in some of the
19 things going on in this meeting, as well as the others.
20 I think we need to put it out on the table and address
21 it.
22 MS. WEBB: All right. I appreciate that
23 comment. Mary, you were raising your hand.
24 MS. RISELEY: I like to think it's
25 completely irrelevant if the people work at the lab or if

1 they are a member of the public; they have a right to
2 speak. But I would like to say that tonight we lost
3 track of the vector that is expected by NEPA. And the
4 vector in a DARHT comment meeting, or in a scoping
5 meeting, is comments from the public to DOE. And it
93 6 seems like a lot of what happened this evening is that
7 that was passed on to other people, and they prepared
8 rebuttal testimony rather than commenting on the DARHT
9 EIS itself. And I don't know if it's possible to do
10 anything like that, but maybe a reminder every once in a
11 while that the purpose of meeting is to evaluate publicly
12 the DARHT EIS, and presenting your own personal opinion
13 about the various alternatives rather than the ideas of
14 some other members of the public.
15 MS. WEBB: About ten hands went up, and I
16 do appreciate that comment, Mary. And I did say earlier
17 on that the purpose of the meeting is to discuss the
18 accuracy and adequacy of the EIS, specifically the
19 environmental analysis contained therein. I did however
20 say that we would entertain comments on other aspects of
21 the project for this review project. However, you are
22 absolutely correct the main focus of this meeting is to
23 get your comments on the adequacy and accuracy of the
24 environmental impact analysis in the document. A bunch
25 of hands went up simultaneously, and Chris is one.

1 Greg is one. Dan is one.
2 DR. KERLINSKY: We will go around this
3 way.
4 MR. MECHELS: I like that.
5 MS. WEBB: All right, Chris. You may say
6 something.
7 MR. MECHELS: Because of my earlier noted
8 trouble with members of Los Alamos National Laboratory
9 throwing off statements which the public cannot rebut, I
10 mean, I would like to get a clarification on the
11 statement he just made; that part of the reason we need
12 DARHT is because, quote, that the -- "that you don't
13 really understand the production process." Is that the
14 official laboratory position from these two gentlemen?
15 MR. CUNNINGHAM: I'm not representing the
16 laboratory's position.
17 MR. MECHELS: As a member of the a
18 laboratory and making a comment like that, is that true?
19 I'm just saying, is that true?
20 MR. CUNNINGHAM: Get it out of the Miller
21 Report. They don't --
22 MR. MECHELS: Wait a minute. Is that
23 true? Here are two people who work at the laboratory and
24 are experts in that area.
25 MR. MECHELS: I don't care what the Miller

1 or somebody's comments. I can't remember whose comment,
2 but basically on NEPA. To me what NEPA is, it's about
3 public involvement. the public being involved and
4 informed, and I feel rongly because of the
5 comments I presented y and being able to do that.
6 So I feel that the NEPA process is all
97 7 about involvement, not about some kind of formal
8 specification of how comments are solicited.
9 MS. WEBB: Thanks. And Christine, I think
10 your hand went up when all the hands --
11 MS. CHANDLER: No.
12 MS. WEBB: It didn't go up? I'm sorry
13 MS. CHANDLER: The one time.
14 MS. WEBB: George, your hand went up.
15 MR. CHANDLER: I will make an
16 environmental comment on the environmental section of
17 this report, which I think is outstanding. There are
18 more thorough documents produced by the laboratory on lab
19 surveillance and I think it's clear from what's in this
20 report and from other things, that the laboratory
21 dedicates large amounts of resources to environmental
22 surveillance, tests everything conceivable, looking for
23 migration of radionuclides off the laboratory property
24 into the general environment, and has found nothing
25 credible that would pose any credible threat to any of

98 1 its neighbors.
2 Mostly the -- there's, for example, when
3 you look at the numbers you see a lot of plutonium
4 numbers along the Rio Grande, and you find out that's all
5 from atmospheric testing. There's a hint in a couple of
6 places that there may have been some migration of
7 plutonium down from the Bayo Canyon or the Pueblo Canyon
8 but the amount that's there is minuscule compared to
9 what's in the atmosphere from atmospheric testing.
10 The uranium content in northern New Mexico
11 is very hot, and a lot of uranium -- there is a lot of
12 uranium radioactivity. There is essentially no
13 contribution from the laboratory of uranium into the
14 environment that is made. There is a large amount of
15 uranium on the mesa where these tests take place, 144,000
16 kilograms -- that's a number; that's a big number --
98 17 that's been expended out there carefully continuously
18 monitored for any sign of migration, and there are in
19 fact cleanup activities on the way.
20 So I think one of the things that's very
21 important about this report is it documents the care that
22 the laboratory takes to protect its neighbors from any
23 kind of threat from activity out there, and those
24 activities -- my personal observations are, they're
25 increasing.

1 MS. WEBB: Thanks. Something else
2 regarding EIS analyses, which I just wanted to say again;
3 we talked a little bit about safety and reliability,
4 which was part in the EIS of the purpose and need. An
5 EIS specifies and identifies the purpose and need, but
6 the purpose of an EIS is not precisely to debate or
7 analyze the purpose and need. The purpose of an
8 Environmental Impact Statement is to analyze the
9 environmental impact of a proposal, in this case, the
10 preferred alternative and the various alternatives to.
11 The Environmental Impact Statement is one facet but not
12 the only facet that will lead to the ultimate decision.
13 Other things that are not analyzed in EIS, such as cost
14 benefit analysis, programmatic studies, and other things
15 of that type, will enter into the decision process, but
16 are not part of the environmental analysis that's
17 included in the Environmental Impact Statement. Does
18 anybody else -- well, we are having a round of applause
19 from next door.
20 MR. LYLES: John Lyles and I have heard a
21 lot of ideology and statistics about weapons and
22 production rates and various reasons or not reasons to
23 finish building DARHT. I was wondering, since you've
24 been bringing up the environmental part in the last few
25 minutes towards the end here, the archeological part,

1 has -- in the last two days of these meetings, have any
2 representatives of the pueblos been coming to these and
99 3 actually having input because they are the most affected.
4 It's their ruins and sites there.
5 MS. WEBB: Representatives of the pueblos
6 have certainly been invited to these meetings. As with
7 other types of other government entities, we make special
8 provisions to make sure their comments are heard, as I
9 have made the offer to other government entities, I have
10 made the offer to go to the pueblos and speak to the
11 tribal governments directly. They have accepted those
12 invitations and these types of interchanges will
13 continue. We do, under law, regulation and good-neighbor
14 practices, take into account the input and give special
15 deference to the input of the tribal governments as well
16 as the state and local governments.
17 MR. CUNNINGHAM: Can I comment real
18 briefly? I know Bev Larson, who is the archeologist, I
19 believe, that did some the work on the archeological --
20 the cultural impact, if you will, Nake'muu, which is one
21 of the sites that might be impacted and she has had
22 several discussions. She had a very active discussion
23 with the pueblo. One example I think is kind of
24 interesting, I think; you guys correct me if this is
25 wrong, but I believe the pueblos were interested in

taking earth and putting it over some of the ruins and they felt that that was the appropriate mechanism to ensure that resource, and they were much more willing to do that, for instance, than having it torn apart, and the pueblos were consulted to make sure that resources were being handled in an appropriate way.

MS. WEBB: What you're referring to was there was an archeological site that was covered by this earthen berm. The laboratory did consult with the local pueblos and at the request of the local pueblos, the archeological site was covered and is banked under that big mound of earth. That was not the preferred approach that had been suggested by the State of New Mexico State Historical Preservation Officer, but they did again -- again the state deferred to the wishes of the pueblo. Beverly was here earlier. I don't know if she's still with us. Beverly did contribute to this Environmental Impact Statement. I might just mention that the analysis was done by members of the Pacific Northwest Laboratories. The gentleman from Pacific Northwest Laboratories who did this analysis is also here tonight, somewhere. I don't see him at the moment, but he is here tonight, so if somebody wants to specifically ask about that.

MR. WATSON: I would like to make an

observation. My name is Scott Watson, speaking on my own behalf. About the Indian ruins, I think you pointed out earlier that the Indians ruins around the site which have been doing open-air hydrotesting for some 30 years now is excellent. I would like to add to that observation. As a citizen of Los Alamos I'm well aware of the number of ruins around the mesa tops, for example, White Rock Canyon, Bandelier, other areas, and we have observed those, as someone who likes ruin areas, and observed the damage done to them by hikers, bikers, motorcycle riders and people of the general public, and I have had the opportunity to observe the condition of the ruins at the laboratory site and comparatively say, those ruins at the laboratory sites are in much better condition, which indicates to me that the laboratory, as a responsible steward of the archeological site and laboratory, actually maintain archeologists on-site and require reviews of these sites before such construction can take place. So I think it's important that the public be aware that these sites are being well preserved and the fact that this ruin is in such good condition is testimony of that.

MS. WEBB: Thank you, Scott. We seem to be winding down. Who else would like to speak? There are some people who haven't said anything tonight. I

wasn't one of them. Ken?

MR. BAUER: Diane, I'm going to push the envelope a little. My name is Ken Bauer. I work at the lab as well, even in the stakeholder office, but I wish to speak as a private citizen. So in that sense, it is a little late, and I'm off the clock; I guess I can do that.

With respect to the format of individuals rebutting each other over time, I would like to suggest that that is an adversarial situation where -- where we're pitting each other's rhetorical skills against one another, and perhaps it's not as constructive as speaking to -- to the goal of the meeting and working toward certain decision points that may be enhanced by that discussion.

The reason I wanted to break my silence was to say that -- that with respect to the adequacy of the of the draft, I was surprised that the air quality was significantly worse with the containment option. And since this hasn't come up, I would like to suggest that in the final draft, the final EIS, a fuller explanation is made of how an identical set of calculations for an open air explosion versus an explosion that takes place inside containment and is properly vented, and so you on can come out significantly worse in that case where it's

contained. The socioeconomic consequences of using containment, of course, have been stated many times. It costs more money to that do that. As a chemist, I -- I learn to accept the -- to reject the notion that it was -- that the solution to pollution was dilution. And often the statement is made, 500 feet out from the site, you won't find any soil, any soil contamination in that background. The air quality 3-, 400 feet away is at background again, this is -- this is because of the incredible dilution effect that takes place over this distance, and I think that as -- as citizens and scientists, we should reject the notion that by diluting 20 pounds of lead over the course of a year or 30 pounds of beryllium and large amounts of uranium, that just because it gets diluted over that large space, that it's acceptable because we can't measure any more out at this certain point.

So in that respect, I would like to argue that containment has merits that should be embraced by the community members and by the scientific participants. Thank you.

MS. WEBB: Thank you, Ken. All right. Anybody else want to say anything to us tonight?

MR. MECHELS: One last comment is that I personally think that this is a bit adversarial in this

105 format. I came here specifically to speak to the DARHT EIS. I did, so my main objections were specifically against that I think that we don't do very well when we have people saying, "So and so said so. I said so," and so I wish to refute them. I don't think it's useful.

MS. WEBB: If anybody else has comments on the format, I would be glad to hear then them now or there's evaluation forms out at the front desk and you can write those types of comments down.

Who else would like to speak? Jay is looking.

MR. COGHLAN: I propose to adjourn.

MS. WEBB: Jay is entertaining a proposal to adjourn, and I think it sounds like a good idea. So again, thank you all very much for coming. I know that you're all busy. I appreciate your taking the time to be here tonight.

(Hearing adjourned at 10:20 p.m.)

STATE OF NEW MEXICO)
) ss
COUNTY OF BERNALILLO)

I, IRENE DELGADO, New Mexico CCR 253, DO HEREBY CERTIFY that I did report in stenographic shorthand the foregoing proceeding as set forth herein; that the foregoing pages are a true and correct transcript of my stenographic notes and were reduced to typewritten transcript through Computer-Aided Transcription.

I FURTHER CERTIFY that I am neither employed by nor related to any of the parties or attorneys in this case, and that I have no interest in the final disposition of this case in any court; that on the date I reported these proceedings, I was a New Mexico Certified Court Reporter.

IRENE DELGADO, NM CCR 253
Notary Public Expires: 5-1-96

Transcript Attachment
Comment Code 54

DARHT EIS COMMENTS FOR PUBLIC FORUM

1. Are the activist groups really interested in ensuring a safe and healthy environment in the context of ongoing work, or is their true agenda to eliminate all work on or related to nuclear weapons? Does the lab expend energy on meeting environmental requirements? Are these requirements too lax?
   a. Quotes from Mary Risely and Jackie Cabasso
   b. Galvin commission's findings on over-regulation by DOE (page 10 bottom).
2. Why does the US need to retain its nuclear weapons?
   a. Deterrence: In July of 1994, President Clinton said "We wil retain strategic nuclear forces sufficient to deter any future hostile foreign leadership with access to strategic nuclear forces from acting against our vital interests and to convince it that seeking a nuclear advantage would be futile" (slide 2 of Background Information for DARHT).
   b. Deterrence: In September of 1994, the Nuclear Posture Review concluded that we should "lead" in the area of reducing the nuclear danger and stemming proliferation. As part of these goals, the active stockpile has been reduced by 59% since 1988 and will be reduced by 79% ~~in~~ by 2003; storage locations have been reduced by over 75%, and personnel access to weapons or control has been cut by 70%. Furthermore, the US has and will presumably continue to support treaties that reduce the potential for non-nuclear states to gain a nuclear capability. However, the Nuclear Posture Review also emphasized that we must "preserve options in the case that reform fails in Russia" and "maintain good stewardship" of the weapons that remain in our stockpile.
   c. Non-proliferation: The DARHT EIS references the Presidential Decision Directive when it says that a safe and reliable US nuclear stockpile supports non-proliferation insofar as it provides an umbrella for our non-nuclear allies. As an example, what would happen if North Korea pursued a path toward nuclear armament, threatening non-nuclear states like South Korea and Japan. Would not a unilateral disarmament by the US increase the chances of those countries attempting to arm themselves?
3. Why does the US need national labs to continue to have nuclear weapons programs, in particular the SBSS program?
   a. To ensure the continued safety and reliability of the stockpile, in support of our deterrence hedge against Russia's probable success in reform and also in support of non-proliferation. The independent Galvin commission, headed by Robert Galvin, the CEO of Motorola, strongly supported the role of the

laboratories in administering the SBSS, particularly LANL, in saying (in Section VIIIA) that
   i. "the primary mission of the weapons laboratories MUST be a safe, secure AND RELIABLE nuclear stockpile in the absence of nuclear testing..."
      "It requires the following rank-order priorities"
      (1) Attracting and retaining skilled scientists, ...
      (2) Enhancing surveillance of weapons in stockpile...
      (3) Continued hydrodynamic testing to cope with problems
      (4) Assessing problems, reanalyzing previous data through numerical simulations, ...
      (5) Sustaining the scientific process of inquiry through experimentation.
      The Galvin commission also recommends that LLNL relinquish its peer review role in SBSS and that DARHT get continued funding. The JASON report, which was chaired by Dr. Sid Drell of Stanford University, said in its conclusions that
      (6) A strong SBSS program, such as we recommend in this report, is an essential component for the US to maintain confidence in the performance of a safe and reliable nuclear deterrent under a CTB. The technical skill base it will help maintain and renew in the defense program and weapons labs will also be important for assessing emerging threats from proliferant nations and developing possible technical response thereto.
      (7) ... it is CLEAR that IMPROVED hydrotesting is crucial to continued confidence in the safety and reliability of nuclear primaries ...
      (8) the first of 7 recommendations (and presumably the most important) is to continue building DARHT, as it (page 4) "would provide important information about the time development as well as the 3-dimensional structure of the implosion" and it "will provide GREATLY enhanced capabilities of importance in the absence of underground tests"
   b. A SBSS program is necessary to maintain confidence in the stockpile, which is a necessary ingredient for our political leaders to negotiate treaties that stem proliferation while still ensuring our interests, such as NPT or CTB. This concern is evident in the requests made by Congress in the late 80's and early 90's to

more x-rays than PHERMEX or FXR (>2x), and so will decrease the noise in radiographs and be able to penetrate thicker systems than both PHERMEX and FXR.

ii. Resolution - the smaller spot size afforded by DARHT (2x-3x better than PHERMEX) will mean a much improved ability to see the hydrodynamic contributors to the boosting process, which is the most important and least understood part of the operation of the primary. Current PHERMEX resolution and dose make it impossible to get enough detail to improve the calculational codes. Furthermore, better resolution allows an experimenter to use a more optimal geometry (object closer to x-ray source) to take better advantage of the dose that he has.

wrt to some parts of the primary evolution

8 iii. Lower energy - DARHT will have a lower energy than PHERMEX, and close to that of FXR. A lower energy means that there are more photons for a given dose level (so the penetrating ability is improved) and the attenuation to photons of the heavy metals that we radiograph is less so that a higher percentage of photons is able to penetrate.

iv. Shorter pulse - the pulse width of DARHT is 60 nanoseconds, compared to 200 nsec for PHERMEX, so that better "stop-action" data is taken, wherein material boundaries (which are dynamically evolving) are not allowed to "smear" the radiograph to as high a degree.

v. Multiple views or time snapshots - an analysis of the one-point safety of devices requires multiple views at one time of the device, which only multiple independent axes can provide with the needed dose and resolution. A benchmark hydrodynamic test which will be compared to future tests in order to detect performance changes will require more than one time snapshot of the device. This is due to the shot-to-shot variability in determining the absolute timing of the test. Determining relative timing between two snapshots in a single test can be done with higher precision and will thus allow a more predictable, as well as more informative, benchmark test.

vi. Of course, more axes, more dose, better resolution, and more time snapshots will make the benchmark test even more predictable and informative, but a facility such as the Advanced Hydrotest Facility will require much riskier technology and much more money than that required

9 by DARHT. DARHT is a necessary first step toward

providing the additional information needed to improve predictive computer codes, define and develop the testing components of a SBSS program, implement and improve moderate-risk components of a proposed AHF, and further define requirements for an AHF. This approach is endorsed by several independent panels, review committees, and

9 commissions (HPAIC, DAIC, JASONs, e.g.). It is anticipated that even more capability than that offerred by DARHT will be needed to maintain the extremely high confidence in our country's stockpile that we have historically enjoyed due to a limited, but vitally important, nuclear testing program. The degree to which additional money should be spent on such a facility should be guided by our experience with DARHT and our nation's evolving nuclear policy.

b. DARHT was indeed conceived in an era when new weapons designs were being developed, and would have been used in that capacity were it completed in an era when ongoing designs were needed. However, hydrodynamic testing has also played a vital historical role in discovering potential safety and reliability problems with deployed and developmental weapons. Remember that

10 fully 1/3 of all nuclear tests were executed to ensure the nuclear safety of weapons, which was the highest priority for weapons' designers to observe. Finally, hydrodynamic testing has played a vital and historic role in helping designers to modify and improve their predictive calculational codes (whereas nuclear testing is imperative for certification). Thus, DARHT would have been used in the many of the same capacities it is being promoted for today even if new designs were being explored.

c. DARHT will not be used to implement new designs because there is a presidential order that prohibits such activity. However, even if new designs were desired, DARHT (and even a more capable AHF) would simply not provide enough information for designers to certify a completely new design without a nuclear test. That this is so is stated many times in the Kidder and

11 Miller reports. Nuclear testing is still essential for certifying that a new weapon design will be safe and reliable, and the need for nuclear testing will not be eliminated until a replacement program is validated by nuclear tests. Such a validation of a replacement program will be necessary before it is accepted by weapons' designers and responsible military and political leaders. This validation of a replacement to nuclear testing has not taken place and cannot take

place as long as there is a moratorium on nuclear testing. Thus, there should be little concern that DARHT will be used to design new weapons. However, changes in behavior as a result of small changes in existing devices due to new materials, processes, components, and incremental re-designs due to any of the above, may be detectable by DARHT and perhaps diagnosable and correctable using DARHT or an AHF. This would be an essential component of a meaningful SBSS program. [1]

COMMENT CODE	LOCATION OF EIS REVISION(S)
1 - 1	None required.

RESPONSE

DOE appreciates this comment.

COMMENT CODE	LOCATION OF EIS REVISION(S)
2 - 1	None required

RESPONSE

The documents referred to in this comment have been superseded by the DARHT EIS, but are available for review in the LANL Community Reading Room. DOE prepared these DARHT environmental documents (Action Description Memoranda), during the 1980s under prior environmental review procedures then in effect. The general biological environment of LANL was discussed in the 1979 Sitewide EIS for LANL (DOE/EIS-0018) and served as a baseline for those reviews. DOE revised its NEPA documentation requirements in 1990. DOE/LAAO revised its NEPA review procedures in 1994 and now routinely makes all NEPA reviews available to the general public and other Federal agencies; however, prior to the policy changes in 1990 DOE did not generally make NEPA reviews (except for EISs) available except on request. Because the 1980s reviews did not identify the presence of federally-listed species, DOE was not required to initiate consultation with the USFWS under Section 7 of the ESA. DOE will provide copies of the Action Description Memorandum to the Albuquerque office of the USFWS for their files.

DOE has considered DOI's comment regarding reissuing of the draft EIS or allowing more than 30-days for review of the final EIS prior to reissuing a ROD. DOE believe that concerns raised by the DOI have been adequately considered in preparing the final EIS and that it is unnecessary to reissue the draft EIS or to provide more than 30 days review of the final EIS. DOE has closely coordinated with the Albuquerque office of the USFWS to ensure that issues raised by that office and DOI, in particular issues related to the Mexican spotted owl and implementing the associated mitigation measures identified in appendix K, have been adequately addressed.

In a telephone conversation on August 15, 1995, DOI agreed that proceeding with a final EIS with a 30-day review was appropriate, and DOE has agreed that it would continue to meet with the USFWS New Mexico Ecological Services State Office periodically.

COMMENT CODE	LOCATION OF EIS REVISION(S)
2 - 2	Section 2.3.1

RESPONSE

Baseline research will be conducted at many sites and facilities, not just at DARHT or PHERMEX at LANL, and is expected to take several years. Baselining to document the current physical status of the weapons systems will involve a broad range of observations, measurements, and tests. "Baselining" will involve many different types of calculations, tests and experiments performed at different DOE weapons facilities, primary LANL, LLNL, and SNL. Among these activities will be hydrodynamic testing conducted at LANL or LLNL as appropriate to research each type of information needed to answer a particular question. The extent and duration of these activities will depend in part on the nature of the results, but several years is the best early estimate. Text has been added to section 2.3.1 to clarify baselining.

COMMENT CODE	LOCATION OF EIS REVISION(S)
2 - 3	None required.

RESPONSE

Section 3.3.3 of the EIS states that DARHT would take advantage of the existing infrastructure established to support PHERMEX. This infrastructure is outlined in Table 3-1, which has been revised to indicate the existing facilities involved. The term "infrastructure" in this section of the DARHT EIS refers to the larger relationships among facilities at LANL; although the term "infrastructure" is sometimes used to mean improvements such as fence lines, roadways and utilities, these features are already in place for the facilities listed in table 3-1. Tables 3-3 and 3-4 contain an outline of the utilities required for each of the alternatives.

COMMENT CODE	LOCATION OF EIS REVISION(S)
2 - 4	None required.

RESPONSE

Potential impacts from construction and operation of the Radiographic Support Laboratory (RSL) were considered in a series of environmental reviews prior to initiating its construction in 1988. No significant impacts were found. Impacts from construction of the RSL (e.g., habitat reduction) have already occurred and now apply equally to all alternatives analyzed in the DARHT EIS.

COMMENT CODE	LOCATION OF EIS REVISION(S)
2 - 5	Appendix K.

RESPONSE

DOE completed its Biological Assessment of the DARHT site in July 1995, and has consulted with the USFWS. The assessment addresses potential impacts on all threatened and endangered species from activities at the proposed DARHT site, as well as mitigation measures. See appendix K for this assessment and USFWS letter to DOE dated August 3, 1995, concurring with DOE's determination that the operation of the DARHT facility is not likely to adversely affect the Mexican spotted owl. DOE appreciates the cooperation it has received from the USFWS' New Mexico Ecological Services State Office and will continue consultation, as appropriate, with the Service regarding implementing mitigation measures identified in appendix K.

COMMENT CODE	LOCATION OF EIS REVISION(S)
2 - 6	Section K.3.2

RESPONSE

The DOE has consulted with the USFWS regarding methods to minimize and mitigate adverse impacts to wildlife, and the Service has concurred with DOE's findings (see appendix K).

Modeling of fragment distribution has shown that there would be minimal amounts of test materials past an 800-ft (245-m) radius. Most of these materials would be sand size particles that have traveled in an upward trajectory and fall back to earth at a nonlethal velocity. DOE has calculated the potential for wildlife to be struck by a piece of flying debris to be less than 1 in 10 million at 1,200 ft (365 m) (see appendix K, section K.3.2). The DARHT EIS evaluates accidents on a "what if" basis, i.e., assume the accident occurs and describe the impacts of the event. DOE does not consider the possibility of beams "escaping" the DARHT as a credible event. The firing area would be cleared prior to a shot to prevent accidents to personnel; this clearing procedure would also prevent large wildlife from being present on the mesa top when the experiment takes place. Thus, accidents in the immediate vicinity of the firing point should not be a concern to wildlife.

The EIS identifies mitigation measures which will result in the avoidance and minimization of significant adverse impacts (see chapter 5 and specifically section 5.11). Further the Record of Decision for this EIS will document major mitigation measures, and a Mitigation Action Plan will be issued sometime following the ROD in which all mitigation measures will be identified.

COMMENT CODE	LOCATION OF EIS REVISION(S)
2 - 7	Tables S-1 and 3-3

RESPONSE

Section 4.1.1 of the DARHT EIS acknowledges that 8 ac (2.3 ha) of land has been disturbed by previous construction at the DARHT site. Any habitat reduction from this construction has already occurred. Because these impacts have already taken place, DOE cannot ignore them, but they apply equally to all alternatives analyzed in the DARHT EIS, and would not serve to help DOE select among the alternatives analyzed. Table 3.3 has been revised to indicate that no additional habitat reduction would occur as a result of implementing the DARHT Baseline Alternative.

COMMENT CODE	LOCATION OF EIS REVISION(S)
2 - 8	None required.

RESPONSE

DOE acknowledges that construction of the DARHT facility began before this EIS was started. For the purposes of the DARHT EIS, DOE considers that the impacts that have already occurred at the DARHT site due to construction prior to the decision to prepare this EIS to be part of the existing environment. An EIS is prepared to assist a federal agency in decision-making; the decisions facing DOE at this time do not include a decision whether or not to begin construction (that has already occurred) but instead include a decision whether or not to complete the DARHT facility to conduct enhanced radiographic hydrodynamic tests, or to complete the structure for some other use. Analysis of impacts from future construction activities is in chapter 5.

COMMENT CODE	LOCATION OF EIS REVISION(S)
2 - 9	None required.

RESPONSE

The acreage and types of habitats that could be affected by direct or indirect impacts from construction and operation of DARHT are described in detail in chapter 4. Potential impacts are calculated across a broader area than for a localized habitat.

COMMENT CODE	LOCATION OF EIS REVISION(S)
2 - 10	Section 3.5.2

RESPONSE

The exclusion zones discussed in the DARHT EIS are safety features to provide protection to personnel and structures while testing takes place. During a test, the exclusion zone is the area which is cleared of any personnel before each shot. There are limitations on the types and designs of structures that can be built within exclusion zones. As mentioned in the DARHT EIS, section 3.3.6, the high explosives testing area at LANL comprises some 20 mi^2 (52 km^2), and includes several high explosive test facilities. Each test facility has a defined exclusion zone. The radius of each of these zones varies depending on the amounts of HE for which the facility is designed. The proposed DARHT facility would have an exclusion zone of 2,500 ft (750 m). This information will be included in EIS section 3.5.2.

COMMENT CODE	LOCATION OF EIS REVISION(S)
2 - 11	Section 5.11 and appendix K

RESPONSE

The final EIS has been revised to now list all candidate species, including information provided by the USFWS letter dated January 23, 1995. The biological assessment for the DARHT site, which was completed in July 1995, includes mitigation measures that the USFWS has concurred with.

COMMENT CODE	LOCATION OF EIS REVISION(S)
2 - 12	Appendix K

RESPONSE

The biological assessment for the DARHT site was completed in July 1995. It concluded that there was a low potential for the occurrence of the peregrine falcon at the DARHT site. Informal consultation with the USFWS has been completed (see appendix K).

COMMENT CODE	LOCATION OF EIS REVISION(S)
2 - 17	None required.

RESPONSE

DOE recognizes that secondary impacts may adversely affect resources that are not in the immediate vicinity of a proposed project. DOE has completed computer modeling to help assess impacts to surface water sections (see appendix E3).

COMMENT CODE	LOCATION OF EIS REVISION(S)
2 - 18	Section 3.3.3

RESPONSE

The likelihood of a transportation accident involving a test assembly bound for DARHT or PHERMEX is considered to be an extremely unlikely (annual probability of occurrence of 10^{-4} to 10^{-6}) to incredible (annual probability of occurrence of less than 10^{-6}) based on related LANL safety studies. For the EIS, impacts of accidents were evaluated without considering this very low probability of occurrence. Evaluation of potential impacts to humans from transportation accidents are considered bounding for blast effects and are also likely to be bounding for radiological and toxicological impacts since human dose receptors are assumed to be located nearby, likely closer to human activities than biotic resources, particularly wildlife. Potential impacts from soil contamination have been examined under normal operational releases from DARHT and PHERMEX operations, which would result in greater releases than a transportation accident.

COMMENT CODE	LOCATION OF EIS REVISION(S)
2 - 19	None required.

RESPONSE

Table 5-19 in the final EIS indicates the amounts of materials that are estimated to be released to the environment on an annual basis for all alternatives analyzed. It has been estimated that all of the high explosives would be consumed in the experiments. Ten percent of the solid material would be aerosolized, and a majority of the remaining material would be deposited within 460 ft (140 m) of the firing point.

DOE does not believe that any alternative analyzed would result in increased human activity in the area due to facility operations, or expansion of development into previously undeveloped areas. The construction and operation of DARHT will occur within LANL's High Explosives Research and Development and Testing Area in which land use has remained essentially unchanged for 50 years and the level of human activity expected under any alternative would be expected to remain essentially unchanged from the existing situation. The area in the vicinity of the DARHT site (although not the DARHT site itself) and the alternative locations for the vessel cleanout facility was previously disturbed by agricultural activities prior to the location being part of LANL.

COMMENT CODE	LOCATION OF EIS REVISION(S)
3 - 1	Sections Executive Summary, 1.3, 3.7, 5 Intro, 5.4.1.1, 5.4.1.3, 5.4.2.1.2, 5.4.3.3, 5.4.4.1, 5.4.4.2, 5.4.3.3, 5.4.5.1.1, 5.4.6.1.1, 5.4.7.2, 5.4.8.2, 5.4.9.2, 5.4.10, 5.4.10.3, 5.4.11.2, D.5, E3.5, and H.5.2

RESPONSE

DOE has prepared a revised Preferred Alternative, which is the Phased Containment Option of the Enhanced Containment Alternative, to address the concerns raised in this comment. See sections 3.7 and 5.4.

COMMENT CODE	LOCATION OF EIS REVISION(S)
3 - 2	Section 4.9

RESPONSE

DOE agrees. See revised section 4.9.

COMMENT CODE	LOCATION OF EIS REVISION(S)
3 - 3	Section H.3.2

RESPONSE

DOE agrees. The text has been revised to reflect the suggested change. See section H.3.2.

COMMENT CODE	LOCATION OF EIS REVISION(S)
3 - 4	None required.

RESPONSE

DOE appreciates this comment. The EPA has a statutory requirement, under 42 U.S.C.7609, to review proposals of other Federal agencies to determine whether the environmental impacts of the proposal would be unsatisfactory from the standpoint of public health or welfare or environmental quality. The EPA has four rating categories: environmentally unsatisfactory; environmental objections; environmental concerns; and lack of objections. DOE notes that the EPA reviewed the draft classified supplement along with the draft DARHT EIS, and appreciates the assistance of the EPA in this regard.

COMMENT CODE	LOCATION OF EIS REVISION(S)
4 - 1	Section 4.6 Tables 4-14 and 4-15

RESPONSE

Upon hearing of the concerns from San Ildefonso and other pueblos, DOE has removed the maps of cultural resources in the vicinity of the DARHT and PHERMEX sites. The tables in section 4.6 have been revised after consultation with Indian tribes.

The maps were included in the DARHT draft EIS because a Federal land managing agency can release maps of cultural sites if in doing so the best interest of the cultural resources would be served. DOE included the maps in the draft EIS because it was thought that the best interests to serve the environmental analysis was to show the location of sites in relation to the DARHT and PHERMEX Facilities. Access controls to TA-15 were considered sufficient to ensure that the sites would be protected.

COMMENT CODE	LOCATION OF EIS REVISION(S)
4 - 2	None required.

RESPONSE

DOE notes that all of the cultural resource sites listed in the DARHT EIS, including the four mentioned in this comment, are within a fenced exclusion zone that is not accessible to the general public. One reason that archeological and cultural sites on LANL grounds tend to be better preserved than those on surrounding lands is the fact that access to LANL has been controlled for over 50 years. The Nake'muu site has been described in the open literature many times over the past 90 years, as have several of the other cultural resource sites near TA-15. DOE takes seriously its responsibilities as a federal land management agency to preserve the cultural resource entrusted to its care. After conversation with San Ildefonso and other tribes, DOE has developed additional mitigation means to assist in protecting cultural resources in the vicinity of TA-15. See section 5.2.11.2 of the EIS.

COMMENT CODE	LOCATION OF EIS REVISION(S)
4 - 3	Sections 4.6.3 and 6.9

RESPONSE

DOE apologizes for any misunderstanding and has advised the Pueblo of San Ildefonso that there was no intent to violate the Tribe's privacy in regard to consultation under the American Indian Religious Freedom Act (AIRFA). Instead, DOE merely intended to note for the record in the DARHT EIS that it was pursuing its obligation to consult with the tribal governments under the AIRFA and other cultural resource laws, in accordance with its government–to–government relationship with San Ildefonso and other tribes. The text of the EIS has been revised in section 6.9 to indicate that consultation with the tribes is ongoing, and will be ongoing, for the life of the project.

COMMENT CODE	LOCATION OF EIS REVISION(S)
4 - 4	Section 4.6

RESPONSE

See response to comment 4-1.

COMMENT CODE	LOCATION OF EIS REVISION(S)
4 - 5	Section 4.6

RESPONSE

See response to comment 4-1.

COMMENT CODE	LOCATION OF EIS REVISION(S)
4 - 6	Section 4.6

RESPONSE

See response to comment 4-1.

COMMENT CODE	LOCATION OF EIS REVISION(S)
5 - 6	Section 4.6

RESPONSE

See response to comment 4-1.

COMMENT CODE	LOCATION OF EIS REVISION(S)
5 - 7	None required.

RESPONSE

Section 5.1.6.1 indicates that measurements showed the air shock wave generated by a test event is of greater concern than vibrating ground motion in regard to the potential for damage to structures or cultural resource sites. In fact, ground motion caused by the air wave is stronger than seismically transmitted ground motion. DOE does not believe that further analysis of seismic ground motion is needed. The measured air wave is noted as being about one-tenth the value normally tabulated for window breakage. Based on these measurements, the 150-lb (68-kg) shots that would be fired at DARHT are calculated to be about one-half of the value normally tabulated for window breakage.

Standing walls, such as those at the Nake'muu ruins are slowly and continually weakened by natural processes, and they will eventually fall from natural forces. It should be noted that lightning strikes anywhere within a mile or two can produce an airwave at Nake'muu greater than that expected from DARHT testing. Damage at Nake'muu from DARHT air waves is not considered a reasonable expectation. In any event, to mitigate possible impacts, DOE has agreed to continue to work with San Ildefonso to protect Nake'muu and other cultural resource sites. See section 5.11 of the EIS.

COMMENT CODE	LOCATION OF EIS REVISION(S)
5 - 8	None required.

RESPONSE

PHERMEX, and firing sites very close to it, have been used at various times in the past for shots considerably larger than any design shots for DARHT. Thus, the fragment distribution in the vicinity of PHERMEX is not a good model.

Modeling of fragment distribution has shown that there would be minimal amounts of test materials past a 800-ft (245-m) radius. Most of these materials would be sand size particles that have traveled in an upward trajectory and fall back to earth at the velocity of gravity. Section 3.3.1 of the EIS has been revised to reflect this information.

As noted in the EIS, the probability that any shrapnel would reach Nake'muu is small and could be reduced further by placing an additional barrier on top of the DARHT building see section 5.11 of the FEIS. Shrapnel for any shots larger than the design shots would be mitigated by temporary blast shields.

COMMENT CODE	LOCATION OF EIS REVISION(S)
5 - 9	None required.

RESPONSE

The American Indian Religious Freedom Act, August 1978, sets U.S. policy to "protect and preserve for American Indians . . . access to sites. . ." LANL policy has been to consult with local Pueblos (in particular the governments of the four Accord Tribes) and coordinate access to areas within LANL. If pueblo members were visiting the Nake'muu site, there would be no shots at DARHT during the visit and pueblo members would not experience any shot effects. A possible exception to site access might be special arrangements to observe actual effects.

COMMENT CODE	LOCATION OF EIS REVISION(S)
6 - 1	None required.

RESPONSE

DOE appreciates the State's review.

COMMENT CODE	LOCATION OF EIS REVISION(S)
7 - 1	Section 4.4.2

RESPONSE

The statement in section 4.4.2 has been modified. Similarly, surface water and spring sustain perched ground water within Pajarito Canyon near the western portion of LANL.

COMMENT CODE	LOCATION OF EIS REVISION(S)
7 - 2	Section 4.4.3

RESPONSE

This limitation is noted in the EIS text. See section 4.4.3.

COMMENT CODE	LOCATION OF EIS REVISION(S)
7 - 3	None required.

RESPONSE

The DOE agrees that the screen lengths of the water supply wells limit their utility as water quality monitor wells. Data from these wells have been referenced in the draft EIS because there are no existing monitor wells in the area of TA-15. To eliminate this deficiency, DOE has suggested drilling a Laboratory-wide network of properly designed monitor wells under the Ground water Protection Management Program.

COMMENT CODE	LOCATION OF EIS REVISION(S)
7 - 4	None required.

RESPONSE

DOE has no intent to discharge DARHT-related materials to ground water. Analyses in section 5.2.4.2 indicate that, using conservative assumptions to maximize impact from infiltration of materials, there would be no impacts to ground water quality. Peak concentrations (which are well below applicable MCLs) calculated under these unfavorable conditions would be reached only after 20,000 to 40,000 years.

DOE has prepared the Ground Water Protection Management Program Plan and submitted it for review and comment to the New Mexico Environmental Department's Ground Water Remediation and Hazardous Waste Bureau. This document addresses ground water concerns LANL-wide and, in combination with the DARHT EIS, provides much more information than previous documents.

COMMENT CODE	LOCATION OF EIS REVISION(S)
7 - 5	None required.

RESPONSE

The DOE appreciates this assessment.

COMMENT CODE	LOCATION OF EIS REVISION(S)
7 - 6	None required.

RESPONSE

In the event that DOE decides to implement an alternative involving the operation of DARHT, DOE and LANL will obtain all State permits necessary for operation of DARHT. Recognizing that appendix A values of AQCR 702 are screening values, DOE does not believe that these values provide a representative look at potential DARHT impacts because of the significant differences in operating parameters. Some of the unique DARHT parameters include periodic detonations rather than continuous stack or point-source releases, operation in an area closed to public access, and the fact that 90 percent or more of the depleted uranium that would be used in uncontained detonations remains on site as large and small metal fragments (section B.8), immediately reducing the amount of material available to 10 percent of the bounding amount of 1,543 lb (700 kg) annual usage. DOE is confident that calculation of impacts using EPA-approved methods would not exceed NMED permit requirements and in fact would be lower than impacts calculated in the draft EIS.

Hourly emission estimates for chemicals which react with heat to form varying chemical products should not be based entirely on yearly expenditure amounts. For instance, emissions of lithium hydride would be based on the aerosolized amount remaining after the combustion reaction with high explosives, not on the amount expended. Lithium hydride, in the presence of air, humidity, and heat will react immediately and completely to form lithium hydroxide, an unregulated form of lithium.

COMMENT CODE	LOCATION OF EIS REVISION(S)
7 - 7	None required.

RESPONSE

DOE does not believe that implementing the DARHT proposal to complete construction of the facility would meet the requirements for an AQCR 702 construction permit. DOE does not believe that the periodic emissions expected from DARHT, if implemented, would exceed appendix A levels, nor would any of the other criteria under AQCR 702 Part 3 C.2 apply.

See response to comment 7-6.

COMMENT CODE	LOCATION OF EIS REVISION(S)
7 - 8	None required.

RESPONSE

Amounts of metals and other materials assumed under all alternatives are the maximum amounts that have been projected for annual use at DARHT. Thus, the actual number of tests can vary from year to year and the amounts of materials released to the environment would remain within those levels discussed in the EIS. It is anticipated that actual usage will be significantly less. Use of hazardous materials is closely controlled at PHERMEX, and would be administratively limited at DARHT in a year when the maximum amounts of material were approached. One intent in this control is to prevent or strictly limit the potential for mixed-waste generation.

COMMENT CODE	LOCATION OF EIS REVISION(S)
7 - 9	None required.

RESPONSE

The solubility of uranium in LANL waters was assumed to be 300 mg/L (see appendix E2.2.1) and the proposed MCL value is 20 µg/L (see section 5.1.4.1). Thus, the solubility is 15,000 times the proposed MCL. One premise of the EIS calculations was that public access is limited by the present boundary of the LANL site which is approximately 0.75 mi (1 km) east of the DARHT site. A conservative modeling approach was adopted for runoff from the mesa top contributing water and sediment to the adjacent canyon bottoms. Using the curve number method, the volume of rainfall that becomes surface runoff was determined. This amount of water was assumed to carry contamination at the solubility limit to the canyon bottom. Thus, runoff from the firing site arrives in the canyon bottom and merges with water arriving from upstream in the watershed. The resulting solution concentration in the first segment or reach of the canyon was calculated to be above the proposed MCL, (i.e., 28 and 30 µg/L, see tables 5-3 and 5-7 of the DARHT final EIS); however, this location is within the boundary of LANL and not a point of public access. The quality of water discharging into the Rio Grande was shown to be well below the proposed MCL (see tables 5-2 and 5-6).

COMMENT CODE	LOCATION OF EIS REVISION(S)
7 - 10	None required.

RESPONSE

The EIS evaluated potential radiological impacts from releases of uranium and tritium to the environment. See sections 5.1.8 and H.3. Tritium impacts were determined to be negligible because of the low quantity (3 Ci) and form (tritium gas) potentially released.

Analyses in the EIS conservatively assumed that 10 percent of all material released during uncontained detonations was respirable (see section 5.1.2.1.2 and figure B-1).

COMMENT CODE	LOCATION OF EIS REVISION(S)
7 - 11	None required.

RESPONSE

See response to comment 3-1.

COMMENT CODE	LOCATION OF EIS REVISION(S)
7 - 12	None required.

RESPONSE

The DOE appreciates this suggestion.

See response to comment 3-1.

COMMENT CODE	LOCATION OF EIS REVISION(S)
8 - 1	Sections Executive Summary, 1.3, 3.7, 5 Intro, 5.4.1.1, 5.4.1.3, 5.4.2.1.2, 5.4.3.3, 5.4.4.1, 5.4.4.2, 5.4.3.3, 5.4.5.1.1, 5.4.6.1.1, 5.4.7.2, 5.4.8.2, 5.4.9.2, 5.4.10, 5.4.10.3, 5.4.11.2, D.5, E3.5, and H.5.2

RESPONSE

DOE appreciates this assessment. Mitigation will be addressed in the ROD according to the selected alternative.

See response to comment 3-1.

COMMENT CODE	LOCATION OF EIS REVISION(S)
8 - 2	None required.

RESPONSE

The 25 percent value is a hypothetical number used in this EIS to provide a bounding unit for analysis. The actual percentage under this alternative would be expected to be less. Some uncontained shots are necessary because the amount of high explosive needed would exceed containment capacity, special diagnostic equipment would not fit in the containment, or moving elements (such as a projectile) are involved. Other experiments might be done without containment because their small size would not justify the cost of containment or they would not include hazardous materials, where containment would mitigate adverse impacts from contamination by hazardous materials.

COMMENT CODE	LOCATION OF EIS REVISION(S)
8 - 3	None required.

RESPONSE

DOE recognizes that offsite discharge occasionally occur. Offsite surface water flow may occur seasonally in all of the drainages on the Pajarito Plateau depending upon the degree of snowmelt or intensity of summer thunderstorms. None of the drainages that cross DOE land, however, flow year long. Offsite flows typically are limited to a few days per year and flow may not be continuous from LANL contaminant source areas to the DOE boundary.

COMMENT CODE	LOCATION OF EIS REVISION(S)
8 - 4	None required.

RESPONSE

DOE agrees that more investigation is needed in the Cañon de Valle area. There is considerable debate between hydrogeologists as to the source of the springs and surface water. Please note that the DARHT draft EIS acknowledges the possibility that shallow perched ground water may exist in this area (section 4.4.3). DOE cannot verify the flow measurements cited in the comment but appreciates this information.

COMMENT CODE	LOCATION OF EIS REVISION(S)
8 - 5	Section 4.4.2

RESPONSE

Section 4.4.2 has been modified to include additional information on springs and drill holes in the canyons near DARHT and their implications concerning the presence of perched ground water.

COMMENT CODE	LOCATION OF EIS REVISION(S)
8 - 6	Section 4.4.2

RESPONSE

See response to comment 8-5.

COMMENT CODE	LOCATION OF EIS REVISION(S)
8 - 7	Section 4.4.2

RESPONSE

See response to comment 8-5.

COMMENT CODE	LOCATION OF EIS REVISION(S)
8 - 8	Section 4.4.2

RESPONSE

A comprehensive study has not been conducted in the Cañon de Valle area to determine the source of springs. Until such an investigation is performed, and the source is determined to be perched ground water, we cannot verify the NMED's interpretation.

See response to comment 8-5.

COMMENT CODE	LOCATION OF EIS REVISION(S)
8 - 9	Section 4.4.2

RESPONSE

See response to comment 8-5.

COMMENT CODE	LOCATION OF EIS REVISION(S)
8 - 10	None required.

RESPONSE

The hydrologic properties of the Discharge Sink in Potrillo Canyon located onsite at LANL have not been studied. Core from a borehole in the upstream portion of the Sink has been tested extensively for unsaturated hydraulic characteristics. From this data we are able to calculate hydraulic gradients within the Sink and make estimates of downward flux rates. Additional surface water flow characteristics were determined during a 5-year study.

COMMENT CODE	LOCATION OF EIS REVISION(S)
8 - 11	None required.

RESPONSE

DOE agrees that perched ground water in the alluvium is likely to exist in upper Cañon de Valle, sustained by spring flow and seasonal runoff. The dimensions of such a zone are unknown at present.

COMMENT CODE	LOCATION OF EIS REVISION(S)
8 - 12	Section 4.4.2

RESPONSE

It is possible a perched ground water body may exist in Water Canyon below Cañon de Valle. At present it is not known what the source of the water may be (e.g. effluent discharges, spring flow) nor is it known if this is a permanent water body. If a perched zone exists at this location, it cannot be very extensive, as wells WCO-1 and WCO-2 are dry just one-half mile below the WCM holes, which are located south of TA-15.

See response to comment 8-5.

COMMENT CODE	LOCATION OF EIS REVISION(S)
8 - 13	None required.

RESPONSE

Figure 4-12 shows contours on top of the main aquifer. Taking these contours as an approximation of the potentiometric surface, it appears that water in the aquifer moves eastward or southeastward across LANL. The only possible recharge area is in the Jemez Mountains immediately west of LANL, or areas further west. DOE asserts that these best available data support the statement cited in the comment regarding the aquifer recharge and flow locations.

COMMENT CODE	LOCATION OF EIS REVISION(S)
8 - 14	None required.

RESPONSE

The storm water monitoring stations near PHERMEX are recently installed and major storms are infrequent. As a result, the PHERMEX storm water quality data requested have not yet been obtained. DOE uses the best data available in its NEPA reviews but does not require that new data be collected in all cases. The runoff modeling described in appendix E computes the sediment load transported from LANL in the Rio Grande but currently doesn't provide details of sediment transport within LANL.

COMMENT CODE	LOCATION OF EIS REVISION(S)
8 - 15	None required.

RESPONSE

The calculations presented emphasize dissolved concentrations. Both the New Mexico General Stream Standards and the New Mexico Ground Water Standards are based on dissolved concentration limits. Nonetheless, sediment loading and associated concentrations are calculated at the Rio Grande.

COMMENT CODE	LOCATION OF EIS REVISION(S)
8 - 16	None required.

RESPONSE

The Ancho Canyon surface water station is located near the Rio Grande, a distance greater than one-half mile from Ancho Spring. While flow at the station is largely derived from Ancho Spring, it is considered to be a surface water station because it may be additionally affected by other surface features. Please note that the Laboratory Environmental Surveillance Reports (LANL 1993c and LANL 1994a) recognize that water collected directly from Ancho Spring is considered to be ground water.

COMMENT CODE	LOCATION OF EIS REVISION(S)
8 - 17	None required.

RESPONSE

DOE believes that the isotopic analyses are reliable. The question raised is whether the samples obtained from the wells are truly representative of the ground water horizons implied or contaminated by water from other horizons on the surface. The question of annular leakage and subsequent contamination of the main aquifer samples with water from the surface on shallow horizons probably cannot be answered without specially designed sampling techniques or entering the wells in question.

However, it should be noted that the effect of such contaminations, if it exists, is to produce conservative errors in the interpretation of results. The tritium and carbon-14 analyses are done to infer the presence of contaminations, if any, of the main aquifer by contaminants in shallow waters, and the rate at which surface water infiltrates through the unsaturated zone. In both cases, if the main aquifer samples are diluted by shallow water, the potential impacts on the main aquifer would be overestimated.

COMMENT CODE	LOCATION OF EIS REVISION(S)
8 - 22	None required.

RESPONSE

Additional studies are planned to monitor the potential impacts of the proposed action on the Mexican spotted owl. See section 5.11 and appendix K. The scope of these studies will be determined over time and will be coordinated with the USFWS.

COMMENT CODE	LOCATION OF EIS REVISION(S)
8 - 23	None required.

RESPONSE

The environmental impact analysis modeling in appendix H and the environmental consequences in sections 5.18 and 5.4.8 were based on calculated concentrations of uranium and other metals on foodstuffs, and accepted parameter values from the referenced professional literature for foodstuff uptake, translocation, and dose.

COMMENT CODE	LOCATION OF EIS REVISION(S)
8 - 24	Sections 4.5.4, 5.2.5.1.2, 5.2.5.4, and appendix K.

RESPONSE

DOE recognizes this fact; discussions in the DARHT draft EIS were written before field surveys were completed for the Mexican spotted owl in the vicinity of the DARHT site. Several sections in the EIS have been revised to properly reflect the protection of this species. See sections 4.5.4 , 5.2.5.4, and appendix K.

COMMENT CODE	LOCATION OF EIS REVISION(S)
8 - 25	Section 5.2.5.4

RESPONSE

DOE completed its biological assessment for the vicinity of the DARHT site in July 1995, after the draft DARHT EIS was issued. Consultation with the USFWS is now complete and in the event DOE proceeds with the DARHT proposal, DOE will take appropriate mitigation measures to protect biological resources.

COMMENT CODE	LOCATION OF EIS REVISION(S)
8 - 26	None required.

RESPONSE

DOE agrees with the presumption that the limits established under the NESHAPS permit would not limit testing under the Enhanced Containment Alternative, particularly since the NESHAPS limit is dose-based at 10 mrem/year from the air pathway. The anticipated dose impact from DARHT would be a small fraction of this value.

COMMENT CODE	LOCATION OF EIS REVISION(S)
8 - 27	None required.

RESPONSE

Since the prototype vessel has not been used before and is basically still a concept it is anticipated that there will be engineering problems encountered during operation. The testing limitations described in section 3.7 are considered reasonable at this point. These types of considerations provide part of the basis for the formulation of the Preferred Alternative, Phased Containment. DOE also anticipates being able to develop the vessel technology and provide increasing levels of containment, even beyond the proposed 75 percent in Phased Containment, if successful.

COMMENT CODE	LOCATION OF EIS REVISION(S)
8 - 28	None required.

RESPONSE

Three air sampling stations, two of which are located in TA-15, were put in place during 1993. However, analysis of LANL environmental surveillance data for 1993 has not yet been completed and is not available. Results available for other air monitoring stations, particularly the LANL perimeter stations for years before 1993, indicate very low to nondetectable concentrations of materials (mainly uranium) which could have originated at PHERMEX. Also, usage of these materials has decreased at PHERMEX over the years, so any detected concentrations would be expected to be less. Since the two stations in questions are onsite, in the middle of TA-15, they would be of limited use in estimating potential impacts offsite.

COMMENT CODE	LOCATION OF EIS REVISION(S)
8 - 29	Section 4.2.5

RESPONSE

The EIS has been corrected to read "downwind."

COMMENT CODE	LOCATION OF EIS REVISION(S)
8 - 30	None required.

RESPONSE

EPA-prescribed methods are required for demonstration of compliance with 40 CFR 61 Subpart H. However, DOE Order 5400.5 "Radiation Protection of the Public and the Environment" directs the use of realistic assumptions in dose calculation methods in demonstrating that requirements of the Order have been met. Estimates using both methodologies are presented in section 4.8.1.1.

COMMENT CODE	LOCATION OF EIS REVISION(S)
8 - 31	None required.

RESPONSE

Comparison to the EPA limit is presented in the final EIS (see second paragraph of section 4.8.1.1.) DOE believes comparison to the 100 mrem DOE standard contained in DOE Order 5400.5 is appropriate because it shows the radiological dose contribution from all LANL exposure pathways, rather than just the airborne pathway as required by EPA NESHAPS regulations at 40 CFR Part 61 Subpart H. It also provides some indication of the effect of using site-specific, realistic dose calculation methods.

COMMENT CODE	LOCATION OF EIS REVISION(S)
8 - 32	None required.

RESPONSE

The relative values are based on the mechanism of release. The EIS analyzes a hypothetical situation in which the effective release for unconfined tests would occur about 328 ft (100 m) above ground, depending somewhat on the size of the shot. The expanding ball of blast products would mix with the air and would be subjected to the winds at the higher elevation. For contained tests, the emission would occur near ground level as blast products are vented, comparatively slowly, following a test.

COMMENT CODE	LOCATION OF EIS REVISION(S)
8 - 33	None required.

RESPONSE

At the current time, too little information exists, and estimates of costs associated with soil cleanup are too nebulous to provide a detailed estimate of cost savings. DOE believes that the range from 25 to 90 percent (a factor of less than 4) is all that can be justified with the current information available.

COMMENT CODE	LOCATION OF EIS REVISION(S)
8 - 34	None required.

RESPONSE

The EIS analysis considers ground-level release for all criteria pollutants (section C1.3). The exception stated there is an area source rather than a point source; not an exception to gound-level release. Elevated release is used to analyze the effect for blast products, such as depleted uranium, beryllium, and lead (section 5.4.2.1 and H2.2). The height of release would depend somewhat on the size of the shot. Larger amounts of explosive would cause effective release at higher levels. As the release height increases, the FENII and MEPAS computer codes incorporate more dispersion and lesser resultant doses.

COMMENT CODE	LOCATION OF EIS REVISION(S)
9 - 1	None required.

RESPONSE

DOE appreciates this comment.

COMMENT CODE	LOCATION OF EIS REVISION(S)
9 - 2	None required.

RESPONSE

DOE agrees.

COMMENT CODE	LOCATION OF EIS REVISION(S)
10 - 1	None required.

RESPONSE

The DARHT EIS analyzes the environmental impacts that would be expected if five alternative ways to achieve enhanced radiographic capability were implemented, and compares these impacts with the current situation. DOE has stated, as part of the purpose and need for this proposal, that it needs to conduct dynamic experiments on plutonium. The EIS is prepared to aid in the DOE's decision-making process as to whether or not to provide enhance capability, but DOE is not facing a decision as to whether or not plutonium experiments are needed, and the DARHT EIS does not analyze whether or not these experiments are needed.

The President and Congress have directed the DOE to maintain the nuclear weapons complex and to ensure the safety, security, and reliability of the nuclear weapons stockpile, and have appropriated funds accordingly. The public is able to give input to this process through the election of public officials, involvement with public officials, and by participation in public hearings such as those held for the DARHT draft EIS. Plutonium is used in some stockpiled weapons. Although substitute materials are used whenever possible, some experiments to address stockpile issues cannot be done with a substitute material.

The Department prepared a classified supplement to the DARHT EIS that provides additional information and analysis. In general, the environmental impacts identified in the classified supplement have been incorporated into the unclassified portion of this EIS.

COMMENT CODE	LOCATION OF EIS REVISION(S)
10 - 2	None required.

RESPONSE

Dynamic experiments involving plutonium would always be conducted inside double-walled steel containment vessels (sec. 3.3.2). Different designs could be used depending on the nature of the dynamic experiment and diagnostic tools used and would be developed in response to specific needs at the time such an experiment is designed.

COMMENT CODE	LOCATION OF EIS REVISION(S)
10 - 3	None required.

RESPONSE

The amount of material in any single dynamic experiment or set of experiments would vary according to test objectives. Different objectives could require different materials. In no case would the material be capable of providing a nuclear yield during the dynamic experiment.

COMMENT CODE	LOCATION OF EIS REVISION(S)
10 - 4	None required.

RESPONSE

DOE conducts many types of tests and experiments on various isotopes, mixtures and alloys of plutonium. Dynamic experiments with plutonium, of the types proposed and discussed in the DARHT EIS, could involve various plutonium isotopes and alloys, which would be especially chosen for the purposes of the experiment. All experiments would be arranged and conducted in a manner such that a nuclear explosion could not result. In the past, DOE has conducted dynamic experiments at PHERMEX using weapons-grade and other forms of plutonium metal. See sections 2.3.3 and 3.3.2.

COMMENT CODE	LOCATION OF EIS REVISION(S)
10 - 5	None required.

RESPONSE

Any experiment involving a containment vessel would require that some parts of the experimental assembly be put together before placement inside the containment vessel. Other parts of the experimental assembly, such as some diagnostic devices, would be attached after placement of the assembly inside the containment vessel.

COMMENT CODE	LOCATION OF EIS REVISION(S)
10 - 6	Sections 5.1.9, 5.1.9.1, 5.1.9.2, 5.1.9.3, 5.4.9, 5.7.2.2, and J.6.1

RESPONSE

As noted in the EIS, any experiments that would incorporate plutonium would be conducted in double-walled containment vessels. Using this approach in the past, there have been no failures of the containment. Based on its engineering experience, DOE and LANL believe that vessel failure with a subsequent release to the environment is not a reasonable scenario.

DOE prepared a classified supplement to the DARHT EIS which describes, among other things, possible "accident scenarios regarding dynamic experiments using plutonium." The environmental impacts from the classified supplement, including accident scenarios, have been included in the appropriate sections of the DARHT EIS. See sections 5.1.9, 5.4.9, and 5.7.2. Based on the analyses presented in the classified supplement, conducting experiments with plutonium would be expected to have minimal potential for environmental impacts under any of the alternatives analyzed.

After completing the experiment, the vessel would be taken to the Plutonium Handling Facility at LANL, at TA-55, for cleanup procedures. This discussion in the EIS has been revised for clarity. See section 3.3.8.

COMMENT CODE	LOCATION OF EIS REVISION(S)
10 - 7	Sections 3.3.8 and 5.4.10.3

RESPONSE

DOE would conduct any dynamic experiments using plutonium in a double-walled steel containment vessel. After completing the experiments the vessel would be taken to the Plutonium Handling Facility at LANL, at TA-55, for cleanup procedures. Discussion of waste volumes and composition of waste is contained in the EIS, sections 3.3.8 and 5.4.10.3.

Liquid plutonium waste streams would not be generated as a result of operations involving plutonium at DARHT or PHERMEX. Following completion of these operations the containment vessel would be moved to the LANL plutonium handling facility, TA-55, for cleanout and recovery. TA-55 waste streams will be addressed in the LANL Sitewide EIS. DOE has an excellent basis to estimate future waste streams, using past dynamic experiment, cleanout and recovery information.

COMMENT CODE	LOCATION OF EIS REVISION(S)
10 - 8	Section 3.8

RESPONSE

Part of DOE's purpose and need for enhanced radiographic capability specified in the DARHT EIS is to obtain information about plutonium through dynamic experiments (see section 2.3 of the DARHT EIS). Under the Plutonium Exclusion Alternative, DOE could not use the enhanced radiographic capability proposed for the DARHT Facility to obtain the needed information about plutonium, but instead would have to rely on its existing capability at PHERMEX or other facilities. This would have two immediate programmatic implications: first, DOE could not obtain the higher resolution information that is needed for dynamic experiments with plutonium; and second, DOE would have to continue to maintain and operate PHERMEX in addition to DARHT. Although the EIS is focused on environmental impacts, not programmatic impacts, DOE has summarized the programmatic consequences of the various alternatives in section 3.11. DOE expects to consider programmatic impacts when making its final decision on this project (see section 1.6).

COMMENT CODE	LOCATION OF EIS REVISION(S)
11 - 1	None required.

RESPONSE

Section 106 of the National Historic Preservation Act (NHPA) requires that all properties (sites) that are determined eligible for the NRHP and which may be affected by a proposed Federal action be evaluated with respect to adverse effect. The NHPA requires that Federal agencies protect eligible resources through mitigation of adverse effects which can consist of protection data recovery or other actions. In the case of the Nake'muu site, mitigation of adverse effect would be accomplished by orienting the DARHT Facility such that the Nake'muu site would be in the "blast shadow," and other mitigation as addressed in section 5.11.

COMMENT CODE	LOCATION OF EIS REVISION(S)
11 - 2	None required.

RESPONSE

The draft EIS referenced past consultation with the SHPO and was prepared concurrently with additional field surveys and consultation with the New Mexico State Historic Preservation Officer. The archeological surveys were completed simultaneously with the draft EIS, and appropriate consultations have resulted. The DOE's actions in this area are consistent with the requirements of the CEQ 1502.25 (a).

COMMENT CODE	LOCATION OF EIS REVISION(S)
11 - 3	None required.

RESPONSE

The NEPA regulations require consideration of impacts to cultural and historic resources among other aspects of the environment [40 CFR 1502.16]. The DARHT EIS identifies and assesses those impacts that might be expected from normal operations under any of the seven alternatives analyzed, and from various accident scenarios. DOE believes that the analyses in the DARHT EIS adequately disclose the environmental impacts expected and that the procedures established in correspondence between the New Mexico State Historic Preservation Officer and DOE would serve to minimize any potential impacts to important sites.

The EIS identifies and analyzes the impacts of each alternative on cultural resources in sections such as 5.1.6, 5.2.6, and 5.4.6.

See section 4.6.1.

COMMENT CODE	LOCATION OF EIS REVISION(S)
11 - 4	None required.

RESPONSE

Following a NEPA review and completion of an environmental impact statement, an agency is required to document its decision in a formal document called a Record of Decision (ROD) (see inside back cover of EIS). By regulation, among other things a ROD must specify which alternative or alternatives were considered to be environmentally preferable [CEQ Regulation, 40 CFR 1505.2(b)]. An agency does not document this in the EIS (draft or final) because it is through the decision-making process (documented in the ROD) that the agency determines which alternatives were considered to be environmentally preferable. While an agency is required to identify and discuss in the ROD all factors that entered into its decision-making [40 CFR 1505.2(b)], an agency is not required to select the environmentally preferable alternative. As stated in section 1.6 of the EIS, DOE will identify in the DARHT ROD the environmentally preferable alternative, other decision factors, and how those considerations were balanced, in accordance with its regulatory responsibilities.

COMMENT CODE	LOCATION OF EIS REVISION(S)
11 - 5	Section 2.5

RESPONSE

DOE has revised the discussion in the DARHT EIS of nonproliferation and counter proliferation applications for enhanced radiographic hydrodynamic test capability (see section 2.5).

The concepts and capabilities of hydrodynamic testing have been well known to negotiating parties for the Nonproliferation Treaty, as noted in the response to comment 17-4. Currently, it is not considered sufficient to certify a completely new design without nuclear test data. Activities proposed for DARHT or PHERMEX do not include nuclear tests. A few years ago, DOE briefly studied containment for very low-yield nuclear tests (CONVEX, see comment 53-53), but these tests could not be done at DARHT or PHERMEX because the containment would be too large and would be buried underground.

The Nation's commitment to nonproliferation follows. The parties agree to not transfer nuclear weapons, other devices, or control over them, and to not assist, encourage, or induce nonnuclear states to acquire them. However, the treaty does not invoke stockpile reductions by nuclear states, and it does not address actions of nuclear states in maintaining their stockpile. Article VI obligates each of the parties to negotiate in good faith on the "cessation of the nuclear arms race at an early date and to nuclear disarmament..." The concept of hydrodynamic testing is known to all the signatories, and the capability exists with several of the nuclear states. Such capability is said to have been an important factor for the nuclear states to have entered into the treaty and to agree to further negotiate for a Comprehensive Test Ban Treaty. On May 11, 1995, 178 nations agreed to permanently extend the expiring nuclear Nonproliferation Treaty and accept a set of "principles and objectives" that include specific steps to turn back the nuclear arms race. The five nuclear states also agreed to work toward a comprehensive test ban by 1996 and rapid negotiation of a treaty to end production of nuclear bomb material.

COMMENT CODE	LOCATION OF EIS REVISION(S)
11 - 6	None required.

RESPONSE

The EIS addresses cumulative impacts of past, present, and reasonably foreseeable future actions as required by 40 CFR 1508.7.

COMMENT CODE	LOCATION OF EIS REVISION(S)
11 - 7	None required.

RESPONSE

As discussed in section 1.1 of the EIS, DOE initiated construction of the DARHT firing site facility based on environmental reviews conducted in the 1980s. In 1984, in response to public concern, DOE began this DARHT EIS. In July of 1994, the Secretary of Energy instituted a Department-wide NEPA Policy that, among other things, requires that DOE complete its NEPA reviews more expeditiously than was done in the past. The 10-month schedule for completing, the DARHT EIS is consistent with both the letter and spirit of the Secretary's Policy.

COMMENT CODE	LOCATION OF EIS REVISION(S)
11 - 8	Sections 4.5, 4.5.1, 4.5.4, 5.1.5.4, 5.2.5.4, and Appendix K Table 4-12

RESPONSE

See response to comment 2-13.

BESPOI

COMMENT CODE	LOCATION OF EIS REVISION(S)
12 - 1	None required.

RESPONSE

A Federal agency is obligated to include within the scope of analysis of an environmental impact statement the impacts of "connected actions." "Connected actions" are closely related actions which: might automatically trigger other actions that may require an EIS; would not proceed unless other actions are taken previously or simultaneously; or are interdependent parts of a larger action and depend on the larger action for their justification [CEQ regulations, 40 CFR 1508.25 (a)(1)]. DOE did not identify any "connected actions" relative to its proposal to obtain enhanced radiographic hydrodynamic test capability analyzed in the DARHT EIS.

See discussion in section 2.6 and volume 2, section 1.5.

COMMENT CODE	LOCATION OF EIS REVISION(S)
12 - 2	None required.

RESPONSE

The geologic setting and geology near the site are described in section 4.3.2. Because the local geology does not vary greatly laterally, the nearby data are deemed sufficiently representative, so long as analyses do not indicate marginally acceptable results. The potential for migration of contaminants with ground water is discussed in appendixes D and E.

With regard to the transport of fissile materials, currently there are approximately 25 to 50 shipments per year to and from LANL. DOE considers this to be an ongoing aspect of the nuclear weapons programs. Thus, decisions on enhanced hydrodynamic capability are unrelated to the shipments of fissile materials to and from LANL.

COMMENT CODE	LOCATION OF EIS REVISION(S)
12 - 3	None required.

RESPONSE

DOE disagrees and knows of no evidence that a weapon system does not age. A weapon consists of electrical and mechanical parts that are made of metals and plastics; until a weapon is dismantled, it will age. The existing stockpile is considered to be safe and reliable, and has not yet experienced any post-design life aging problems since in the past, weapons have been retired soon enough that this has not occurred. The concern remains with the future stockpile since current U.S. policy requires that the existing stockpile remain active past its design life.

COMMENT CODE	LOCATION OF EIS REVISION(S)
12 - 4	None required

COMMENT CODE	LOCATION OF EIS REVISION(S)
12 - 5	None required.

RESPONSE

Any known violation of permit standards or noncompliant situations are reported through the appropriate regulatory authority. Steps to bring LANL into compliance are negotiated with the regulatory authority. Citizen suits can be (and have been) brought against LANL or DOE if the public does not feel the spirit and intent of the laws are not being followed by LANL or DOE, or properly implemented by the regulatory authority. A violation at a single facility would not prevent other operations from being conducted at LANL.

COMMENT CODE	LOCATION OF EIS REVISION(S)
13 - 1	None required.

RESPONSE

DOE agrees that existing dynamic nuclear weapons remain safe and reliable. DOE disagrees that confidence in a weapon system "actually increases with age;" DOE believes that it is essential to continue to study aging effects on nuclear weapons systems, and the condition of nuclear weapons primaries.

COMMENT CODE	LOCATION OF EIS REVISION(S)
13 - 2	Section 2.1

RESPONSE

DOE has revised the text in chapter 2 to clarify the discussion of need. The text points out that stockpile problems have arisen in the past; DOE relied heavily on underground nuclear testing as a diagnostic tool to assist in correcting these problems. DOE expects that stockpile problems will arise in the future - no one can predict with certainty when problems might occur, or what part of a nuclear weapon might be affected. Particularly in an era without nuclear testing, hydrodynamic testing increase in importance as an analysis tool or for confirming other analyses. DOE does not believe it is prudent to wait for problems to develop before acquiring the tools to deal with them. The recently completed study by the three nuclear weapons laboratories entitled "Stockpile Surveillance: Past and Future" (Johnson, K, et al. 1995) notes that certain types of components in primaries do in fact age. The average age of weapons in the enduring stockpile is increasing and in a few years will exceed for the first time the design lives of the individual weapons. The study describes hydrodynamic testing as the principal tool to help understand the effects of aging processes and verify any fixes for such problems. The comment confuses reliability with performance; while primaries are designed to provide ample energy to set off the secondary, the problem is whether the primary can be relied upon to achieve this performance. This engineering margin is unrelated to the need to compensate for the effects of aging or other influences.

COMMENT CODE	LOCATION OF EIS REVISION(S)
13 - 3	Section 2.3.2

RESPONSE

The comment references the "Sandia Stockpile Life Study" for which viewgraphs and an interim summary were prepared in 1993. DOE understands from Sandia that these viewgraphs were used as part of an internal status briefing. The data used to develop these viewgraphs arose from a database which was recognized to be incomplete and inadequate, in that much data, particularly that relating to problems found through methods outside the DOE's formal Stockpile Evaluation Program, was incompletely or inconsistently documented in this database. In particular, findings and "actionable" findings associated with the nuclear package (including the weapons primary) were not completely documented.

The three weapons laboratories (LLNL, LANL, and SNL) have now conducted a joint study [Stockpile Surveillance: Past and Future] (Johnson et al. 1995) which has updated this data to provide a more accurate record. The "defects database" now has more than 2,400 entries. More than 370 cases resulted in action due to safety or reliability concerns. Approximately 110 problems since 1958 required action to the nuclear components, in 39 of the 50 weapon types covered by the report. Of these, more than 90 were related to the weapons primary. While the rate of findings decreases after a weapon is initially deployed, the study concludes that it is reasonable to expect that problems would continue to arise in the stockpile at the rate of one or two defects per year, as the stockpile ages beyond the original design expectations. DOE notes that of the weapon types introduced since 1970, nearly one-half required nuclear testing to verify, resolve, or certify the resolution of problems relating to safety and reliability. This and other information have now been included in the final EIS in section 2.3.2.

The comment mentions metallurgical data and equation of state measurements. Such data are valuable, but do not relieve the need for enhanced radiographic hydrotesting.

COMMENT CODE	LOCATION OF EIS REVISION(S)
13 - 4	None required.

RESPONSE

Regarding the implosion process, DOE needs the enhanced capability that would be provided by DARHT to assure collection of adequate data in support of fundamental questions about physics of nuclear weapons regardless of aging considerations. See section 2.3.1.

As noted in the EIS, section 2.3.2, DOE believes that evaluation of aging weapons is needed. Actions should begin as soon as possible to benchmark the condition of weapons and their expected performance characteristics as a baseline for future surveillance observations and performance tests. DOE believes that, by itself, weapons surveillance is not adequate to evaluate, predict, and resolve performance or reliability problems.

COMMENT CODE	LOCATION OF EIS REVISION(S)
13 - 5	None required.

RESPONSE

DOE agrees that the existing stockpile is safe and reliable. The concern lies with the future evolution of the stockpile, the ability to address and resolve issues as they arise, and to maintain a high level of confidence in safety and reliability as the stockpile ages.

COMMENT CODE	LOCATION OF EIS REVISION(S)
13-6	Section 2.3.1

RESPONSE

DOE appreciates the concern expressed by this comment, but believes that the EIS adequately explains the safety issues associated with the proposed action.

The discussions in chapter 2 of the DARHT final EIS have been revised to include additional information related to safety and reliability.

COMMENT CODE	LOCATION OF EIS REVISION(S)
13-7	Sections 2.1, 2.3.1 and 2.3.2

RESPONSE

See the responses to comments 13-2 and 13-3.

COMMENT CODE	LOCATION OF EIS REVISION(S)
13-8	None required.

RESPONSE

The purpose and need for enhanced radiography as proposed for DARHT is stewardship of the U.S. nuclear weapons stockpile pursuant to direction from the President and Congress. There is no requirement for new-design nuclear weapons at the present time.

COMMENT CODE	LOCATION OF EIS REVISION(S)
13-9	Section 2.3.2

RESPONSE

A discussion of the relevance of remanufacturing nuclear weapons to the DARHT proposal has been added to chapter 2. Chapter 2 has been revised in the final EIS to clarify the purpose and need. Additional information has been included in accordance with the SS&M Program Plan issued by the DOE in May 1995.

COMMENT CODE	LOCATION OF EIS REVISION(S)
13-10	Section 2.2.1

RESPONSE

While it is true that current national policy does not provide for the design of new nuclear weapons, the final EIS states that in the event that the U.S. decides it needs to design and manufacture new nuclear weapons it would use every tool necessary to accomplish this mission. This could include using enhanced radiographic hydrodynamic capability as proposed for DARHT (see section 2.3.4).

COMMENT CODE	LOCATION OF EIS REVISION(S)
13 - 19	Section 2.6 and volume 2, section 1.5.

RESPONSE

Please refer to the text in section 2.6 and EIS volume 2 section 1.5 for information on the relationship of the DARHT EIS to other DOE EISs.

COMMENT CODE	LOCATION OF EIS REVISION(S)
14 - 1	None required.

RESPONSE

Up to 15 acres (6 ha) could have above-background concentrations of uranium under all of the alternatives developed in the DARHT EIS that would employ uncontained tests. This estimate was derived from the soil contamination analysis in appendix D. An estimate of measurable soil contamination, rather than a calculated estimate, would be 3 to 4 acres (1.2 to 1.6 ha) for the uncontained alternatives. This estimate was based on observed contamination at PHERMEX, which historically has used more depleted uranium and other materials than are planned for DARHT. Maximum use of material at the proposed DARHT facility is projected to be about 30 percent less than historical annual use at PHERMEX.

Appendix E used conservative modeling assumptions to estimate potential impacts to surface and ground water from DARHT operations. These evaluations showed there would be no impacts of DARHT operations.

COMMENT CODE	LOCATION OF EIS REVISION(S)
14 - 2	None required.

RESPONSE

Annual averages for the past several years have been the basis for materials that would be expended at the firing point. The number of detonations is not a good indicator because detonations may have different objectives (see table B-3) which can lead to great variability in characteristics among the detonations. To some extent, stockpile issues that arise will determine the shots required. However, there are also logistical constraints on how quickly the more sophisticated tests and experiments can be prepared and performed. Thus, the actual rates are not expected to be much different than past experience with PHERMEX.

COMMENT CODE	LOCATION OF EIS REVISION(S)
14 - 3	Sections 5.1.8, 5.1.8.1, 5.1.8.2, 5.1.8.3, 5.1.9, 5.1.9.1, 5.1.9.2, 5.1.9.3, 5.4.8, 5.4.9, 5.7.2.2, and J.6.1

RESPONSE

As noted in the DARHT draft EIS (see section 2.1), some aspects of the hydrodynamic testing and dynamic experiment program, and the related environmental assessment of alternatives, are classified as Secret Restricted Data under the provisions of the Atomic Energy Act of 1954, as amended, to protect national security. DOE prepared a classified supplement to the DARHT EIS that contains additional information and analysis. After review of this material, DOE determined in May 1995, that certain aspects of the impact analysis could be presented in an unclassified summary and made these available to the general public. DOE has revised the EIS in several places to incorporate this information. See chapters 3 and 5 and appendixes I and J.

OMMENT CODE	LOCATION OF EIS REVISION(S)
14-4	None required.

ESPONSE

ollowing a dynamic experiment using plutonium, the containment vessel would be moved to the LANL lutonium handling facility, TA-55, for cleanout and recovery. DOE expects that some small amount of total aste volume would become part of the TA-55 waste stream.

OE does not expect WIPP to be either "problematic" or "without [sufficient] capacity" with regard to anagement of waste produced at DARHT or PHERMEX.

haracterization for WIPP would not be a problem because such characterization consists of certifying types, uantities, and forms of TRU in a waste package.

OMMENT CODE	LOCATION OF EIS REVISION(S)
14-5	None required.

ESPONSE

See response to comment 10-7.

OMMENT CODE	LOCATION OF EIS REVISION(S)
14-6	None required.

RESPONSE

See response to comment 13-14.

COMMENT CODE	LOCATION OF EIS REVISION(S)
14-7	None required.

RESPONSE

All alternatives analyzed in the DARHT final EIS are assumed to use the same maximum quantities of materials annually; for example, 1,540 lb (700 kg) of depleted uranium or 20 lb (9 kg) of beryllium. Table 3-3 shows releases to the environment, rather than use. Under all alternatives except the Enhanced Containment Alternative, 100 percent of the used material is assumed to be released to the environment so it is the same as usage. The amount of material released to the environment for the Enhanced Containment Alternative options varies by the particular pathway (e.g. water) examined. Water modeling assumes 460 lb (210 kg) of DU per year (30 percent of 1,540) is available for release. Seventy percent of the 1,540 lb (700 kg) DU used is deposited on or near the firing site as large and small fragments of metal, cleaned up during routine housekeeping activities, and disposed. Thus, there has not been an increase in usage of DU. The water modeling subtracts the 70 percent of DU that is cleaned up and disposed, i.e., 1,540 lb (700 kg) minus 70 percent equals 460 lb (210 kg).

COMMENT CODE	LOCATION OF EIS REVISION(S)
14 - 8	None required.

RESPONSE

Waste material (mainly soil and detonation debris) removed from the PHERMEX firing site is low-level waste in most cases because of the presence of depleted uranium. Hazardous constituents potentially used at PHERMEX have not been detected in waste sampled; no mixed waste streams are generated from the PHERMEX firing site. DOE considers the evaluation of low-level waste disposal at LANL to be beyond the scope of the DARHT EIS or related actions. Waste management practices specifically associated with the alternatives analyzed are presented in Chapters 3 and 5 of the EIS.

COMMENT CODE	LOCATION OF EIS REVISION(S)
14 - 9	None required.

RESPONSE

Any modeling technique is based on hypothetical conditions. Justification for using Gaussian plume models is discussed extensively in appendix H.2. Use of Gaussian plume models provides a conservative estimate (tends to underestimate actual dispersion, and therefore overestimate potential consequences) of atmospheric dispersion when applied to complex terrain such as that found at Los Alamos. No mixing height data are available for Los Alamos, so the nearest available data were used. Again, mixing height data for Albuquerque would be conservative and would tend to overestimate potential consequences. Further, air quality modeling for purposes of the EIS does not require site specific air monitors.

COMMENT CODE	LOCATION OF EIS REVISION(S)
14 - 10	None required.

RESPONSE

DOE feels the estimate of the percent of materials that is aerosolized (10 percent) is well substantiated. Approximately 70 percent of the material on the ground is collected for disposal. For water resource impact evaluation, the remaining material on the ground was assumed to be very mobile to provide a conservation estimate of potential impacts. The portion of the material that is available to water resource contamination is discussed in various sections of chapter 5 and appendix E.

Neither lithium nor lithium hydride are regulated materials in soils or water. There are no Maximum Contaminate Levels or guidelines for either of these materials. Evaluation of lithium hydride was included principally because it can be an inhalation hazard from airborne emissions. Similarly, there are no constituents of high explosives residues that are known to be regulated materials in soils or water.

COMMENT CODE	LOCATION OF EIS REVISION(S)
14 - 11	None required.

RESPONSE

The dose that could result from resuspension and offsite transport of depleted uranium deposited in the firing site vicinity would be a very small fraction of the potential impacts calculated from the uncontained detonation releases. LANL's air monitoring stations are the most effective tool for monitoring and estimating any offsite radiation dose that could occur from this diffuse, nonpoint source release.

STONE

)DE LOCATION OF EIS REVISION(S)

Section B.8

90 percent of the DU that is brought to the firing site is estimated to remain within 490 ft (150 m) ɔint as described in section 4.3.3. In all likelihood, an even greater percentage remains in this se radiation that specifically indicates uranium contamination is not distinguishable from naturally :ground levels at distances of about 460 ft (140 m) from the firing point. About 70 percent of the um brought to the firing point is collected in cleanup. The soil contamination in the vicinity of the the starting point for analyses modeling the potential transport of uranium. The other metals 'ays similar to the depleted uranium. The high explosives convert during detonation to mostly water, ; any residues are extremely minor.

ODE LOCATION OF EIS REVISION(S)

None required.

of fractures could cause a faster drainage rate. However, the units of the Bandelier tuff at TA-15 etrating fractures in the lower units (fig 4-10).

:ODE LOCATION OF EIS REVISION(S)

None required.

that protection of its workers and the general public remains of highest priority. Depleted uranium ɔme more radioactive over time, although it is true that decay of the uranium isotopes, of which is particularly important, results in the production of a series of radioactive progeny. Dose in the EIS for depleted uranium include all of the radioactive progeny that have half lives greater mately 10 minutes. The very short-lived radon progeny which are not included are typically of in spaces with poor air turnover which allow the progeny to come into equilibrium with the radon-226 ;e types of conditions are not of concern for DARHT operations. Radon progeny produced from DU at 1 be a very minor contributor to overall radon progeny in ground water, compared to the contribution ly occurring uranium-238 and its radon progeny.

MMENT CODE	LOCATION OF EIS REVISION(S)
4 - 17	None required.

SPONSE

e models presented in appendix E3 on surface water modeling include a simple partitioning of precipitation into noff to the canyon bottoms and infiltration into the mesa. The movement of water and contaminants in the nyons adjacent to Threemile Mesa was modeled using an updated version of the Lane et al. (1985) e-dimensional event-based model (see appendix E3). Climate records from the LANL site were used to drive e model, and flood events carrying water from the upper watersheds to the Rio Grande were simulated using this odel.

he model described above, which includes consideration of runoff, infiltration, and precipitation event-driven ooding was used to model the migration of depleted uranium. In the model, depleted uranium was removed from e firing site by runoff and infiltration at a relatively high solubility of 300 mg/L–a value higher than observed olution concentrations. The annual depleted uranium inventory was applied to the firing site soils during each of he 30 years of firing site operation. Because of the relatively high solubility assigned to uranium, the annual nventory was, for all practical purposes, removed from the site each year by the combination of runoff and nfiltration.

OMMENT CODE	LOCATION OF EIS REVISION(S)
14 - 18	None required.

RESPONSE

The use of 460 lb (210 kg) of depleted uranium as an initial annual source loading for the water resource system analysis reflects the application of 70 percent cleanup levels to the original annual inventory of 1,540 lb (700 kg).

Soil analyses were run to detect residues of high explosives, and none were found. Consequently, no analyses of potential impacts to water quality were conducted for high-explosive residues.

Lithium hydride does not appear in high quantities in the inventory, is primarily an inhalation hazard, and is not regulated to an MCL or MCLG in drinking water. Consequently, no analyses of potential impacts to water quality were conducted for lithium hydride.

See response to comment 14-7.

COMMENT CODE	LOCATION OF EIS REVISION(S)
14 - 19	None required.

RESPONSE

The DARHT EIS states "... well extraction of dissolved contaminant mass from the regional aquifer, if transported to the aquifer, is a possible consideration" and "... it may be unnecessary to model the flow and transport of contaminants in the main aquifer depending on the results of vadose zone modeling" (see appendix E4). Appendix E4 is largely devoted to a description of the vadose zone flow and contaminant transport modeling performed. Sections 5.1.4.2, 5.2.4.2, and 5.4.4.2 of the EIS contain results of vadose zone and ground water pathway analyses for the alternatives considered. In the analysis, well extraction of dissolved contaminant mass from the regional aquifer is described as occurring through a municipal/industrial well similar in all aspects to those currently operated by Los Alamos County in the Pajarito Field. Some wells from this field are located on the mesa immediately north of Threemile Mesa and Potrillo Canyon.

COMMENT CODE	LOCATION OF EIS REVISION(S)
14 - 20	None required.

RESPONSE

Because of research conducted on Potrillo Canyon and reported by Becker (1993) in her dissertation, more is known about this canyon and the discharge sink than other pathways from the firing site to accessible water supplies. Her estimates of dissolved and suspended uranium contamination entering the discharge sink are based on field observations and show relatively low migration rates. The model applied in this EIS to examine longer-term events also showed relatively low quantities of uranium moving into the discharge sink. Because the water quality entering the discharge sink over the long term was shown to remain below MCL and MCLG values for drinking water, further investigation of the discharge sink to better understand the potential hydrologic connection between the discharge sink and main aquifer would not alter the evaluation of alternatives analyzed in the DARHT EIS. However, it may well be important to other programs at LANL to better understand and characterize the hydrologic connection between the land surface and the main aquifer. Certainly, if under the proposed ground water protection program it is discovered that relatively young water is recharging the aquifer at this location, it will be important to develop a better understanding and a more mechanistic model of the discharge sink and its communication with the main aquifer.

COMMENT CODE	LOCATION OF EIS REVISION(S)
14 - 21	None required.

RESPONSE

Operations such as those planned for DARHT have been ongoing at LANL for decades and have not adversely affected tourism at local sites. Visitation at Bandelier has continued to increase. Part of the northern portion of Bandelier National Monument was part of the original Laboratory site and was added to the National Monument in the 1960s; this has not impacted recent use of the National Monument.

Nake'muu and other sites in the firing area would not be accessible to the general public for tourism or any other use in the foreseeable future.

See response to comment 4-2.

COMMENT CODE	LOCATION OF EIS REVISION(S)
14 - 22	None required.

RESPONSE

DOE does not believe that piecemeal destruction of cultural resource sites at LANL is occurring. The vast majority of proposed cultural resource sites in the vicinity of TA-15 are not threatened by LANL activities. The few that might be adversely affected by any alternative analyzed in the DARHT EIS, such as by construction at the firing point, are protected or excavated in coordination with the affected Pueblos and the State Historic Preservation Office.

See response to comment 4-2.

COMMENT CODE	LOCATION OF EIS REVISION(S)
14 - 28	None required.

RESPONSE

The analysis in the EIS was conducted in a manner to overestimate the amount of materials to be used and, thus, overestimate the potential impacts from the No Action Alternative. It is felt that by being conservative in this manner will allow a demonstration of insignificant impacts. This demonstration is based on high material usage levels that are not likely to be encountered. Thus, the impacts that are evaluated in the EIS are higher than those that are currently encountered from PHERMEX operations.

COMMENT CODE	LOCATION OF EIS REVISION(S)
14 - 29	None required.

RESPONSE

NEPA evaluation must be based on available information. The best available data and estimates are appropriate for the process.

COMMENT CODE	LOCATION OF EIS REVISION(S)
14 - 30	None required.

RESPONSE

All facilities administered by the DOE are regulated by the same set of environmental standards as any other industry or Federal agency. The majority of the materials released from PHERMEX are in such a form as to inhibit release to the environment, thus allowing an opportunity to provide a certain level of short-term cleaning to be followed by post-facility-operation remediation.

COMMENT CODE	LOCATION OF EIS REVISION(S)
15 - 1	None required.

RESPONSE

DOE appreciates this comment.

COMMENT CODE	LOCATION OF EIS REVISION(S)
15 - 2	Sections Executive Summary, 1.3, 3.7, 5 Intro, 5.4.1.1, 5.4.1.3, 5.4.2.1.2, 5.4.3.3, 5.4.4.1, 5.4.4.2, 5.4.3.3, 5.4.5.1.1, 5.4.6.1.1, 5.4.7.2, 5.4.8.2, 5.4.9.2, 5.4.10, 5.4.10.3, 5.4.11.2, D.5, E3.5, and H.5.2

RESPONSE

See response to comment 3-1.

COMMENT CODE	LOCATION OF EIS REVISION(S)
16 - 1	None required.

RESPONSE

The DOE appreciates this assessment.

MENT CODE	LOCATION OF EIS REVISION(S)
·1	Section 2.6 and volume 2, section 1.5.

PONSE

se refer to the text in section 2.6 and EIS volume 2 section 1.5 to provide for information on the relationship of DARHT EIS to other DOE EISs.

MENT CODE	LOCATION OF EIS REVISION(S)
·2	Sections 2.2.2, 2.4, 2.6, 3.3.4, 3.10.5, and volume 2, section 1.5.

PONSE

pter 2 of the EIS has been revised to more clearly show how the need for enhanced hydrodynamic testing is ived from directives made by the President and Congress.

E believes that DARHT, while a part of the SS&M program, is independently justified (see sections 2.6 and volume 2, section 1.5). As stated in sections 2.4 and 3.10.5, FXR is not a reasonable alternative for ducting dynamic experiments with plutonium (see response 13-13). The ongoing upgrades of PHERMEX and R are discussed in section 2.4 and 3.3.4. Upgrade of PHERMEX with the capability proposed for DARHT is lyzed as a reasonable alternative to provide enhanced radiographic capability. Additional discussions of ERMEX upgrades are presented in the response 13-17.

MMENT CODE	LOCATION OF EIS REVISION(S)
7·3	Section 2.6 and EIS volume 2 section 1.5

SPONSE

ase refer to the text in section 2.6 and EIS volume 2, section 1.5.

MENT CODE	LOCATION OF EIS REVISION(S)
7	Section 2.6 and volume 2, section 1.5.

ONSE

e refer to the text in section 2.6 and EIS volume 2, section 1.5. DOE believes that the need for enhanced graphic hydrotesting capability is justified independently of other Stockpile Stewardship and Management s.

analogy of obtaining a CAT-scan baseline prior to the development of heart disease (as discussed in comment number 17) was used simply to convey an example of obtaining a three-dimensional image in a way that easily recognizable for the general public. DOE is proposing to use DARHT to provide a safety and reliability line of the enduring stockpile with the use of enhanced radiography to obtain a three dimensional image.

MENT CODE	LOCATION OF EIS REVISION(S)
·8	None required.

PONSE

two views of DARHT will provide three-dimensional information. This will be the first facility to give such mation in the U.S. and obtain deeply penetrating high-resolution images. Additional views will give more ned information and also more detailed analysis. The Department is considering a conceptual facility, called Advanced Hydrotest Facility (AHF) that would be used to provide up to eight radiographic views and 20 or e images. This would require a significant advance in technological capability. Information obtained from RHT would be used to evaluate aspects of the design of a AHF and provide experience important in optimizing operations of an advanced facility. Additional information is included section 3.10.3 of the EIS.

MMENT CODE	LOCATION OF EIS REVISION(S)
7·9	None required.

SPONSE

DE acknowledges that there are some technical questions regarding the second axis of DARHT, as discussed in HPAIC (as raised by this commenter). As noted in section 3.5, under the DARHT Baseline Alternative and y other alternative involving two axes, DOE would need to test and refine the accelerator technology proposed r the first axis before deciding on the technology to be used for the second axis.

elative to current technology, the technology proposed for DARHT would provide higher-energy x-rays, which, in m, could penetrate denser materials, and a shorter pulse time, which would provide a sharper image (better solution) of materials moving at high speed.

HERMEX and FXR accelerator technology is fundamentally different from that planned for DARHT and cannot e improved to match the same goals. The second axis proposed for DARHT would provide three-dimensional capability, which is in no way available for a single shot now. Several marginal improvements in technical pecifications can result in important improvements in test data.

he EIS has discussed DOE's plans to upgrade its hydrodynamics facilities at PHERMEX and FXR (sections 2.4 d 3.3.4). However these upgrades would not provide the enhanced capability, as stated in the purpose and need, at would be provided by DARHT technology.

COMMENT CODE	LOCATION OF EIS REVISION(S)
17 - 10	None required.

RESPONSE

DOE does not agree that present radiographic hydrodynamic test capabilities are adequate for the type of stockpile stewardship directed by the President and Congress. The fact that certain levels of knowledge might be useful for design purposes does not preclude their usefulness in understanding stewardship issues.

COMMENT CODE	LOCATION OF EIS REVISION(S)
17 - 11	Section 2.6, 5.1.10 and volume 2, section 1.5.

RESPONSE

Please refer to the text in sections 2.6 and 5.1.10, and EIS volume 2 section 1.5 for information on the relationship of the DARHT EIS to other DOE EISs. Waste management impacts for DARHT were evaluated in chapter 5 of the draft EIS. These were inadvertently omitted from the summary table S-1 of the draft EIS and have been included in the final EIS.

COMMENT CODE	LOCATION OF EIS REVISION(S)
17 - 12	None required.

RESPONSE

The DOE recognizes its responsibilities for waste management relative to the DARHT project. Under the Preferred Alternative the volume of LLW is projected to decrease significantly as the use of vessels increases.

Decisions regarding how to spend U.S. Treasury funds are made by the President and Congress. The President and Congress have directed the DOE to maintain the nuclear weapons complex and to ensure the safety, security, and reliability of the nuclear weapons stockpile and have appropriated funds accordingly. DOE recognizes that there are many demands for Federal dollars, but a portion of these dollars are needed for its mission assignment. Decisions on whether to request funds for DARHT construction are largely independent of decisions on funding provided for other activities, such as waste management or environmental restoration, within the overall envelope of DOE activities.

COMMENT CODE	LOCATION OF EIS REVISION(S)
17 - 13	Section 2.6 and volume 2, section 1.5.

RESPONSE

Please refer to the text in section 2.6 and EIS volume 2 section 1.5 for information on the relationship of the DARHT EIS to other DOE EISs.

COMMENT CODE	LOCATION OF EIS REVISION(S)
17 - 14	Chapter 2.1

RESPONSE

See response to comment 13-2.

COMMENT CODE	LOCATION OF EIS REVISION(S)
17 - 18	None required.

RESPONSE

DOE disagrees with the comment that DARHT was proposed as a "magnet" facility to bring other new nuclear weapons design facilities to LANL. The hydrodynamic testing facilities at LANL are funded and operated by the DOE as part of the laboratory's ongoing stockpile stewardship mission, and DOE proposes to complete and operate the DARHT facility at LANL in furtherance of that mission. The DARHT facility is needed at LANL for this mission regardless of any other facilities which may eventually be located or operated there. Only one of the specific facilities mentioned in this comment, the Contained Explosives Test Complex, is related to DARHT. It is analyzed in this EIS as the Vessel Cleanout Facility of the Vessel Containment and Phased Containment Options of the Enhanced Containment Alternative. Of the other facilities mentioned in this comment, some are only in the early planning stages (such as the Tritium Laboratory), some are already completed (such as the Weapons Component Testing Facility and the Radiographic Support Laboratory (RSL)), and some are unrelated to the nuclear weapons complex (such as the Advanced Neutron Source). Specifically, the RSL will be used regardless of alternative. DOE believes that the proposal for enhanced radiographic hydrotesting capability is independently justified and thus need not follow the SS&M PEIS and the LANL SWEIS (see section 2.6, volume 1, and section 1.5, volume 2).

COMMENT CODE	LOCATION OF EIS REVISION(S)
17 - 19	None required.

RESPONSE

DARHT is sited at LANL because of the existing infrastructure as noted in the section 3.10.1 discussion of why other sites were not analyzed as alternatives in this EIS. Hydrodynamic testing has been conducted at LANL for 0ver 30 years. Thus, DARHT is not part of the overall reconsolidation of the DOE complex. Reconfiguration of the DOE weapons complex to reduce costs and consolidate functions necessarily causes the remaining functions to be consolidated at the remaining facilities.

COMMENT CODE	LOCATION OF EIS REVISION(S)
17 - 20	Sections Executive Summary, 1.3, 3.7, 5 Intro, 5.4.1.1, 5.4.1.3, 5.4.2.1.2, 5.4.3.3, 5.4.4.1, 5.4.4.2, 5.4.3.3, 5.4.5.1.1, 5.4.6.1.1, 5.4.7.2, 5.4.8.2, 5.4.9.2, 5.4.10, 5.4.10.3, 5.4.11.2, D.5, E3.5, and H.5.2

RESPONSE

The final EIS contains an additional option, the Phased Containment Option (preferred alternative), within the Enhanced Containment Alternative. The selection of alternatives to be analyzed in the EIS from among a much broader range of possible alternatives is discussed in section 3.10. Each of the alternatives that were considered, but not analyzed in the EIS, were rejected for reasons such as failure to meet the purpose and need, infrastructure requirements, or cost. The DOE believes that their discussion in section 3.10 supports its choices for the range alternatives to be analyzed in the EIS.

COMMENT CODE	LOCATION OF EIS REVISION(S)
17 - 21	2.4

RESPONSE

See response to comment 13-17.

IENT CODE	LOCATION OF EIS REVISION(S)
22	Section 2.5

)NSE

has revised the discussion in the DARHT EIS of nonproliferation and counter proliferation application for ced radiographic hydrodynamic test capability (section 2.5). The concerns raised by Congress for the nal Ignition Facility are specific to that facility and not general to all new facilities in the DOE complex.

sponse to comment 17-4.

MENT CODE	LOCATION OF EIS REVISION(S)
·23	None required.

ONSE

objective of the science-based stockpile stewardship program is to preserve the safety, performance, and bility of the Nation's nuclear weapons stockpile. However, the existence of this program is a key element in U.S. decision to enter into the nonproliferation treaty, as described in the President's statement of August 11, 5 (see the first box in chapter 2). See also the response to comment 17-4 for a discussion that signatories to conproliferation treaty were knowledgeable about hydrodynamic testing.

IMENT CODE	LOCATION OF EIS REVISION(S)
·24	None required.

PONSE

cited sentence (draft EIS, section 2.5 paragraph 4, lines 7-10) does not reference DARHT and says only that of testing, "would not change the status of the United States in terms of proliferation." As noted, FXR would be closed under any of the DARHT alternatives.

MMENT CODE	LOCATION OF EIS REVISION(S)
7·25	Section I.3.2.

SPONSE

purpose of an EIS is to identify environmental impacts and compare them among the alternative courses of ion analyzed. DOE has prepared a classified supplement to the DARHT EIS, and has incorporated the classified aspects of the classified impact analysis in the DARHT EIS. These include the impacts from routine erations regarding dynamic experiments with plutonium, and the consequences of accidents, in the event that y occurred, regarding dynamic experiments with plutonium. See section I.3.2.

COMMENT CODE	LOCATION OF EIS REVISION(S)
17 - 26	None required.

RESPONSE

DOE indicated in the Notice of Intent, the Implementation Plan, and the draft DARHT EIS that a classified supplement would be prepared that would provide additional information and analysis. DOE made an unclassified summary of the classified analysis available to the general public and incorporated the impacts in this final EIS. DOE also invited review of the classified supplement (by appropriately cleared individuals with a need to know the information) from the State of New Mexico, the Environmental Protection Agency, and certain Indian tribes. DOE has made all unclassified information and analysis relevant to the DARHT EIS available for public review.

COMMENT CODE	LOCATION OF EIS REVISION(S)
17 - 27	None required.

RESPONSE

The Record of Decision will document the DOE's decision on DARHT. None of the alternatives under consideration would involve any activities that would compromise nonproliferation policy or conflict with the President's decision that the United States will not design or build new nuclear weapons. DOE is strictly adhering to this policy. Under current policy, DARHT will be used only for assessing the safety, performance, and reliability of existing weapons; it will not be used to design new weapons.

COMMENT CODE	LOCATION OF EIS REVISION(S)
17 - 28	Section I.3.1

RESPONSE

DOE agrees with this comment. Use of the 50th percentile meteorology is an assumption where it is equally likely that atmospheric conditions could be greater than or less than the conditions assumed. The final EIS text notes that this is a realistic, rather than conservative assumption.

COMMENT CODE	LOCATION OF EIS REVISION(S)
17 - 29	None required.

RESPONSE

As described in appendix H, potential release during routine operations must pass through multiple HEPA filters and are continuously monitored. No plutonium releases have ever been detected, therefore, it may be assumed that releases are zero. However, to provide a conservative estimate of potential impacts, it was assumed plutonium was released at the threshold of detection of the monitoring instrument. This would be the maximum quantity of plutonium that could conceivably be released.

OMMENT CODE	LOCATION OF EIS REVISION(S)
17 - 30	None required.

ESPONSE

he 50-year committed population dose described was actually the effective dose equivalent to the population. or purposes of this analysis there is no difference between the two dose terms. Evaluating the potential dose hich could be received over 50 years is DOE's standard practice so that potential dose (and effects) will not be nderestimated, for both populations and individuals. Maximally Exposed Individual (MEI) doses were also alculated for routine exposures and accidents, and estimates were made of the maximum probability of ontracting a latent fatal cancer by these hypothetical individuals.

OMMENT CODE	LOCATION OF EIS REVISION(S)
17 - 31	None required.

RESPONSE

The resuspension pathway was included in these analyses.

COMMENT CODE	LOCATION OF EIS REVISION(S)
17 - 32	None required.

RESPONSE

The population of the La Tierra/Las Companos area was included in population dose calculations. The calculations used the latest available population data, from 1993, which are more up-to-date than those available from the 1990 U.S. Census. These data are shown in table H-6.

COMMENT CODE	LOCATION OF EIS REVISION(S)
17 - 33	None required.

RESPONSE

Because dynamic experiments with plutonium would be analyzed and conducted in such a way that a nuclear explosion physically could not occur, the accident scenario discussed in the EIS involves an accidental detonation of the high explosives and subsequent scattering of vaporized or particulate plutonium metal. The analysis indicates that at most, 12 additional latent cancer facilities might be projected to occur over a 50-year time frame. The dynamic experiments could not possibly result in an accidental detonation of a nuclear weapons primary since these components will not be tested in DARHT. The projected number of latent cancer fatalities (12) was arrived at using the modeling techniques and best available data described in appendix I. The approach in appendix I assumes a realistic scenario for public exposure.

COMMENT CODE	LOCATION OF EIS REVISION(S)
17 - 34	Sections 5.1.9.2 and I.3.2 Table I-7

RESPONSE

DOE agrees that the dose to an noninvolved worker from an uncontained detonation was inadvertently omitted from the unclassified discussion. This has been included in the final version of the EIS.

IMENT CODE	LOCATION OF EIS REVISION(S)
·38	Tables S-1 and 3-3, section 3.3.8.

'PONSE

ste management impacts for DARHT were evaluated in chapter 5 of the draft EIS. These were inadvertently ted from the summary table S-1 and have been included in the final EIS. A discussion has also been added to pter 3 regarding waste management.

MMENT CODE	LOCATION OF EIS REVISION(S)
1·39	None required.

SPONSE

: DARHT activities over the next 40 years would be known only in a general way. The details of D & D not be known until the time to close down DARHT. Appropriate NEPA reviews would be conducted at that e, as stated in the EIS section 3.3.9.

MMENT CODE	LOCATION OF EIS REVISION(S)
7·40	None required.

SPONSE

own available data is used wherever possible along with recognized, credible modeling codes to compute vironmental impacts. When suitable data are not available, there calculations use conservative assumptions sistently for all alternatives. The NEPA process is to be followed using available data, rather than specifying a a acquisition program.

e allegations cited are primarily in the purpose and need chapter, and these are being clarified in text changes d other comment responses.

MMENT CODE	LOCATION OF EIS REVISION(S)
17·41	None required.

SPONSE

s noted in the EIS, any experiments that would incorporate plutonium would be conducted in double-walled ctainment vessels. Using this approach in the past, there have been no failures of the containment, not even of inner wall. Based on this engineering experience, the LANL experimenters believe that vessel failure with a bsequent release to the environment is not a reasonable or credible (less than $1x10^{-6}$ probability of occurrence r year) scenario.

fter a test, the vessel is moved to the LANL plutonium handling facility, TA-55, for cleanout and recovery. Most f the plutonium materials are recovered for recycling. The small amount not recovered becomes part of the A-55 waste stream and loses its identity as DARHT waste.

ONSS

COMMENT CODE	LOCATION OF EIS REVISION(S)
17 - 42	None required.

RESPONSE

The cited data in table 4-1 are all taken from a LANL publication in 1994. As such, these data are considered to be a complete inventory of emissions in significant amounts for materials likely to be used at a hydrodynamic testing facility. The source document has a more extensive list corresponding to other activities at LANL. These are the most recent data available. Within LANL, time is required to compile, check, and certify the data as well as conduct the review and approval process for publication.

COMMENT CODE	LOCATION OF EIS REVISION(S)
17 - 43	None required.

RESPONSE

DOE did not rely upon result of the LANL air monitoring program in evaluating potential environmental impacts from DARHT or PHERMEX. Rather, this information is presented in chapter 4 of the EIS to present a picture of the potentially affected environment at LANL and the nearby vicinity.

COMMENT CODE	LOCATION OF EIS REVISION(S)
17 - 44	Section 6.1.

RESPONSE

DOE has negotiated a Federal Facilities Compliance Agreement (FFCA) with the Environmental Protection Agency in order to come into compliance with the monitoring requirements of the Clean Air Act regulations governing hazardous air pollutants. This agreement provides for additional monitoring stations. Section 6.1 was revised to update the status of the FFCA.

COMMENT CODE	LOCATION OF EIS REVISION(S)
17 - 45	None required.

RESPONSE

See response to comment 8-28.

COMMENT CODE	LOCATION OF EIS REVISION(S)
17 - 46	None required.

RESPONSE

This table was reproduced from the 1992 Environmental Surveillance Report to provide general information regarding airborne releases from LANL as a whole. Since material usages and potential impacts of the dynamic experiments at PHERMEX and DARHT are dealt with extensively elsewhere in the EIS, both from past operations and for projected DARHT operations, DOE did not feel it was necessary to repeat impacts from dynamic experiments here.

COMMENT CODE — LOCATION OF EIS REVISION(S)

17-47 — Section 4.8.1.1

RESPONSE

Text will be changed to indicate that LANL exceed the EPA annual standard for radionuclide emissions of 10 mrem in 1990 and was cited. This instance of noncompliance is discussed in greater detail in section 6.1. Operations at PHERMEX and those planned for DARHT are different from those which resulted in exceeding EPA standards.

COMMENT CODE — LOCATION OF EIS REVISION(S)

17-48 — Table 4-22

RESPONSE

The term is left unchanged in the body of the table because the table is taken from published literature. However, the term is footnoted as follows: "This value includes a radon contribution on the order of 200 mrem, but such a value can vary considerably."

COMMENT CODE — LOCATION OF EIS REVISION(S)

17-49 — None required.

RESPONSE

Section 4.9 is descriptive of History of Accidents at LANL. Analysis of accidents is discussed in appendixes I and J.

COMMENT CODE — LOCATION OF EIS REVISION(S)

17-50 — Section B.8

RESPONSE

Text in various places will be clarified to explain the fate of depleted uranium in the tests. The concept is illustrated in figure B-1, which has been modified to show 10 percent aerosolized (all assumed respirable).

COMMENT CODE — LOCATION OF EIS REVISION(S)

17-51 — None required.

RESPONSE

See response to comment 17-41.

COMMENT CODE — LOCATION OF EIS REVISION(S)

17-52 — None required.

RESPONSE

The cited value is considered bounding and conservative, because transport of test assemblies in TA-15 and TA-16 occurs under much stricter regulations and with much better compliance with regulations than ordinary highway traffic.

)E LOCATION OF EIS REVISION(S)

None required.

ercent, is derived from an empirically developed distribution of particle sizes produced in similar
: analysis assumes that the empirical distribution accurately describes the particle distributions
/ould be done at DARHT.

)E LOCATION OF EIS REVISION(S)

None required.

ducting analyses to determine if a transportation accident resulting in detonation of the high
occur, the DARHT EIS calculates impacts if such a scenario were to occur. See section 5.7.2 and

DE LOCATION OF EIS REVISION(S)

Section 5.1.7.2

ion 5.1.7.2 has been clarified. Under the No Action Alternative, the partially completed buildings
site would be completed for some other purpose. No additional area would be disturbed. The
table 5-4 (formerly table 5-5) are for completing this construction.

DE LOCATION OF EIS REVISION(S)

None required.

sis for worker protection for noise impulses presented on page C-17 of the draft EIS shows that
tions could the threshold limit of 100 noise impulses per day at 140 dB be exceeded. The cycle
might apply to simple tests such as firing a series of projectiles against armor plate, but not to
odynamic tests or dynamic experiments. The rate of 2 shots/month is used in analyzing the major
night occur and is based on previous experience at PHERMEX.

)DE LOCATION OF EIS REVISION(S)

None required.

es would provide a preferential path for water infiltration, a path that could be hard to seal.
cal geology/stratigraphy does not vary much laterally, the nearby core data are deemed sufficiently
so long as analyses do not indicate marginally acceptable results.

ıcy is not required to obtain field data for all conceivable environmental parameters for a given
to do so would make the costs of NEPA reviews prohibitively expensive. The CEQ regulations
alysis with the best available information and acknowledges that there may be missing or
ormation [40 CFR 1502.22.]

COMMENT CODE	LOCATION OF EIS REVISION(S)
17-58	None required.

RESPONSE

Since 1991, advanced laboratory techniques have been used to detect tritium at ultra-low levels and to determine that recent water (a few decades old) has recharged the main (i.e., deep) aquifer in several locations at LANL. In these instances, main aquifer contamination is located in the northern portion of the LANL site and is associated with a high tritium source concentration in a canyon bottom alluvial aquifer, and with older wells into the main aquifer (constructed with cable-tool drilling techniques and having questionable seals between well-bore and well-casing). In contrast, the Potrillo Canyon, Water Canyon, and Cañon de Valle locations in the southern portion of the LANL site do not exhibit alluvial aquifers and are not locations for wells that penetrate to the main or deep aquifer. Thus, the driving force provided by overlying saturated alluvial sediments, and the short-circuit pathway provided by imperfect seals in boreholes, are both absent in the canyons of interest to the DARHT EIS.

Water travel times from the surfaces of Threemile Mesa and Water Canyon (i.e., reach 12) to the main aquifer are reported in table E4-2 as 298 and 179 years, respectively. The comment that modeling for the EIS found "times for transport to the main aquifer to be in tens of thousands of years" refers to times reported as associated with the occurrence of peak concentrations of highly retarded metals (uranium, beryllium, and lead). Tritium, observed to have migrated into the main aquifer in the northern portion of the LANL site, is highly mobile and moves with the ground water. In the DARHT EIS, analysis has focused on highly retarded metals in an environmental setting that does not offer the same opportunity for rapid vertical migration.

COMMENT CODE	LOCATION OF EIS REVISION(S)
18-1	Section 2.1

RESPONSE

While an EIS specifies the purpose and need to which the agency is responding, the primary purpose of an EIS is to analyze the environmental impacts expected to occur if one of the alternatives were to be implemented. However, in response to this and other comments, the DARHT EIS has been revised to better explain the purpose and need. See section 2.1.

COMMENT CODE	LOCATION OF EIS REVISION(S)
18-2	Sections 2.4 and 3.3.4

RESPONSE

PHERMEX accelerator technology is fundamentally different from that planned for DARHT, and cannot be improved to match the same goals. Neither PHERMEX, FXR, nor PHERMEX and FXR in cooperation (existing or upgraded) can achieve the enhanced radiographic hydrodynamic test capability specified in the EIS.

See response to comment 13-13.

COMMENT CODE	LOCATION OF EIS REVISION(S)
18 - 3	Section 2.1

RESPONSE

In the past, the DOE has discovered most problems in the stockpile through surveillance programs and has used nuclear testing to resolve them and/or certify the systems when fixed. Thus, there is no history of using hydrodynamic testing alone to either identify or resolve post-deployment problems. The current stockpile systems are certified safe and reliable based on this nuclear testing, among other things. However, new problems are likely to arise eventually as the systems age. For any such problems involving nuclear components, DOE would have to rely on hydrodynamic testing using test assemblies to address the problems and/or certify the fixes.

COMMENT CODE	LOCATION OF EIS REVISION(S)
18 - 4	None required.

RESPONSE

The references cited for chapter 2 are not intended to be an exhaustive list on the subject of the nuclear weapons stockpile. This section arises because the discussion in chapter 2 is meant to describe the purpose and need rather than present arguments for them. The purpose and need arise because the President and Congress have directed the DOE to maintain the nuclear weapons complex and to ensure the safety, security, and reliability of the nuclear weapons stockpile. On August 11, 1995, the President committed to pursue a Comprehensive Test Ban Treaty provided a strong and continuing stockpile stewardship program is in place. Part of this mission is further defined by the NOI for the Stockpile Stewardship and Management PEIS which states that an enhanced radiographic hydrodynamic test capability will be part of that program.

COMMENT CODE	LOCATION OF EIS REVISION(S)
18 - 5	Section 2.1

RESPONSE

Enhanced hydrodynamic testing is clearly needed to improve the current testing capabilities and achieve DOE's mission goals for stockpile stewardship, as descried in chapter 2 of the EIS. However, sections 2.6 of the draft EIS called attention to the fact that DARHT is new technology and as such has uncertainties until the hardware is proven. Until testing is done, there is also some uncertainty in the amount of improvement in the testing results. Acknowledging such uncertainties is realistic engineering, but does not imply expected shortcomings.

See response to comment 17-4.

COMMENT CODE LOCATION OF EIS REVISION(S)

13-6 None required.

RESPONSE

In the absence of underground nuclear testing, it is not fully known whether enhanced radiographic hydrodynamic testing will fully satisfy the need for stockpile assurance. However, the President has determined that the United States will not design or build new nuclear weapons, and the DOE is strictly adhering to this policy. Under current policy, DARHT would be used only for assessing the safety, performance, and reliability of existing weapons, and would not be used to design new weapons. The possibility exists that, without nuclear testing, the Nation could not ensure the continued viability of a nuclear deterrent based on the existing weapons in the nuclear weapons stockpile. If stockpile viability could not be ensured, it would be incumbent upon the President to determine whether or not to change the policy to allow the design and building of new nuclear weapons, as well as to evaluate the potential ramifications for nonproliferation policy. On August 11, 1995, the President committed to pursue a Comprehensive Test Ban Treaty provided a strong and continuing stockpile stewardship program is in place.

COMMENT CODE LOCATION OF EIS REVISION(S)

13-7 None required.

RESPONSE

See response to comment 13-3.

COMMENT CODE LOCATION OF EIS REVISION(S)

13-8 None required.

RESPONSE

See response to comment 13-9.

COMMENT CODE LOCATION OF EIS REVISION(S)

13-9 None required.

RESPONSE

This assessment may be based on the Miller report or other unclassified appraisals of problems in the nuclear weapons stockpile. Any such unclassified report is likely to have the same limitations as the Miller report.

See response to comment 13-3.

COMMENT CODE LOCATION OF EIS REVISION(S)

13-10 Section 2.3.2

RESPONSE

See response to comment 13-9.

COMMENT CODE	LOCATION OF EIS REVISION(S)
18 - 11	Section 2.2.1

RESPONSE

The parenthetical phrase presented on page 2-2 of the draft EIS has been changed to read "(even to replace those removed when past their useful life)." Useful life is not a defined engineering term; but as a practical matter, an engineering decision is made on the cost benefits of retaining a system. Design life is an estimate (or an objective) during the design stage of what the useful life will be.

See response to comment 13-3.

COMMENT CODE	LOCATION OF EIS REVISION(S)
18 - 12	None required.

RESPONSE

Certainly, regular maintenance will allow a measure of confidence in the stockpile; DOE does not dispute this fact. However, there will be a programmatic need for hydrodynamic testing at any level of stockpile stewardship activity whether at a level greater than currently envisioned in the "Stockpile Stewardship and Management Program" document released as part of the PEIS process or at the less scientifically active and more limiting role of custodial responsibility as outlined in this comment. See section 2.6 and EIS volume 2 section 1.5.

Specifically, under the above proposal hydrodynamic testing would still be needed for:

- Surveillance of existing stockpiled weapons and systems
- Final proof testing of rebuilt weapons (in the absence of underground nuclear testing)
- To support non- and counter-proliferation activities
- To keep expertise of a nuclear weapons cadre as high as possible should the DOE be directed to return to previous levels of nuclear weapons program activity to include design and certification of new weapons and weapons systems.

Given the above, DARHT is a prudent investment to replace an aging 35-year old existing facility (PHERMEX) at LANL since the only other radiographic capability in the United States, FXR at LLNL, would not allow the required level of hydrodynamic testing activity for the weapons program should PHERMEX become non-operational.

Regular maintenance, already done routinely, does not forestall aging problems. Periodic nonnuclear component replacement is already contemplated in order to keep abreast with relevant technological advances.

The remanufacturing approach is likely to be more costly in terms of up-front dollars and environmental burden for the following reasons:

- The restart of old facilities, particularly Rocky Flats, is not feasible.
- New facilities, with increased capacity, will be required to replace warheads at a rate sufficient to forestall potential aging problems; the stockpile will have to be fully remanufactured on a 20 to 30- year time scale, rather

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COMMENT CODE LOCATION OF EIS REVISION(S)

13-13 None required.

RESPONSE

Maintaining "core intellectual and technical competencies" (see box in EIS section 2.1) in nuclear weapons has much more immediate need than the ability to resume weapons design, if such activity is ever needed in the future. A program of certification of the systems in the enduring stockpile requires intelligent assessment of the surveillance results using facilities such as DARHT to better characterize physical phenomena. Intelligent assessment of stockpile issues to plan, execute, and interpret needed tests and experiments is the immediate role of the core intellectual and technical competency.

COMMENT CODE LOCATION OF EIS REVISION(S)

13-14 Sections 2.3.1, 2.3.2, and 2.5

RESPONSE

Although fundamental scientific knowledge about physical processes can be used in a variety of ways, the DARHT capabilities are to be directed at understanding and resolving safety and reliability problems in the weapons stockpile. As time passes the nature of these problems is not necessarily the same as those addressed during design verification.

Chapter 2 has been modified in the final EIS to clarify and better support the purpose and need. The additional information presented is attributable in part to the Stockpile Stewardship and Management Program Plan issued by the DOE in May 1995 and also to clarify some potentially sensitive issues.

COMMENT CODE LOCATION OF EIS REVISION(S)

13-15 Section 2.3.2

RESPONSE

See response to comment 13-7.

COMMENT CODE LOCATION OF EIS REVISION(S)

13-16 Section 2.3.3

RESPONSE

The existing body of information regarding the intrinsic properties of plutonium is inadequate. For example, DOE needs more information regarding changes in plutonium properties as impurities build up inside the material due to radioactive decay. These changes may affect the ductility of the metal or its reaction to shock heating. In turn, these may affect the behavior of a weapons pit, which may affect the safety or reliability of the weapon. Section 2.3.3 has been revised to include more information on this subject.

COMMENT CODE LOCATION OF EIS REVISION(S)

13-17 Section 2.3.4

RESPONSE

Chapter 2 has been revised to include additional discussion on the NPT. Section 2.3.4 points out that the U.S. seeks to continue to meet international agreements and assist other nations in evaluating nuclear weapons. DOE does not believe that activities allowed under these agreements violate the NPT.

COMMENT CODE	LOCATION OF EIS REVISION(S)
18 - 18	Section 2.4

RESPONSE

See response to comment 13-13.

COMMENT CODE	LOCATION OF EIS REVISION(S)
18 - 19	None required.

RESPONSE

See response to comment 17-4 and response below.

The science-based stockpile stewardship program is much broader than just the program to build and operate DARHT. It is the entire program, not just DARHT, that is offered as one basis for other nations' confidence in the United States nuclear deterrence.

COMMENT CODE	LOCATION OF EIS REVISION(S)
18 - 20	None required.

RESPONSE

See response to comment 10-4.

COMMENT CODE	LOCATION OF EIS REVISION(S)
18 - 21	Sections 3.3.8 and 5.4.10.3.

RESPONSE

See response to comment 13-16.

COMMENT CODE	LOCATION OF EIS REVISION(S)
18 - 22	None required.

RESPONSE

In the unclassified summary of the classified supplement to the EIS potential environmental consequences of an accidental breech are discussed. The classified supplement examines potential environment impacts of the accident on a "what if" basis, that is, assuming that the accident would occur without consideration of the probability or frequency of occurrence. The summary notes that related DOE safety studies suggests the probability of this accident is less than one-in-one-million per year.

MENT CODE	LOCATION OF EIS REVISION(S)
-23	None required.

PONSE

Plutonium Exclusion Alternative was analyzed to allow DOE to compare the environmental impacts of ducting to the impacts of operating the DARHT Facility without dynamic experiments with plutonium at HT. DOE needs to conduct dynamic experiments with plutonium (see section 2.3.3). Because of structure consideration LANL is the only site where these could be conducted. In the event DOE would to exclude plutonium experiments at DARHT, DOE would need to conduct these dynamic experiments require radiography at PHERMEX (as has been done in the past). To exclude all dynamic experiments plutonium from all facilities at LANL would not respond to the DOE's needs.

MENT CODE	LOCATION OF EIS REVISION(S)
-24	None required.

PONSE

part of its mission to ensure the continued safety and reliability of the enduring stockpile, DOE needs to ct dynamic experiments with plutonium. An integral part of DOE's need for the proposed enhanced graphic capability is to diagnose the results of these dynamic experiments.

ted by the commenter, DOE considered as unreasonable the alternative of upgrading the FXR facility to de enhanced radiographic capability for conducting dynamic experiments with plutonium, because it would expensive to construct and operate the requisite plutonium handling infrastructure at site 300 at LANL on 3.10.1.1). However, unless this were done, DOE could not meet its need for enhanced radiographic ility for plutonium experiments.

ough DOE analyzed the Plutonium Exclusion Alternative in order to identify and define the extent of ronmental impacts that might be attributable to conducting dynamic experiments with plutonium at DARHT, EIS points out that this alternative would not meet the DOE's need for enhanced capability to diagnose these riments (section 3.8). DOE disagrees that including this alternative implies that a facility without plutonium ility would meet its purpose and need for enhanced radiography.

response to comment 13-13.

COMMENT CODE	LOCATION OF EIS REVISION(S)
18 - 25	Sections Executive Summary, 1.3, 3.7, 5 Intro, 5.4.1.1, 5.4.1.3, 5.4.2.1.2, 5.4.3.3, 5.4.4.1, 5.4.4.2, 5.4.3.3, 5.4.5.1.1, 5.4.6.1.1, 5.4.7.2, 5.4.8.2, 5.4.9.2, 5.4.10, 5.4.10.3, 5.4.11.2, D.5, E3.5, H.5.2

RESPONSE

See response to comment 3-1 and response below.

Uranium dissolution in surface water (rain) was assumed to be greater than any measured levels at or near the PHERMEX firing point (section E2.2.1). Subsequent modeling showed: uranium concentrations in waters released to nearly Water Canyon could be slightly above the proposed MCL; waters at the discharge sink in Potrillo Canyon an order of magnitude below the proposed MCL; and water at the nearest offsite access an order of magnitude below the drinking water standard (section 5.1.4.1).

Section 5.1.6.1 indicates that the expected air waves at Nake'muu would be a small fraction of the amount needed to cause window breakage (for comparison), and the site has continually stood up to similar airwaves. Nake'muu is considered by most recent scholarship to be an uncompleted structure of about the time of the Pueblo revolt, rather than associated with the Anasazi. The probability that any blast fragments would fall at Nake'muu is extremely small and can be reduced further with mitigation measures.

COMMENT CODE	LOCATION OF EIS REVISION(S)
18 - 26	None required.

RESPONSE

The internal size and configuration of the containment structure would require free-moving robotic devices to accomplish remote cleaning. A wide range of tasks would be required, such as inspection and removal of widely varying sizes and shapes of blast debris; and inspection, repair, and replacement of blast mats on the interior surfaces. A great deal of time and money would be needed to develop either a general purpose or a range of robotic devices, if indeed such is even possible with current and foreseeable technology.

COMMENT CODE	LOCATION OF EIS REVISION(S)
18 - 27	None required.

RESPONSE

A ball of hot gases and aerosolized blast products quickly rises because it is less dense than the surrounding air. As the gases rise, they cool by expansion and mix with surrounding air. In this manner, the effective height for dispersal by winds is about 330 ft (100 m) depending somewhat on the size of the shot.

An extensive discussion of this topic is provided in appendix H.2. The explosive dispersion of the uncontained detonations results in greater dispersion that allows these detonations to be modeled as elevated point-source Gaussian releases for atmospheric dispersion and airborne impact evaluation purposes.

MENT CODE	LOCATION OF EIS REVISION(S)
1-28	Sections Executive Summary, 1.3, 3.7, 5 Intro, 5.4.1.1, 5.4.1.3, 5.4.2.1.2, 5.4.3.3, 5.4.4.1, 5.4.4.2, 5.4.3.3, 5.4.5.1.1, 5.4.6.1.1, 5.4.7.2, 5.4.8.2, 5.4.9.2, 5.4.10, 5.4.10.3, 5.4.11.2, D.5, E3.5, and H.5.2

RONSE

E believes that the revised Preferred Alternative, the Phased Containment Option of the Enhanced inment Alternative, addresses the central issue of this comment.

E believes that it would be highly speculative to try to estimate costs associated with potential soil clean-up ears or more in the future. At the current time, too little information exists and estimates of are too nebulous ovide a detailed estimate of cost savings. DOE does believe that the Phased Containment Option of the nced Containment Alternative would have lower associated clean-up costs (ranging from 25 to 90 percent than the uncontained alternatives.

MENT CODE	LOCATION OF EIS REVISION(S)
1-29	Sections 2.3.2 and 2.5

RONSE

President and Congress have directed the DOE to maintain the nuclear weapons complex and to ensure the ty, security, and reliability of the nuclear weapons stockpile, and have appropriated funds accordingly. pter 2 of the EIS has been revised to more clearly indicate that purpose and need for enhanced hydrodynamic ing capabilities arise from the directives from the President and Congress. It is currently against U.S. policy to op new nuclear weapons systems.

esponses to comments 13-9 and 17-4.

MENT CODE	LOCATION OF EIS REVISION(S)
2-1	None required.

RONSE

E appreciates this comment.

MENT CODE	LOCATION OF EIS REVISION(S)
2-1	Section 2.1

RONSE

esponse to comment 13-9.

MENT CODE	LOCATION OF EIS REVISION(S)
2-2	None required.

RONSE

E agrees.

COMMENT CODE	LOCATION OF EIS REVISION(S)
20 - 3	Section 2.3.2

RESPONSE

See responses to comments 18-29 and 18-8.

COMMENT CODE	LOCATION OF EIS REVISION(S)
20 - 4	Section 2.3.2

RESPONSE

See response to comment 13-6.

COMMENT CODE	LOCATION OF EIS REVISION(S)
20 - 5	Section 2.5

RESPONSE

See response to comments 13-9, 17-4, and response below.

The EIS discussion of nonproliferation has been revised.

COMMENT CODE	LOCATION OF EIS REVISION(S)
20 - 6	None required.

RESPONSE

The DOE agrees.

COMMENT CODE	LOCATION OF EIS REVISION(S)
20 - 7	None required.

RESPONSE

The Phased Containment Option analyzed in the EIS would use vessels for most tests. Under this option, uncontained tests might be used for large tests, special diagnostics, or tests not involving hazardous materials such as depleted uranium, beryllium, or lead. DOE acknowledges that hydrodynamic tests are expensive and agrees that as much data as possible should be collected.

The cost of each shot, that is, hydrodynamic test or dynamic experiment, varies widely depending on the size of the experiment and its associated diagnostics. The cost may range from over a million dollars for a major hydrodynamic test representing a full system with simulated materials to a few thousand dollars for the simpler, smaller experiments that examine one specific physical property, such as high explosive detonation velocity. At PHERMEX, we conduct about 40 to 50 experiments yearly, 5 to 10 of which are considered major hydrodynamic tests.

COMMENT CODE	LOCATION OF EIS REVISION(S)
20 - 10	Section 6.9

RESPONSE

Comments from neighboring pueblos have indicated their desire to have less discussion of Native American cultural resources in the DARHT EIS. In deference to these requests, discussion of these cultural resources has been decreased in the EIS. However, a list of consultations with outside agencies and Native American tribes has been added to the EIS. See section 6.9.

COMMENT CODE	LOCATION OF EIS REVISION(S)
21 - 1	None required.

RESPONSE

The DOE recognizes that to acquire certain information additional tests may be required, relative to the Preferred Alternative. However the number of tests that would be conducted under any alternative are driven largely by scheduling and funding concerns; therefore, although to achieve the same amount of information more tests might be required under the Single Axis Alternative, in actual practice DOE would probably forego many additional tests. Note that most of the environmental impacts relevant to this alternative given on an annual basis. Because the time needed to set up a test is not strongly dependent on the use of one or two axes, the number of tests per year probably would be about the same.

COMMENT CODE	LOCATION OF EIS REVISION(S)
21 - 2	None required.

RESPONSE

DOE agrees that under the Upgrade PHERMEX Alternative, the facility would have to be shut down for a long time and there would be programmatic impacts due to such a delay. The shut-down period is noted in the EIS text.

COMMENT CODE	LOCATION OF EIS REVISION(S)
21 - 3	None required.

RESPONSE

The DOE appreciates this assessment.

COMMENT CODE	LOCATION OF EIS REVISION(S)
21 - 4	None required.

RESPONSE

DOE has included in the EIS radiation exposure-to-risk conversion factors and made the conversions from radiation dose to risk of latent cancer fatalities for potentially exposed workers and members of the public. Of particular note is that no latent cancer fatalities are projected from radiation exposure under any of the DARHT activities under any of the proposed activities involving depleted uranium or tritium. DOE believes other sources are available that may serve as a radiation primer and provide information as to relative risk assessment and comparison.

COMMENT CODE LOCATION OF EIS REVISION(S)

21 - 5 None required.

RESPONSE

See response to comment 20-7 and response below.

DOE appreciates this suggestion. Consideration can only be qualitative until specific tests and specific add-on experiments are identified.

COMMENT CODE LOCATION OF EIS REVISION(S)

22 - 1 None required.

RESPONSE

DOE agrees.

COMMENT CODE LOCATION OF EIS REVISION(S)

22 - 2 None required.

RESPONSE

DOE appreciates this comment.

COMMENT CODE LOCATION OF EIS REVISION(S)

23 - 1 None required.

RESPONSE

The LANL sitewide EIS will address ultimate disposition of radioactive waste stored or disposed from all LANL activities, and the contributions from any alternatives analyzed in the DARHT EIS would be only a small percentage of that total; these contributions are discussed in the EIS. The DOE is preparing a PEIS on waste management at all of its sites [NOI 55 FR 42633] that will be used to help establish a Department-wide waste management policy. See section 3.3.3.

COMMENT CODE LOCATION OF EIS REVISION(S)

23 - 2 Section 5.1.10

RESPONSE

The typographical error has been corrected.

COMMENT CODE LOCATION OF EIS REVISION(S)

23 - 3 None required.

RESPONSE

Fabrication of parts that would be used at DARHT is addressed in section 3.3.3 and table 3-1. DOE would conduct dynamic experiments with plutonium and hydrodynamic tests using hazardous or radioactive material under all alternatives analyzed in the DARHT EIS, including No Action. These activities would not bear on DOE's decisions regarding enhanced radiographic capability.

COMMENT CODE	LOCATION OF EIS REVISION(S)
23 - 4	None required.

RESPONSE

The measurable cumulative impacts are discussed in section 5.9. DOE acknowledges that LANL is an alternative site for many actions under the SS&M PEIS as described in the NOI for that PEIS. However, these potential activities are too speculated to be assessed in detail at the time. DOE believes that DARHT is justified independently of any SS&M decisions. See also, section 2.6 and volume 2, section 1.5.

COMMENT CODE	LOCATION OF EIS REVISION(S)
23 - 5	Section 2.6 and volume 2, section 1.5.

RESPONSE

Please refer to the text in section 2.6 and EIS volume 2 section 1.5 for information on the relationship of the DARHT EIS to other DOE EISs.

COMMENT CODE	LOCATION OF EIS REVISION(S)
23 - 6	None required.

RESPONSE

Direction by the President and Congress for DOE to ensure the safety, security, and reliability of the nuclear weapons stockpile create current responsibilities, not ones that are activated for each of these elements when an issue for that element arises. Some safety and reliability issues can perhaps be addressed to some extent with current technology, but DARHT technology would better elucidate the physical processes involved. Competence to address a fuller spectrum of issues will require the temporal and spatial resolution provided by DARHT. Because such a facility requires years to construct, equip, and bring up to full operational capability, DOE concludes a need to proceed now. Relevance of the PEIS does not necessarily preclude or terminate activities that will be discovered in the PEIS. Since the action is urgent but not an emergency, 40 CFR 1506.11 does not apply.

See EIS volume 2 section 1.5.

COMMENT CODE	LOCATION OF EIS REVISION(S)
23 - 7	Section 2.3

RESPONSE

Chapter 2 of the DARHT EIS has been revised to provide more information on why enhanced radiographic testing cap[ability is needed to assure stockpile safety and reliability.

COMMENT CODE	LOCATION OF EIS REVISION(S)
23 - 8	None required.

RESPONSE

See EIS volume 2 section 1.5.

MSFO

COMMENT CODE LOCATION OF EIS REVISION(S)

3-3 None required.

RESPONSE

DOE agrees that any of the waste products from its operations should not be allowed to "ruin" Pajarito Plateau or any of the adjacent areas. LANL has numerous programs that prescribe how the waste products are handled and a monitoring network that provides information on the levels of contaminants found in the environment. These programs are described to some degree in the DARHT EIS and in more detail in the LANL annual Environmental Surveillance Reports (LANL 1993c and LANL 1994a).

COMMENT CODE LOCATION OF EIS REVISION(S)

3-4 None required.

RESPONSE

DOE and LANL are working to improve communication with the general public in a variety of ways. Processes such as this NEPA review afford an opportunity for the DOE and LANL to provide information on specific projects and explain the rationale for recommending that a certain course of action be taken or not be taken. One of the governing purposes of NEPA is to open the Federal decision-making process to public scrutiny, and to invite public participation in the decision-making process.

COMMENT CODE LOCATION OF EIS REVISION(S)

3-5 None required.

RESPONSE

DOE agrees that there have been no technological benefits from nuclear weapons spending over the past 50 years. Many advances in technology that are in common use today, from satellite communications to electronics plastics, have benefited from research and development funded by the government in response to the need for maintaining nuclear weapons.

COMMENT CODE LOCATION OF EIS REVISION(S)

5-1 Table 5-19

RESPONSE

DOE-4 provides a definition of "other metals" for PHERMEX. The PHERMEX "other metals" are aluminum, brass, iron, inconel, niobium, nickel, silver, tin, titanium, tantalum, tungsten, and vanadium. Plutonium is listed in the "other metals" category. Table 5-19 (formerly table 5-20) will be revised to reflect the PHERMEX "other metals" list.

COMMENT CODE LOCATION OF EIS REVISION(S)

10-2 Sections 5.1.8, 5.1.9, 5.1.9.1, 5.1.9.2, 5.1.9.3, 5.4.8, 5.4.9, and 5.7.2.2

RESPONSE

See response to comment 10-6.

MENT CODE	LOCATION OF EIS REVISION(S)
1-5	None required.

PONSE

text states that the annual probability for earthquake occurrence is low. Section 4.3.4 indicates these bilities are on the order of 10^{-4}. This means the average time between large earthquakes on nearby faults is 10,000 years. The most recent large earthquakes on two of these faults are dated approximately at 4,000 to 0 and 8,000 to 9,000 years ago, respectively. Potential damage to facilities is mitigated by structural and pment design. Damage that might occur is not deemed to result in environmental releases.

MENT CODE	LOCATION OF EIS REVISION(S)
1-1	None required.

PONSE

DARHT EIS provides the level of information on the DARHT project and other alternatives analyzed ficiently to support the "bounding analysis" of environmental impacts included in the EIS. The DOE's LAAO RHT EIS Project Office and its parent AL EIS Program Office are responsible for providing information rding the NEPA review and other aspects of the EIS process. However, those offices do not have the nical expertise for in-depth discussions of the hydrodynamic testing program or issues regarding nuclear pons. The commenter was referred to LANL's Nuclear Weapons Technology Program Office; DOE logizes for the confusion and miscommunication regarding the commenter's earlier request for information.

MENT CODE	LOCATION OF EIS REVISION(S)
1-1	None required.

PONSE

each session of the public hearings on the draft EIS, DOE specifically noted that comments were invited on the pacy and accuracy of the content of the entire EIS, as well as any other matter pertaining to the ronmental review process (see public hearing transcripts). Comments on the purpose and need chapters are icomed.

E recognizes that people who work at its offices or facilities have the same rights as other citizens to ticipate in the NEPA review process. DOE employees and contractors generally work and live in the munities affected by DOE proposals or alternatives. The DOE Los Alamos Area Office's "Policy Enhanced portunities for Stakeholder Involvement in the National Environmental Policy Act Review Process" dated gust 3, 1994, specifically states that DOE and Los Alamos National Laboratory employees may participate in public review process for NEPA, as long as they indicate whether they are speaking in an official capacity or private citizen. Public participation is invited in a NEPA review process to provide additional information or rect factual errors in a draft EIS. DOE weighs the content of each comment on its own merits, including those ed by its own employees and contractors.

COMMENT CODE	LOCATION OF EIS REVISION(S)
28 - 2	None required.

RESPONSE

The public hearings on the draft EIS were patterned after the public scoping meetings held in December on the DARHT EIS. At that time people with differing points of view indicated that the roundtable format was preferred over other formats for public meetings used in the past by DOE (see scoping meeting transcripts). As stated at the public hearings, DOE included three types of areas: a comment room, where people could provide formal comments in a private setting; an information area, where people could entertain informal discussions with knowledgeable laboratory and DOE personnel; and a roundtable discussion. DOE was amenable to providing a choice for the format of the roundtable to provide either an opportunity to present spoken or written material into the record without DOE or laboratory comment; an opportunity to ask questions of DOE and laboratory officials and receive answers; or an opportunity for a roundtable discussion among those of differing points of view. The format shifted several times during the sessions in response to requests from the people attending (see transcripts of scoping meetings and public hearings). Although some people stated that they were uncomfortable with the roundtable discussion, others indicated that they preferred it.

COMMENT CODE	LOCATION OF EIS REVISION(S)
28 - 3	None required.

RESPONSE

The DARHT EIS is a DOE document and represents the point of view of the DOE. It is prepared to provide DOE decision-makers with environmental information to assist them in making an informed decision. It is not intended as a document where either the DOE or its contractors employed at LANL "make a case" in support of a DOE proposal.

COMMENT CODE	LOCATION OF EIS REVISION(S)
29 - 1	None required.

RESPONSE

Although DOE does not develop U.S. policy it does believe the U.S. provides leadership for control, inspection, and reduction of nuclear materials/weapons, and is pleased to be a part of this effort.

See response to comment 17-4.

COMMENT CODE	LOCATION OF EIS REVISION(S)
29 - 2	None required.

RESPONSE

The size of the nuclear weapon stockpile is decided by the President and Congress. While the exact size of the stockpile remains classified, the size has decreased dramatically over the past few years and is expected to increase further over the next few years. DOE agrees that reliability of the stockpile is a concern, and this is addressed in the DARHT EIS.

COMMENT CODE	LOCATION OF EIS REVISION(S)
3-3	None required.

RESPONSE

DOE agrees that all test ban treaties should be honored.

See response to comment 17-4.

COMMENT CODE	LOCATION OF EIS REVISION(S)
3-4	None required.

RESPONSE

The ROD to be issued following the DARHT EIS includes further construction for the DARHT facility, DOE will seek to finish the facility as quickly as possible within the constraints of legal action, sound construction practices, and mitigation measures identified in the ROD.

COMMENT CODE	LOCATION OF EIS REVISION(S)
3-1	Tables S-1, 5-1, 5-5, 5-10, C1-8, and C1-16.

RESPONSE

Data describing NO_2, PM_{10}, and SO_2 for the No Action and DARHT Baseline Alternatives are presented in tables S-1, 5-5, C1-8, and C1-16. For other alternatives, these pollutants are compared in the text to the two alternatives mentioned above. Additional tabulated data are provided as appropriate, such as for the Enhanced Containment Alternative (see table 5-10).

The Air Quality sections and appendix C1 have been revised to better explain contributions to the NO_2, SO_2, and PM_{10} emissions. Air quality values in table S-1 have been revised to reflect the contribution from all applicable emissions sources for each alternative. All of the chapter 5 tables mentioned in the comment have been revised, several have been moved to appendix C1.

COMMENT CODE	LOCATION OF EIS REVISION(S)
3-2	None required.

RESPONSE

Table 5-5 (formerly table 5-6) presents emissions in terms of concentrations and compares these concentrations to regulatory limits. Table C1-3 presents emissions in terms of quantities per unit time.

COMMENT CODE	LOCATION OF EIS REVISION(S)
3-3	None required.

RESPONSE

Table C1-8 (formerly table 5-7) presents emissions in terms of concentrations and compares those concentrations to regulatory limits. Table C1-7 (formerly table C1-6) presents emissions in terms of quantities per unit time.

COMMENT CODE LOCATION OF EIS REVISION(S)

30-8 None required.

RESPONSE

Although the starting point of the uncontained detonations is a table at essentially ground level, the subsequent detonation results in the debris being moved as a buoyant cloud to a much higher effective release height. The debris cloud is generally characterized as a "stem and cap." Appendix H, section H.2.2 describes an evaluation done to determine if simpler, Gaussian plume modeling techniques could be used to approximate the stem and cap model. It was determined that an elevated Gaussian plume release could be used to conservatively simulate the "stem and cap" model.

COMMENT CODE LOCATION OF EIS REVISION(S)

30-9 None required.

RESPONSE

Alternatives that include uncontained detonations have lower nearby impacts [i.e., 0.9 mi (1.45 km) southwest] because of the greater dispersion of the elevated release.

COMMENT CODE LOCATION OF EIS REVISION(S)

30-10 Tables S-1, 3-3, 5-1, and C1-11

RESPONSE

Table S-1, and subsequent summaries in tables S-1 and 3-3, were revised to reflect the revised evaluation presented in table C1-11.

See response to comment 30-7.

COMMENT CODE LOCATION OF EIS REVISION(S)

30-11 Tables S-1, 3-3, 5-1, 5-10, and C1-11

RESPONSE

Differences between table 5-10 (formerly table 5-12) and tables S-1 and 3-3 were the result of errors computing or converting between fraction and percentage of the applicable regulatory limit. Values for table C1-11 (formerly table C1-8) were reevaluated, and the resultant tables 5-10 (formerly table 5-12), S-1, and 3-3 were revised. Consistency among tables has been maintained in the final EIS.

COMMENT CODE LOCATION OF EIS REVISION(S)

30-12 Sections 5.1.2.1.1, 5.2.2.1.1, 5.3.2.1, 5.4.2.1.1, 5.4.2.1.2, 5.5.2, and 5.6.2
Tables S-1, 3-3, 5-10, and C1-11

RESPONSE

See response to comment 30-11.

COMMENT CODE	LOCATION OF EIS REVISION(S)
30 - 13	None required.

RESPONSE

The numbers in question are for the the 30-year lifetime of the project. An average dose (0.02 rem annually) per worker would be an average of 0.6 rem over the 30-year project lifetime. Assuming 100 workers over the 30-year lifetime, the collective worker dose would be 60 person-rem. Both values should remain as stated in the tables.

COMMENT CODE	LOCATION OF EIS REVISION(S)
30 - 14	None required.

RESPONSE

As shown in table 3-3, it is estimated that worker doses under the Enhanced Containment Alternative would be about twice that of the uncontained alternatives. The estimated number of involved workers is the same as that for the uncontained alternatives.

COMMENT CODE	LOCATION OF EIS REVISION(S)
30 - 15	Section "Measurements and Conversions"

RESPONSE

The text of the EIS has been revised to incorporate this comment.

COMMENT CODE	LOCATION OF EIS REVISION(S)
30 - 16	None required.

RESPONSE

DOE appreciates this comment.

DOE has revised chapters 2 and 3 to better explain the purpose and need of DARHT and to provide additional clarification among the alternatives, as well as present the new Preferred Alternative, the Phased Containment Option of the Enhanced Containment Alternative. DOE believes that it has presented DARHT's unclassified unique capabilities, however, certain capabilities remain classified and are addressed in the classified supplement.

COMMENT CODE	LOCATION OF EIS REVISION(S)
30 - 17	None required.

RESPONSE

DOE has employed a professional technical editor to integrate the work of the many authors listed, and strives to prepare this NEPA review in plain (nontechnical) language to reduce the length of the document and increase public understanding. However, DOE is aware that hydrodynamic testing and the nuclear weapons program in general are highly technical, complicated topics.

The appendixes are necessarily more technical in nature and are intended to provide supporting information for specialists.

COMMENT CODE	LOCATION OF EIS REVISION(S)
30-18	None required.

RESPONSE

DOE has reviewed this suggestion and feels that the adding references to the sources of information in other parts of the EIS would make the table too congested. However, the comment is appreciated.

COMMENT CODE	LOCATION OF EIS REVISION(S)
30-19	Sections 5.1.2.1.1, 5.2.2.1.1, 5.3.2.1, 5.4.2.1.1, 5.4.2.1.2, 5.5.2, 5.6.2.1, and 5.6.2.2 Tables S-1, 3-3, 5-10, and C1-11

RESPONSE

The text and tables in the air quality sections have been revised to provide a more detailed explanation of assumptions used in modeling and description of impacts. All calculations and data presented in the tables have been reviewed for accuracy and consistency.

COMMENT CODE	LOCATION OF EIS REVISION(S)
30-20	None required.

RESPONSE

A NEPA review provides a comparative analysis of the environmental impacts of a proposal, and reasonable alternative ways of responding to the specified purpose and need [CEQ Regulations, 40 CFR 1502.13]. The "No Action Alternative" serves as a basis for comparison regarding the environmental impacts of the other alternatives, including the proposed action.

COMMENT CODE	LOCATION OF EIS REVISION(S)
30-21	None required.

RESPONSE

DOE does not believe that the action and alternatives analyzed in the DARHT EIS are connected to actions proposed for other parts of the weapons complex; therefore, the DARHT EIS does not predict impacts, including socioeconomic impacts, on other parts of the complex.

COMMENT CODE	LOCATION OF EIS REVISION(S)
30-22	Tables 5-4, 5-8, 5-9, 5-13, 5-14, 5-15, G-1, and G-2

RESPONSE

DOE agrees. The columns have been added.

COMMENT CODE	LOCATION OF EIS REVISION(S)
30 - 23	Sections 3.3.2, 3.3.8, 5.1.9, 5.7.2.2, I.3.1, and J.6.1 Tables I-14 and I-15

RESPONSE

As noted in the DARHT draft EIS section 2.1, some aspects of the hydrodynamic testing and dynamic experiment program, and the related environmental assessment of alternatives, are classified as Secret Restricted Data under the provisions of the Atomic Energy Act of 1954 as amended to protect national security. DOE prepared a classified supplement to the DARHT EIS that contains additional information and analysis. After review of this material, DOE determined that certain aspects of the impact analysis could be presented in an unclassified summary and made the summary available to the general public in May 1995. DOE has revised the EIS in several places to incorporate this information. See chapters 3 and 5 and appendixes I and J.

COMMENT CODE	LOCATION OF EIS REVISION(S)
31 - 1	Sections 3.3.4 and 3.10.5

RESPONSE

See response to comment 13-13.

COMMENT CODE	LOCATION OF EIS REVISION(S)
31 - 2	Sections 3.3.3 and 3.10.1.2

RESPONSE

The DARHT draft EIS does discuss the required infrastructure that is necessary to support hydrodynamic testing operations; see section 3.3.3. Using multiple sites to perform the necessary testing would be highly inefficient with regard to time and costs as discussed in section 3.10.1.2. DOE has revised these sections of the EIS for clarity.

COMMENT CODE	LOCATION OF EIS REVISION(S)
31 - 3	None required.

RESPONSE

See EIS volume 2 section 1.5 and response below.

The Congress established the national laboratories, under DOE's predecessor agencies, as competitive organizations. The labs are charged with responsibility for solving technological problems encountered in the various areas of DOE's mission. Although the labs compete with each other to obtain work in various portions of a program, they generally work hand-in-hand in sharing data to solve pieces of the puzzle.

COMMENT CODE	LOCATION OF EIS REVISION(S)
32 - 1	None required.

RESPONSE

DOE agrees.

COMMENT CODE	LOCATION OF EIS REVISION(S)
32 - 2	None required.

RESPONSE

DOE appreciates this comment.

COMMENT CODE	LOCATION OF EIS REVISION(S)
33 - 1	Section 4.2.6 Table C2-4

RESPONSE

The test was focused on shock and noise effects at Nake'muu. Other data were acquired as possible, but the test was not set up specifically for noise measurements in communities. The data obtained in communities were consistent with expectations and an extended set of tests under various atmospheric conditions does not seem justified in terms of time and cost. The data in table C2-4 have been reviewed and corrected.

A sound level of 60 dBA is characteristic of normal conversation level.

OMMENT CODE	LOCATION OF EIS REVISION(S)
33 - 2	None required.

ESPONSE

he discussion of cumulative impacts in the EIS addresses the potential impacts that are insignificant when iewed separately but may become significant when viewed together. The contribution to overall LANL missions of criteria pollutants under any of the alternatives analyzed in the DARHT EIS would be consequential in terms of cumulative impacts. DOE did not consider "heating" to be a potential environmental npact of concern; nor would DOE expect "heating" to vary among alternatives (that is, result in an nvironmental change or impact).

OMMENT CODE	LOCATION OF EIS REVISION(S)
33 - 3	None required.

ESPONSE

ible 4-4 was reproduced from the LANL 1992 Environmental Surveillance Report (LANL 1994a), which cludes potential impacts from dynamic experiments separately from point source emissions. Since material ages and potential impacts of the dynamic experiments at PHERMEX and DARHT are dealt with extensively ewhere in the EIS, both from past operations and for projected DARHT operations, DOE did not feel it was cessary to repeat impacts from dynamic experiments here.

pleted uranium emissions are the only type of uranium emissions from DARHT or PHERMEX.

COMMENT CODE — LOCATION OF EIS REVISION(S)

34-4 — None required.

RESPONSE

During the major construction that would be needed to implement the upgrade, the PHERMEX Facility would not be available to conduct tests. If DOE decides to pursue this alternative, when the upgrade is complete, the use would be identical to that described for the DARHT Baseline Alternative.

COMMENT CODE — LOCATION OF EIS REVISION(S)

34-5 — None required.

RESPONSE

A forest fire would impact surface water contaminant migration by increasing the amount of surface runoff available to mobilize and transport contaminants from the firing site to the canyon channels. The greater water volume in the channel system would increase flow rates, allow more contaminant mass in solution, and increase the erosion and transport of sediment-sorbed contaminants. As a result, the increased volume of water and contaminant mass would move through the channel system more rapidly. Recovery of grasses, forbs, and shrubs after a forest fire can be relatively rapid in comparison to the time required for conducting heavy metals away from a firing site.

However, the occurrence of forest fires and the recovery of the ecological system such that runoff returns to typical values can be problematical. The density of trees, the length of fire interval (and hence the density of fuel), and the type and porosity of soil all play a role in determining whether a burn is light or severe, and the depth to which roots are killed in the soil profile. The climatic conditions following a fire also play a significant role, especially precipitation and temperature. Drought conditions can delay recovery while daily thunderstorms, which provide a steady supply of soil moisture, can alleviate stress in trees and promote the germination of grasses, forbs, and shrubs. A study conducted in the wake of the La Mesa fire has shown that biomass production of grasses and forbs after two growing seasons was about 2.5 times that of a predominantly native grass cover of an open pine stand (Potter and Foxx 1992). This implies that runoff may return to typical values very quickly in response to regermination of grasses and forbs in impacted areas. Because release of heavy metals from firing sites is a long-term process, neglect of the potentially short-term impact of a forest fire seems reasonable.

Potter, L.D. and T. Foxx. 1981. *Postfire Recovery and Mortality of the Ponderosa Pine Forest after La Mesa Fire*, pages 39-55 in La Mesa Fire Symposium, held at Los Alamos, New Mexico, October 6-7, 1981. LA-9236-NERP. Los Alamos National Laboratory, Los Alamos, New Mexico.

COMMENT CODE — LOCATION OF EIS REVISION(S)

34-6 — None required.

RESPONSE

There could be some limitations. The containment vessel planned would have optical ports as would the optional extension modules, so a test would have to be configured to use the optical access as it would be available.

COMMENT CODE — LOCATION OF EIS REVISION(S)

35-1 — None required.

RESPONSE

See response to comment 28-2.

COMMENT CODE	LOCATION OF EIS REVISION(S)
35 - 2	None required.

RESPONSE

See response to comment 28-2.

COMMENT CODE	LOCATION OF EIS REVISION(S)
36 - 1	None required.

RESPONSE

The costs associated with decommissioning and cleanup are not considered to be discriminating factors among the alternatives. All of the alternatives, except building containment, including the Phased Containment Option of the Enhanced Containment Alternative (the Preferred Alternative), would conduct some level of open air testing continually through the life of the project.

The initial costs of the Phased Containment Option would be about $30 million higher than implementing the DARHT Baseline Alternative. However, the projected cost over the life of the project would not be substantially different.

Although the EIS does not provide a cost-benefit analysis or a detailed discussion of life-cycle costs, costs of the various alternatives are summarized in table 3-4. DOE believes that the revised Preferred Alternative, the Phased Containment Option of the Enhanced Containment Alternative, would be cost effective over the lifetime of the project.

COMMENT CODE	LOCATION OF EIS REVISION(S)
36 - 2	None required.

RESPONSE

The bulk of increased cost for the Enhanced Containment Alternative is due mainly to increased construction and operating costs of the vessels (Vessel Option) and the associated Recycling Facility, or containment building (Building Option). There would be some cost associated with small quantities of mixed waste; however, one of the purposes of the Recycling Facility would be to minimize the quantity of potential mixed waste generated.

COMMENT CODE	LOCATION OF EIS REVISION(S)
36 - 3	None required.

RESPONSE

The intent of the EIS is to examine potential environmental impacts from the proposed action. To this end, the EIS assumes that potential accidents occur on a "what if" basis, to provide a reasonable upper limit on environmental impacts without consideration of the reliability or probability of occurrence. Overall safety and reliability of hydrodynamic testing operations would be addressed as part of the overall LANL Industrial Safety and Explosive Safety Programs.

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COMMENT CODE	LOCATION OF EIS REVISION(S)
37 - 3	None required.

RESPONSE

See response to comment 20-9.

COMMENT CODE	LOCATION OF EIS REVISION(S)
37 - 4	None required.

RESPONSE

DOE appreciates this comment.

COMMENT CODE	LOCATION OF EIS REVISION(S)
38 - 1	None required.

RESPONSE

DOE agrees that the levels of contamination from PHERMEX operations are insignificant; however, DOE will continue to monitor all potential impacts associated with PHERMEX and DARHT. The actions taken to mitigate potential impacts from the course of action selected in the ROD following the DARHT EIS will be presented in the Mitigation Action Plan.

COMMENT CODE	LOCATION OF EIS REVISION(S)
38 - 2	None required.

RESPONSE

DOE appreciates this comment.

COMMENT CODE	LOCATION OF EIS REVISION(S)
39 - 1	None required.

RESPONSE

Construction of DARHT has ceased pending resolution of a court injunction issued in January, 1995.

COMMENT CODE	LOCATION OF EIS REVISION(S)
39 - 2	None required.

RESPONSE

See response to comment 17-4.

COMMENT CODE — LOCATION OF EIS REVISION(S)

39-3 — None required.

RESPONSE

See response to comment 17-12.

COMMENT CODE — LOCATION OF EIS REVISION(S)

40-1 — None required.

RESPONSE

See response to comment 10-1 and chapter 2.

COMMENT CODE — LOCATION OF EIS REVISION(S)

40-2 — None required.

RESPONSE

Because tests and their objectives can vary, there is no unique value for a source term per shot. The EIS discussions are based on average annual rates for the most part. If plutonium were used in a test, the assembly would be enclosed in a double-walled vessel and no release would be expected at the firing point, as the commenter suggests. However, there would be small impacts to the waste stream from the facility where the vessels are cleaned and materials are recovered.

COMMENT CODE — LOCATION OF EIS REVISION(S)

40-3 — Sections 5.1.9, 5.1.9.1, 5.1.9.2, 5.1.9.3, and I.3.1
Tables I-14 and I-15

RESPONSE

The DARHT EIS refers to two types of containment vessels: double-walled steel vessels which would be used for all dynamic experiments involving plutonium; and single-walled modular steel vessels used for hydrodynamic tests. For the single-walled modular containment vessels, DOE estimates that under normal operations there could be a release (a leak) along the joints of the vessels about 5 percent of the time. The 5-percent estimate was used as a "bounding analysis" to establish a very conservative estimate of the possibility of materials or contaminants being released to the outside environment and is not considered indicative of routine conditions. All accident scenarios in the DARHT EIS were done using a "what if" approach (see EIS appendix I.2). No attempt was made to ascribe probabilities to the likelihood of an accident, or to identify potential causes for an accident (e.g., fire, earthquake, or human error) or the probability for any given causal event to occur. Instead, the DARHT EIS looked at the environmental impacts that would be expected to occur if an accident occurred for any reason (regardless of probability or cause). The unclassified summary of the classified impact analysis indicates that the same "what if" approach was used for accident scenarios involving dynamic experiments with plutonium. Under one of the two accident scenarios analyzed, DOE looked at the environmental consequences expected to occur if the outer containment vessel were breached with a 1-in hole. The summary suggests that related DOE safety studies indicate that the probability of an accidental uncontained detonation of an experimental assembly containing plutonium would be less that 10^{-6} (less than one in a million) per year. The EIS has been revised to indicate the results of the classified impact analysis; see section 5.1.9 and appendix I. Also, there has not been a breach of a containment vessel (inner or outer wall) during the operating history of PHERMEX

COMMENT CODE	LOCATION OF EIS REVISION(S)
40 - 4	None required.

RESPONSE

See response to comment 17-41 and response below.

The likelihood of an accident involving a test assembly containing plutonium at DARHT or PHERMEX is considered to be an extremely unlikely (annual probability of occurrence of 10^{-4} to 10^{-6}) to incredible (annual probability of occurrence of less than 10^{-6}) based on related LANL safety studies. For the EIS, impacts of accidents were evaluated without considering this very low probability of occurrence. DOE believes that an appropriate way to evaluate potential impacts of a hypothetical release of plutonium is to investigate postulated impacts to humans. It is very likely that any contamination from such a release would be subject of rigorous and immediate intervention and remediation activities to reduce potential impacts. The effect of these efforts would be difficult to quantify in a generic, prospective evaluation. Evaluation of impacts from postulated soil contamination from such a hypothetical release would have a great amount of uncertainty associated with it, would be extremely difficult to do in a credible manner, and would add little substantive information due to the low probability of occurrence.

COMMENT CODE	LOCATION OF EIS REVISION(S)
40 - 5	None required.

RESPONSE

DOE agrees that the cost of cleanup in the event of an accidental plutonium release could be expensive, however, the probability of occurrence of such a release is considered to be less than one in a million per year. However, the types of dynamic experiments that would be conducted in the future at DARHT or PHERMEX could not result in a nuclear explosion or nuclear yield; therefore, infrastructure damage or contamination in the event of an accident would be localized with the exception of airborne aerosolized particles.

COMMENT CODE	LOCATION OF EIS REVISION(S)
40 - 6	None required.

RESPONSE

Discussion of the recent fire is included in section 4.9 of the EIS. Procedures are being revised to prevent this kind of incident in the future. Potentially exposed response personnel, such as fire fighters, are trained and have appropriate equipment to respond to this type of incident in a safe manner. The change in procedures will mandate a more protective response mode.

COMMENT CODE	LOCATION OF EIS REVISION(S)
40 - 7	None required.

RESPONSE

DOE appreciates this comment.

RESPONSES

COMMENT CODE	LOCATION OF EIS REVISION(S)
40 - 13	None required.

RESPONSE

Under the No Action Alternative, DOE would continue to conduct hydrodynamic testing and dynamic experiments using the facilities at PHERMEX and FXR as appropriate to address stockpile issues. These capabilities fall short of those believed necessary by DOE and several review panels (see EIS section 2.1); therefore, the No Action Alternative could eventually impact national security. In turn, some as yet unidentified scenarios might cause socioeconomic impacts. Such a scenario is too speculative for this NEPA action. The decision to pursue DARHT technology comes not from analyses in this EIS but from the President and Congress.

COMMENT CODE	LOCATION OF EIS REVISION(S)
40 - 14	None required.

RESPONSE

DOE agrees. The current stockpile is approaching an age that has not been experienced before; thus, the risk of encountering problems is increased.

COMMENT CODE	LOCATION OF EIS REVISION(S)
40 - 15	None required.

RESPONSE

DOE agrees.

COMMENT CODE	LOCATION OF EIS REVISION(S)
40 - 16	None required.

RESPONSE

Aspects that would be affected by tests at the proposed DARHT Facility would be safety, performance, and reliability. "Security" refers to aspects of nuclear weapons such as mechanical or electronic means to thwart unauthorized use of the weapon, or aspects of physical security such as guards or secure storage facilities that are used to protect weapons from unauthorized access. Security of nuclear weapons is an issue that will not be evaluated by tests at the DARHT Facility.

COMMENT CODE	LOCATION OF EIS REVISION(S)
40 - 17	None required.

RESPONSE

DOE appreciates this comment.

MENT CODE	LOCATION OF EIS REVISION(S)
4-18	Sections Executive Summary, 1.3, 3.7, 5 Intro, 5.4.1.1, 5.4.1.3, 5.4.2.1.2, 5.4.3.3, 5.4.4.1, 5.4.4.2, 5.4.3.3, 5.4.5.1.1, 5.4.6.1.1, 5.4.7.2, 5.4.8.2, 5.4.9.2, 5.4.10, 5.4.10.3, 5.4.11.2, D.5, E3.5, H.5.2

ESPONSE

Response to comment 3-1.

MENT CODE	LOCATION OF EIS REVISION(S)
4-19	None required.

ESPONSE

OE agrees with the comment. Although the need for DARHT is premised on the need for enhanced radiographic ydrodynamic testing capability, skilled personnel are necessary to utilize the DARHT equipment, conduct the ss and interpret the results. Use of enhanced radiographic hydrodynamic testing is expected to play a key role science-based stockpile stewardship; see section 2.2.2 of the EIS.

MENT CODE	LOCATION OF EIS REVISION(S)
4-20	None required.

ESPONSE

Response to comment 36-1.

MENT CODE	LOCATION OF EIS REVISION(S)
4-21	Sections Executive Summary, 1.3, 3.7, 5 Intro, 5.4.1.1, 5.4.1.3, 5.4.2.1.2, 5.4.3.3, 5.4.4.1, 5.4.4.2, 5.4.3.3, 5.4.5.1.1, 5.4.6.1.1, 5.4.7.2, 5.4.8.2, 5.4.9.2, 5.4.10, 5.4.10.3, 5.4.11.2, D.5, E3.5, H.5.2

ESPONSE

Response to comment 3-1.

MENT CODE	LOCATION OF EIS REVISION(S)
4-22	None required.

ESPONSE

OE appreciates this comment.

COMMENT CODE	LOCATION OF EIS REVISION(S)
40 - 23	None required.

RESPONSE

Bounding accidents for DARHT and PHERMEX operations were identified and selected for analysis in a Preliminary Hazards Analysis (appendix I, section I.1). Accident consequences were examined on a "what if" basis, that is, assuming that the accident does occur (probability = 1) and examining the consequences. The parameters of the hypothetical detonated assembly (i.e., mass of high explosive and depleted uranium) were selected to maximize the potential consequences. These assumptions resulted in bounding cases that encompass possible impacts from detonations of different types of assemblies.

COMMENT CODE	LOCATION OF EIS REVISION(S)
41 - 1	None required.

RESPONSE

See EIS volume 2 section 1.5.

COMMENT CODE	LOCATION OF EIS REVISION(S)
41 - 2	None required.

RESPONSE

DOE believes that chapters 1, 2, 3, and 4 provide adequate background information, and chapter 5 provides adequate information on potential impacts of the alternatives.

COMMENT CODE	LOCATION OF EIS REVISION(S)
41 - 3	None required.

RESPONSE

An EIS provides a comparative analysis of environmental impacts that would be expected from the various alternatives. An EIS is not intended to analyze other types of impacts, such as mission or cost impacts. However, in table 3-4 DOE has provided a summary of these other types of considerations to assist the reader.

COMMENT CODE	LOCATION OF EIS REVISION(S)
41 - 4	Sections Executive Summary, 1.3, 3.7, 5 Intro, 5.4.1.1, 5.4.1.3, 5.4.2.1.2, 5.4.3.3, 5.4.4.1, 5.4.4.2, 5.4.3.3, 5.4.5.1.1, 5.4.6.1.1, 5.4.7.2, 5.4.8.2, 5.4.9.2, 5.4.10, 5.4.10.3, 5.4.11.2, D.5, E3.5, H.5.2

RESPONSE

See response to comment 3-1.

COMMENT CODE	LOCATION OF EIS REVISION(S)
41 - 5	None required.

RESPONSE

See response to comment 40-13.

COMMENT CODE — LOCATION OF EIS REVISION(S)

42-1 — None required.

RESPONSE

DOE agrees. The current stockpile is approaching an age that has not been experienced before; thus, the risk of encountering problems is increased.

COMMENT CODE — LOCATION OF EIS REVISION(S)

42-2 — None required.

RESPONSE

DOE agrees.

COMMENT CODE — LOCATION OF EIS REVISION(S)

42-3 — Sections Executive Summary, 1.3, 3.7, 5 Intro, 5.4.1.1, 5.4.1.3, 5.4.2.1.2, 5.4.3.3, 5.4.4.1, 5.4.4.2, 5.4.3.3, 5.4.5.1.1, 5.4.6.1.1, 5.4.7.2, 5.4.8.2, 5.4.9.2, 5.4.10, 5.4.10.3, 5.4.11.2, D.5, E3.5, H.5.2

RESPONSE

See response to comments 13-9 and 3-1.

COMMENT CODE — LOCATION OF EIS REVISION(S)

43-1 — None required.

RESPONSE

All comments received from the public are given equal consideration. DOE staff and management meet with members of interest groups, and meetings are encouraged if the stated concerns are credible.

COMMENT CODE — LOCATION OF EIS REVISION(S)

43-2 — None required.

RESPONSE

DOE agrees that the operation of PHERMEX has provided a necessary component in the U.S. nuclear testing program. The level of environmental impact by 30 years of operation is considered to be negligible.

COMMENT CODE — LOCATION OF EIS REVISION(S)

43-3 — None required.

RESPONSE

See response to comment 36-1.

COMMENT CODE	LOCATION OF EIS REVISION(S)
44 - 1	None required.

RESPONSE

The technology proposed for DARHT is still considered to be state of the art. As stated in the EIS, section 3.5.2, the DOE considers enhanced radiography to be the best currently available tool to obtain certain kinds of information regarding the effects of aging on the safety and reliability of weapon primaries.

COMMENT CODE	LOCATION OF EIS REVISION(S)
44 - 2	Section 2.3.2

RESPONSE

A problem similar to that of the W-68 system might be addressed using hydrodynamic testing in the absence of nuclear testing. The hydrodynamic tests would use replacement explosives and mock nuclear components to simulate the W-68 warhead. DARHT technology would be critical for this because of the performance issues concern the configurations of ultra-dense pit materials near the end of the implosion. See section 2.3.2.

COMMENT CODE	LOCATION OF EIS REVISION(S)
44 - 3	Sections Executive Summary, 1.3, 3.7, 5 Intro, 5.4.1.1, 5.4.1.3, 5.4.2.1.2, 5.4.3.3, 5.4.4.1, 5.4.4.2, 5.4.3.3, 5.4.5.1.1, 5.4.6.1.1, 5.4.7.2, 5.4.8.2, 5.4.9.2, 5.4.10, 5.4.10.3, 5.4.11.2, D.5, E3.5, H.5.2

RESPONSE

See response to comment 3-1.

COMMENT CODE	LOCATION OF EIS REVISION(S)
44 - 4	None required.

RESPONSE

As discussed in the DARHT EIS, the need for DARHT is based on national policy. Nuclear weapons are not considered obsolete and remain a vital part the U.S. policy on deterrence. The number and type of weapons in the national arsenal, particularly in the nuclear weapons stockpile, are established annually by the President and Congress; DOE is required to provide the support required to ensure the nuclear weapons stockpile remains safe, secure, and reliable.

COMMENT CODE	LOCATION OF EIS REVISION(S)
44 - 5	None required.

RESPONSE

See response to comment 17-12.

OMMENT CODE	LOCATION OF EIS REVISION(S)
4-6	None required.

ESPONSE

OE agrees.

OMMENT CODE	LOCATION OF EIS REVISION(S)
4-7	None required.

ESPONSE

e response to comment 17-1 and EIS volume 2 section 1.5.

OMMENT CODE	LOCATION OF EIS REVISION(S)
4-8	None required.

ESPONSE

s discussed in the DARHT EIS (section 2.3.1), computer modeling and hydrodynamic testing are the key tools urrently used to gather data regarding nuclear weapon primaries. These two tools had been used in the past in onjunction with the Nevada Test Site underground nuclear testing program. It would not be possible to provide ufficient predictive data of the certainty needed to provide a high confidence level in the safety and reliability of he stockpile if computer modeling were the only means of gathering data.

OMMENT CODE	LOCATION OF EIS REVISION(S)
4-9	None required.

ESPONSE

s stated in the EIS, section 2.2.1, nuclear deterrence remains a cornerstone U.S. policy, and the U.S. will ontinue to rely on DOE to maintain a safe, secure, and reliable nuclear weapons stockpile. DOE recognizes that ndividual citizens may disagree with this policy, and that is their right.

OMMENT CODE	LOCATION OF EIS REVISION(S)
4-10	Sections Executive Summary, 1.3, 3.7, 5 Intro, 5.4.1.1, 5.4.1.3, 5.4.2.1.2, 5.4.3.3, 5.4.4.1, 5.4.4.2, 5.4.3.3, 5.4.5.1.1, 5.4.6.1.1, 5.4.7.2, 5.4.8.2, 5.4.9.2, 5.4.10, 5.4.10.3, 5.4.11.2, D.5, E3.5, H.5.2

ESPONSE

he EIS examines the potential toxicological and radiological impacts from routine and accidental releases of epleted uranium, beryllium, and other materials from DARHT and PHERMEX. Results of these evaluations for he No Action (current program) and other alternatives analyzed in the DARHT EIS are presented in chapter 5.

COMMENT CODE	LOCATION OF EIS REVISION(S)
44 - 11	None required.

RESPONSE

The President and Congress have directed the DOE to maintain the nuclear weapons complex and to ensure the safety, security, and reliability of the nuclear weapons stockpile. Thus, the actions discussed in the DARHT EIS remain tied to U.S. weapons policy regarding the safety and reliability of nuclear weapons, rather than the design or development of new weapons. The level of detail in this EIS is considered adequate for a project-specific analysis.

COMMENT CODE	LOCATION OF EIS REVISION(S)
44 - 12	Sections Executive Summary, 1.3, 3.7, 5 Intro, 5.4.1.1, 5.4.1.3, 5.4.2.1.2, 5.4.3.3, 5.4.4.1, 5.4.4.2, 5.4.5.1.1, 5.4.6.1.1, 5.4.7.2, 5.4.8.2, 5.4.9.2, 5.4.10, 5.4.10.3, 5.4.11.2, 5.5.7.2, 5.5.7.3, 5.5.7.4, D.5, E3.5, and H.5.2

RESPONSE

The comment correctly points out an error in the costs shown for the Plutonium Exclusion Alternative; the text of the EIS has been revised accordingly. See section 5.5.7.2.

Although the EIS does not provide a cost-benefit analysis or a detailed discussion of life-cycle costs, costs of the various alternatives are summarized in table 3-4. DOE believes that the revised Preferred Alternative, the Phased Containment Option of the Enhanced Containment Alternative, would be cost effective over the lifetime of the project. The comment correctly notes that the initial cost of the Phased Containment Option would be about $30 million higher than DARHT alone. However, the projected cost over the life of the project would not be substantially different among alternatives.

COMMENT CODE	LOCATION OF EIS REVISION(S)
44 - 13	None required.

RESPONSE

DOE agrees.

COMMENT CODE	LOCATION OF EIS REVISION(S)
44 - 14	None required.

RESPONSE

DOE appreciates this comment.

COMMENT CODE	LOCATION OF EIS REVISION(S)
44 - 15	None required.

RESPONSE

The NEPA review process is conducted in set stages, each stage tending to supersede the previous stages. For example, a Notice of Intent published in the *Federal Register* (FR) indicates the preliminary thinking of what the scope of an EIS would be, but the scope may change in either the draft or final EIS. [See CEQ regs. 40 CFR 1502.9, 1508.22, 1508.22, and 1508.25]. Under the DOE NEPA process, an Implementation Plan is provided to the public to, among other things, indicate the results of the public scoping process [10 CFR 1021.312]. Appendix A of the DARHT EIS Implementation Plan contains the text of the DOE's Notice of Intent to prepare the DARHT EIS. In the Notice DOE stated that it did not intend to analyze issues or alternatives in the DARHT EIS beyond the construction and operation of DARHT. Therefore, issues such as the Nation's nuclear weapons policies, the DOE stockpile stewardship mission, or continued operation of other (unrelated) facilities at LANL were not considered. See sections 2.6 and 3.10 of the DARHT EIS.

COMMENT CODE	LOCATION OF EIS REVISION(S)
44 - 16	Section 3.6

RESPONSE

DOE agrees with this comment and, although this was mentioned in the draft EIS in table 3-5, DOE has revised the EIS to better explain the programmatic and cost implications of this alternative. See section 3.6.

COMMENT CODE	LOCATION OF EIS REVISION(S)
44 - 17	Section 3.6

RESPONSE

DOE agrees; the text has been revised. See section 3.6.

COMMENT CODE	LOCATION OF EIS REVISION(S)
44 - 18	Section 2.1

RESPONSE

See response to comment 11-5.

COMMENT CODE	LOCATION OF EIS REVISION(S)
44 - 19	None required.

RESPONSE

DOE agrees; these problems are currently being encountered at the PHERMEX Facility.

COMMENT CODE	LOCATION OF EIS REVISION(S)
44 - 20	None required.

RESPONSE

See response to comment 44-12.

COMMENT CODE	LOCATION OF EIS REVISION(S)
44 - 21	Sections Executive Summary, 1.3, 3.7, 5 Intro, 5.4.1.1, 5.4.1.3, 5.4.2.1.2, 5.4.3.3, 5.4.4.1, 5.4.4.2, 5.4.3.3, 5.4.5.1.1, 5.4.6.1.1, 5.4.7.2, 5.4.8.2, 5.4.9.2, 5.4.10, 5.4.10.3, 5.4.11.2, D.5, E3.5, H.5.2

RESPONSE

See response to comment 3-1.

COMMENT CODE	LOCATION OF EIS REVISION(S)
44 - 22	None required.

RESPONSE

DOE believes that the current stockpile is safe on the basis of surveillance and testing. The uncertainties of the stockpile do not pertain to the existing stockpile but rather center on the effects of aging on the stockpile and on the potential of new safety scenarios or issues. DOE needs to ensure that the stockpile remains safe in the future. The existing stockpile is still within its design life, but as time goes on the stockpile will have aged beyond a point that has not been proven to be safe or reliable.

COMMENT CODE	LOCATION OF EIS REVISION(S)
44 - 23	None required.

RESPONSE

The enhanced technology proposed for DARHT would use higher energies which would allow scientists to look more deeply into a surrogate weapons system. This approach would provide more information on the interactions that take place during at later times during a test and allows scientists to make better predictions regarding the effects of aging on actual weapons in the stockpile.

COMMENT CODE	LOCATION OF EIS REVISION(S)
44 - 24	Section 2.3.2

RESPONSE

The EIS has been revised to accommodate this comment. See section 2.3.2.

COMMENT CODE	LOCATION OF EIS REVISION(S)
44 - 25	None required.

RESPONSE

Previously, nuclear tests (underground and above ground) and hydrodynamic tests were used to verify the computational codes, then the computer codes were used to predict what would be expected. Without underground testing the level of detail and amount of information available from hydrodynamic testing becomes more important. Models, calculations, and computer simulations need empirical data in order to build accurate models.

The enhanced capability proposed for DARHT would provide significantly increased levels of information over PHERMEX and FXR, information needed in this environment of no underground testing.

COMMENT CODE LOCATION OF EIS REVISION(S)

44-26 Section 2.3.2

RESPONSE

See response to comments 18-29 and 18-8.

COMMENT CODE LOCATION OF EIS REVISION(S)

44-27 None required.

RESPONSE

The number of tests and experiments planned for any given year depends more on cost and programmatic considerations than the technology used. Although scientists expect to obtain more information per test event if the enhanced technology planned for DARHT were used, the number of tests and experiments is expected to remain generally constant under any alternative analyzed in the DARHT EIS.

COMMENT CODE LOCATION OF EIS REVISION(S)

44-28 Section 2.2.1

RESPONSE

See response to comment 13-9.

COMMENT CODE LOCATION OF EIS REVISION(S)

44-29 None required.

RESPONSE

See response to comment 44-12.

COMMENT CODE LOCATION OF EIS REVISION(S)

44-30 None required.

RESPONSE

DOE agrees that for some projects a higher cost is offset by environmental benefits.

COMMENT CODE LOCATION OF EIS REVISION(S)

44-31 None required.

RESPONSE

DOE agrees.

COMMENT CODE	LOCATION OF EIS REVISION(S)
44 - 32	Section 2.5

RESPONSE

Seeresponse to comment 11-5.

COMMENT CODE	LOCATION OF EIS REVISION(S)
45 - 1	Section 2.1

RESPONSE

See response to comment 13-9.

COMMENT CODE	LOCATION OF EIS REVISION(S)
45 - 2	None required.

RESPONSE

DOE considers the statements in the EIS of purpose and need for DARHT to be accurate. Enhanced radiography capability is essential to ensure the safety and reliability of the existing stockpile. If the comment is suggesting that DOE plans to use DARHT as a design facility, it must be pointed out that this is against current national policy. However, if national policy were to dictate the design of nuclear weapons, then DARHT would be used to assist those efforts.

COMMENT CODE	LOCATION OF EIS REVISION(S)
45 - 3	None required.

RESPONSE

If the presence of such a sensor affected the geometry of the pit or the high explosive around it, hydrodynamic testing might be needed to evaluate the way in which the altered geometry might affect the hydrodynamic phase of the weapon's action.

COMMENT CODE LOCATION OF EIS REVISION(S)

18.4 None required.

RESPONSE

Neither FXR nor PHERMEX is adequate to provide the experimental data needed to ensure the continued safety, performance, and reliability of the stockpile in the absence of nuclear testing. The enhanced capability proposed for DARHT would be expected to provide significantly better resolution which is needed to resolve detailed implosion features necessary to address issues related to nuclear weapon primaries that will arise in the enduring stockpile. In addition, DARHT capability would provide this high-resolution data from two different angles giving information about asymmetries that may be especially important in assessing the possible results of an accident, and about time evolution of an implosion.

FXR and PHERMEX have been adequate for the design of new weapons in the past because they were used in conjunction with nuclear testing, that is, results from FXR or PHERMEX were used in the process that was finally validated with a nuclear test at DOE's Nevada Test Site. In the absence of nuclear testing, much better experimental data (higher resolution, more images) are needed to provide the required information. The JASON report on Science Based Stockpile Stewardship (JSR-94-345, November, 1994) strongly supports the need for advanced radiographic capabilities.

In an absolute sense, FXR by itself is inadequate to provide the needed data because no experiments involving plutonium are conducted there, and the capability to obtain additional data on plutonium is important.

COMMENT CODE LOCATION OF EIS REVISION(S)

45.5 None required.

RESPONSE

DOE agrees that the existing stockpile remains safe, secure, and reliable. The existing stockpile is not considered to be at risk because of a program of continuous surveillance, repair, and replacement of components and subsystems [see O'Leary quote in box in chapter 2 of the EIS]. The concern lies with the future stockpile since current U.S. policy dictates that the existing stockpile remain active past its design life.

COMMENT CODE LOCATION OF EIS REVISION(S)

45.6 None required.

RESPONSE

See response to comments 18-8, 18-9 and 18-29.

COMMENT CODE LOCATION OF EIS REVISION(S)

45.7 None required.

RESPONSE

See response to comment 18-8.

COMMENT CODE	LOCATION OF EIS REVISION(S)
45 - 8	None required.

RESPONSE

Both LANL and LLNL have been doing experiments to improve resolution of existing radiographic and accelerator equipment. One technique is called "spot collimation." In this technique, LLNL uses a gamma-ray camera, and the radiographic spot is collimated with a small tungsten hole thereby reducing the spot size; however, the loss in x-ray quantity is significant, and the field of view available for radiography is also substantially reduced. It is true that by using this technique FXR can obtain a spot size as small as that anticipated from the enhanced techniques developed for DARHT. The performance parameters for these shots were approximately: a spot size of 0.05 in (1.2 mm) and an x-ray quantity of 50R at a distance of 3.28 ft (1 m). DARHT's parameters are a spot size of 0.05 in (1.2 mm) and an x-ray quantity of 350R at a distance of 3.28 ft (1 m). Resolution depends on both the x-ray quantity and the spot size. Consequently, DOE does not agree that the recent tests at FXR gave resolution as good as that which would be expected from DARHT. The enhanced techniques proposed for DARHT could also employ gamma-ray camera technology. Consequently, the images that could be produced using the enhanced techniques developed for DARHT would be expected to be of higher resolution than at FXR. For example, the quantum noise level would be expected to be about 2.6 times lower at DARHT. The dual-axis capability proposed to be employed at DARHT would also have two or more such images with a much wider field of view than the single image obtained at FXR. See: Watson, S., et. al. *A Figure of Merit for Dense Object Flash Radiographic Systems*, LANL- M-4:GR-93-02., and, Mueller, K., *Limiting Performance of Flash Radiographic Systems,* LANL-M-4:GR-92-13, for more information.

COMMENT CODE	LOCATION OF EIS REVISION(S)
45 - 9	None required.

RESPONSE

Dr. Sack was a member of the Hydrotest Program Assessment Independent Consultants (HPAIC) team that reviewed the technology proposed for DARHT in 1992. In that report, Dr. Sack includes a dissenting point of view regarding the need for two axis over one axis for enhanced hydrodynamic testing capability.

DOE and its predecessor agencies have maintained two weapons physics laboratories since the 1950s to promote peer review and healthy discussion among its researchers. DOE encourages a full and open technical discussion among scientists at the laboratories and recognizes that this approach leads to reasoned dissent rather than informed consensus in some cases. DOE acknowledges that Dr. Sack has made important contributions and is highly regarded. DOE has determined that the technology proposed for DARHT via the Enhanced Containment Alternative--Phased Containment Option--is its preferred approach to meeting its need for enhanced radiographic hydrodynamic capability, and respects the right of individual professionals within its laboratory complex to hold differing points of view.

Dr. Sack participated on the recent JASON panel regarding the need for nuclear testing (JASON 1995). That panel concluded that in order to maintain high confidence in the safety, reliability, and performance of the enduring stockpile under a CTBT, the U.S. must maintain an active stockpile stewardship program including the type of capabilities proposed for DARHT.

COMMENT CODE	LOCATION OF EIS REVISION(S)
45-10	None required.

RESPONSE

The draft interagency stockpile stewardship document, dated February 1995, is the rough draft of the "Stockpile Stewardship Program Plan for Fiscal Years 1995 through 1997." When issued, this document satisfies a requirement for the DOE and DOD to issue an annual report on stockpile stewardship activities to the National Security Council (NSC). The stockpile stewardship activities to be documented are defined in the November 1993 *Presidential Decision Directive*. The preliminary draft referred to was prepared as an unclassified working draft for the weapons laboratories (LANL, LLNL, and SNL) and the DOD to comment on and eventually to develop as a joint DOE/DOD report. This draft contains no input from these organizations but does contain extracts from previous reports and from the initial FY 1996 laboratory budget request submitted in April of 1994 as a means of soliciting the correct input for the 1995 report. Initial drafts of this report are written to be unclassified to facilitate the early stages of writing and review. Later drafts and the final report will be classified at the Secret Restricted Data (SRD) level because of the specificity with which weapons activities are discussed.

The Stockpile Stewardship Program Plan as described above should not be confused with the DOE's Office of Defense Programs "Stockpile Stewardship and Management Program" report, which was issued in May of 1995.

COMMENT CODE	LOCATION OF EIS REVISION(S)
45-11	None required.

RESPONSE

Technical work for the Phase II Study of a radio frequency weapon was completed in March 1995; a final report is currently in preparation.

COMMENT CODE	LOCATION OF EIS REVISION(S)
45-12	None required.

RESPONSE

See response to comment 24-4.

COMMENT CODE	LOCATION OF EIS REVISION(S)
45-13	None required.

RESPONSE

The President and Congress have directed the DOE to maintain the nuclear weapons complex and ensure the safety, security, and reliability of the nuclear weapons stockpile, and have appropriated funds accordingly.

The NOI for the programmatic EIS on Stockpile Stewardship and Management [60 FR 31291] states that the capability for enhanced radiographic hydrodynamic testing will remain an integral part of the program under all alternatives analyzed. The purpose of the DARHT EIS is to examine the potential environmental impacts of the various alternatives for accomplishing the DOE proposal to acquire enhanced radiographic hydrodynamic capability.

COMMENT CODE	LOCATION OF EIS REVISION(S)
45 - 14	None required.

RESPONSE

See response to comment 30-17.

COMMENT CODE	LOCATION OF EIS REVISION(S)
45 - 15	None required.

RESPONSE

See response to comments 17-12 and 44-4.

COMMENT CODE	LOCATION OF EIS REVISION(S)
45 - 16	None required.

RESPONSE

See response to comment 17-4.

COMMENT CODE	LOCATION OF EIS REVISION(S)
45 - 17	None required.

RESPONSE

See response to comment 18-23.

COMMENT CODE	LOCATION OF EIS REVISION(S)
45 - 18	None required.

RESPONSE

See response to comment 17-12.

COMMENT CODE	LOCATION OF EIS REVISION(S)
45 - 19	None required.

RESPONSE

The weapons mission of the DOE is established by law, and DOE and its predecessor agencies established LANL as a weapons research laboratory.

COMMENT CODE	LOCATION OF EIS REVISION(S)
45 - 20	None required.

RESPONSE

DOE agrees.

COMMENT CODE	LOCATION OF EIS REVISION(S)
5-21	None required.

RESPONSE

DOE agrees.

COMMENT CODE	LOCATION OF EIS REVISION(S)
5-22	None required.

RESPONSE

DOE agrees.

COMMENT CODE	LOCATION OF EIS REVISION(S)
5-23	None required.

RESPONSE

DOE agrees that the alternatives analyzed present a range of reasonable ways to address the purpose and need, and that there are various pros and cons, such as cost, beyond the environmental impacts.

COMMENT CODE	LOCATION OF EIS REVISION(S)
45-24	None required.

RESPONSE

See response to comment 36-1.

COMMENT CODE	LOCATION OF EIS REVISION(S)
45-25	Sections 5.2.1 and 2.3.1

RESPONSE

Further clarification of the DARHT mission, purpose, and use are reflected in the revised chapter 2 of the final EIS.

An EIS is prepared to provide and analyze environmental information, not to justify the stated purpose and need for a proposal.

See responses to comments 3-1 and 30-17.

COMMENT CODE	LOCATION OF EIS REVISION(S)
45-26	None required.

RESPONSE

See response to comment 30-17.

MENT CODE	LOCATION OF EIS REVISION(S)
.32	None required.

ONSE

n and its radioactive progeny generated in the outdoor environment would not be a concern because they l be subject to immediate atmospheric dispersion that would reduce potential environmental concentrations significant levels. Naturally-occurring radon and radon progeny in indoor environments, such as unventilated ents, are of potentially far greater concern.

MENT CODE	LOCATION OF EIS REVISION(S)
5-33	None required.

SPONSE

E is committed to keeping radiation exposure to members of the public and workers from DOE activities to As w As Reasonably Achievable (ALARA) level, which is a standard radiation protection practice. Based on ings and recommendations of the International Commission for Radiological Protection (ICRP), and the ional Council on Radiation Protection and Measurements (NCRP), DOE believes that there is an acceptable level of risk for exposure to radiation. While improving technical capabilities and meeting operational goals important, the potential environmental impacts must be carefully examined, and DOE is committed to ntifying and examining potential impacts.

MENT CODE	LOCATION OF EIS REVISION(S)
5-34	None required.

SPONSE

OE's proposal for enhanced radiographic capability responds to the direction of the President to ensure the ity, security, and reliability of the nuclear weapons stockpile. DOE is committed to environmental remediation past DOE activities at LANL and all other DOE sites that may have resulted in unacceptable risks to the ulation and environment.

MMENT CODE	LOCATION OF EIS REVISION(S)
5-35	None required.

ESPONSE

epleted or "spent" uranium is a mixture of isotopes of uranium that is depleted in the U-235 isoptope to some vel less than the nominal 0.7 percent (by mass) occurring in natural uranium. The terms "depleted" or "spent" ave been in common use for decades and have no implication regarding to the hazard evaluation of uranium xcept to describe the change in the relative mixture of isotopes (see Glossary in the EIS).

COMMENT CODE	LOCATION OF EIS REVISION(S)
45 - 36	None required.

RESPONSE

The wording of the Comprehensive Test Ban Treaty (CTBT) remains to be negotiated and ratified by the treaty parties. DOE believes that means to ensure the safety and reliability of its enduring stockpile, such as its proposal to acquire enhanced radiographic hydrodynamic capability analyzed in the DARHT final EIS, will enable this Nation to pursue its goals of maintaining a comprehensive ban on nuclear testing, whether through a formal treaty such as the CTBT, or through a self-imposed moratorium as is now the case. As long as the United States retains nuclear weapons, it will be concerned with their safety and reliability. Without nuclear testing hydrodynamic tests and dynamic experiments are a vital means for assessing safety and reliability.

See response to comment 17-4.

COMMENT CODE	LOCATION OF EIS REVISION(S)
45 - 37	None required.

RESPONSE

See EIS volume 2 section 1.5.

COMMENT CODE	LOCATION OF EIS REVISION(S)
45 - 38	None required.

RESPONSE

See response to comment 12-1.

COMMENT CODE	LOCATION OF EIS REVISION(S)
45 - 39	None required.

RESPONSE

In a judgment filed in U.S. District Court, Albuquerque, New Mexico, on May 5, 1995, Judge Mechem ordered DOE to "prepare a comprehensive environmental impact statement of the [DARHT] facility at Los Alamos National Laboratories [sic], as announced in their Notice of Intent ..." The NOI stated, "DOE does not intend, in [the DARHT] EIS, to analyze alternatives or issues beyond the construction and operation of DARHT that relate to the Nation's nuclear weapons policies, the DOE mission of stockpile stewardship and management, the mission of LANL, or continued operation of other facilities at LANL [59 FR 60134]."

"Bomb production," whether at LANL or elsewhere, is not a "connected action" to providing enhanced hydrodynamic test capability, or the construction and operation of DARHT, as that term is defined by regulations [40 CFR 1508.25 (a)(1)]. Accordingly, the DARHT EIS does not consider the production of nuclear weapons.

RESPONSE

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MENT CODE	LOCATION OF EIS REVISION(S)
4-48	None required.

SONSE

air sampling stations, onsite in TA-15, were put in place during 1993. See section 4.2.5. However, analysis ANL environmental surveillance data for 1993 has not yet been completed by LANL and is not available. ils available for other air monitoring stations, particularly the LANL perimeter stations for years before 1993 ate very low to nondetectable concentrations of materials (mainly uranium), which could have originated at ERMEX. Also, usage of these materials has decreased at PHERMEX over the years, so any detected centrations would be expected to be less. Since the two stations in question are onsite in the middle of TA-15 would be of limited use in estimating potential impacts offsite.

MMENT CODE	LOCATION OF EIS REVISION(S)
4-49	None required.

SPONSE

ould DOE be restructured or merged with another Federal agency, both of which have happened in the past, E would not expect such an administrative change to affect this proposed action. Regardless of what agency inisters the stewardship of the nuclear weapons stockpile, the Nation needs to ensure that the weapons in the ockpile remain safe, secure, and reliable. The DOE's proposal to obtain enhanced capability for radiographic ydrodynamic testing responds to a national need to ensure the safety, performance, and reliability of nuclear apons; that need will persist regardless of administrative details.

The Department of Defense (DOD) has endorsed the need for the proposed DARHT facility in response to this IS, as well as on numerous other occasions. See letter 1 from the Assistant to the Secretary of Defense for mic Energy, Dr. Harold P. Smith. Dr. Smith has testified several times before Congressional hearings regarding e need for enhanced hydrodynamic test capability as characterized by the DARHT proposal, the need and ing for the facility, and potential uses for the capability that DARHT would provide. In December 1994, then ty Secretary of Defense, John Deutch, formally declared that the Nation needs the high-resolution, ee-dimensional radiographic capability that DARHT would provide. DOD has been consulted throughout the sign and development of the DARHT facility and throughout this NEPA review. DOE has no reason to doubt at DOD would accept the proposal described in this EIS, and would endorse the DOE's decisions regarding ether or not to proceed with DARHT or one of the other alternatives analyzed in this EIS.

OMMENT CODE	LOCATION OF EIS REVISION(S)
45-50	None required.

ESPONSE

See response to comment 44-9.

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COMMENT CODE	LOCATION OF EIS REVISION(S)
45 - 61	None required.

RESPONSE

See response to comment 17-4.

COMMENT CODE	LOCATION OF EIS REVISION(S)
46 - 1	None required.

RESPONSE

In response to public and DOE concern regarding timeliness of its environmental reviews, in July 1994 the Secretary of Energy instituted a NEPA policy which directed the agency to reduce the median time for preparing an EIS from 33 months to 15 months. This means that half of all DOE EISs will be completed in less than 15 months. DOE felt that the DARHT EIS could be completed in less than 15 months and established a working schedule of 10 months, from Notice of Intent to Record of Decision. DOE is not in a position to speak to issues that may drive the schedules of NEPA reviews of other Federal agencies.

COMMENT CODE	LOCATION OF EIS REVISION(S)
46 - 2	None required.

RESPONSE

See response to comment 45-39.

COMMENT CODE	LOCATION OF EIS REVISION(S)
46 - 3	*None required.*

RESPONSE

Chapter 5 of the EIS addresses environmental impacts of DARHT operations. These evaluations reveal that no cancer deaths are expected from any action at DARHT involving depleted uranium or other materials. As noted in the unclassified supplement, there is a very small possibility of up to 12 latent cancer fatalities in the event of any accident breach of a double-walled containment vessel involving a dynamic experiment with plutonium.

COMMENT CODE	LOCATION OF EIS REVISION(S)
47 - 1	None required.

RESPONSE

DOE appreciates this comment.

COMMENT CODE	LOCATION OF EIS REVISION(S)
47 - 2	Index

RESPONSE

An index has been included in the final EIS.

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COMMENT CODE	LOCATION OF EIS REVISION(S)
47 - 8	None required.

RESPONSE

As the nuclear weapons stockpile decreases to the lower levels established by the President and Congress, DOE is tasked with dismantling the weapons returning from the stockpile. Some of the components removed from returned weapons are discarded, some are destroyed, some are recycled, and some are stored. Some series of weapons had aged beyond their design life at the time they were retired and some had not. The hydrodynamic testing and dynamic experiment programs, and the resultant number of "shots" described in the DARHT EIS are considered to provide a "bounding analysis" for forecasting environmental impacts; the actual impacts from testing and experiment programs in any given year would be expected to fall within this boundary of impacts. However, these programs are not correlated to the number of weapons being retired from the stockpile.

COMMENT CODE	LOCATION OF EIS REVISION(S)
47 - 9	None required.

RESPONSE

See response to comment 17-4.

COMMENT CODE	LOCATION OF EIS REVISION(S)
47 - 10	Section 2.5

RESPONSE

See response to comment 11-5 and response below.

DARHT technology is the potential issue to treaty participants, rather than the amount of money invested. As discussed in the response to comment 47-9, the treaty signatories are well aware of the technology and its implementation.

COMMENT CODE	LOCATION OF EIS REVISION(S)
47 - 11	None required.

RESPONSE

The core competencies are the essential knowledge and expertise, such as computing, scientific, engineering, and material property expertise required to design, engineer, test, and produce nuclear weapons. Such expertise is also essential to conduct safe dismantlement in the United States and elsewhere, to assess nuclear weapon proliferation activities, and to respond to nuclear incidents and devise counter-proliferation measures. See also the DOE's "*The Stockpile Stewardship and Management Program: Maintaining Confidence in the Safety and Reliability of the Enduring U.S. Nuclear Weapon Stockpile.*"

COMMENT CODE	LOCATION OF EIS REVISION(S)
47 - 12	Section 2.1

RESPONSE

See response to comment 11-5.

COMMENT CODE	LOCATION OF EIS REVISION(S)
47 - 13	None required.

RESPONSE

The use of hydrodynamic testing by declared nuclear weapons states has no bearing on the ability to detect proliferation by other nations. Thresholds of detection by seismic means are a greater than the energy release of high explosives in a hydrodynamic test. Mining activities also routinely produce explosives at and considerably beyond the explosive energy of a hydrodynamic test. Nations acting outside the Non-Proliferation Treaty could conduct such experiments provided they were not detectable by other means, independent of the use of hydrodynamic testing by the declared nuclear weapons states.

COMMENT CODE	LOCATION OF EIS REVISION(S)
47 - 14	None required.

RESPONSE

DOE agrees, as stated in the EIS, that in the 1980s DARHT (as then proposed) was intended to assist in designing new nuclear weapons and replacement parts. Since then, the U.S. has determined that in an era of a reduced nuclear weapons stockpile there is no need in the foreseeable future for new-design nuclear weapons.

COMMENT CODE	LOCATION OF EIS REVISION(S)
47 - 15	None required.

RESPONSE

Typical examples of industrial uses might be explosive forming of complicated shapes or explosive welding. However, such details are not now known because such applications of DARHT are somewhat speculative and because much industrial research is proprietary. Industry might want to use DARHT capability to better understand how a metal flows under extreme conditions produced by explosives.

COMMENT CODE	LOCATION OF EIS REVISION(S)
47 - 16	None required.

RESPONSE

Before the nuclear testing moratorium imposed by the President in 1993, DOE used nuclear testing in conjunction with hydrodynamic testing to evaluate the safety, performance, and reliability of the nuclear weapons stockpile. Computational models were verified by observing the results of both hydrodynamic tests and nuclear tests. Since the testing moratorium, increased capabilities for hydrodynamic testing are even more important in verifying the stockpile characteristics and capabilities. DOE believes that increased hydrodynamic testing capabilities can go far in replacing the nuclear testing capabilities no longer available.

COMMENT CODE **LOCATION OF EIS REVISION(S)**

47 - 17 None required.

RESPONSE

The stated 18 percent funding increase (actually 16.9 percent) referred to in the question is correct for the overall level of funding for the weapons program at Los Alamos but does not represent the level of support for the activities which include hydrodynamic testing at facilities like DARHT. These activities are referred to as the "Core" in the table below, including the Los Alamos Meson Physics Facility (LAMPF)/Los Alamos Neutron Scattering Center (LANSCE) funding and about half of the Advanced Strategic Computing Initiative (ASCI) funding represent the operating expense at Los Alamos devoted to stockpile stewardship activities. Based on the President's budget submission for FY 1996, Core funding, unadjusted for inflation, is actually scheduled to decrease in FY 1996 by about 3 percent relative to FY 1995 and by almost 11 percent relative to FY 1994. Including the relevant parts of ASCI and LAMPF/LANSCE (see notes below) within the definition of "Core" activities shows only a modest increase over FY 1995 and will result in an inflation-adjusted decrease in the level of activity. The hydrodynamic testing portion of the Core is undergoing a similar contraction, but not as severe because of the recognized utility of such testing to stockpile stewardship.

The DOE funding in research, development, and testing (RD&T) budget line (currently referred to as "Weapons Stockpile Stewardship" (WSS) for LANL are given below for FY 1994-1996 in thousands of dollars.

Category	FY 1994	FY 1995	FY 1996
Construction	35.5	21.9	39.9
Capital Equipment	25.4	19.9	19.2
Technology Transfer	34.1	35.5	43.6
Education	4.1	6.3	6.3
Inertial Confinement Fusion (ICF)	20.2	21.0	21.8
ASCI	0.0	0.0	15.0
LAMPF/LANSCE	3.5	7.0	24.8
Subtotal	122.8	111.6	170.6
Core	217.7	200.2	193.9
Total WSS	340.5	311.8	364.4

Notes: 1) A construction increase in FY 1996 is due to a commitment to fund Advanced Testing Line for Actinide Separation (ATLAS) construction: 2) about one-half of ASCI funding supports commercial hardware vendors; 3) an increase in LAMPF/LANSCE funding between FY 1995 and FY 1996 is due to DOE Defense Programs assuming responsibility for the operation of the LAMPF accelerator from DOE's Office of Energy Research.

COMMENT CODE **LOCATION OF EIS REVISION(S)**

47 - 18 Section 3.3.4

RESPONSE

See response to comments 13-13 and 31-3.

COMMENT CODE	LOCATION OF EIS REVISION(S)
47 - 19	None required.

RESPONSE

The President and Congress have directed the DOE to maintain the nuclear weapons complex and to ensure the safety, security, and reliability of the nuclear weapons stockpile, and have appropriated funds accordingly. It is not the policy of the U.S. to just "limp along" because confidence in the nuclear weapons stockpile would be reduced. DOE believes it has clearly stated the need for the project.

See response to comment 13-7.

COMMENT CODE	LOCATION OF EIS REVISION(S)
48 - 1	None required.

RESPONSE

DOE agrees that the confidence in the U.S. nuclear weapons stockpile would be reduced if hydrodynamic testing proposed for DARHT were not performed.

COMMENT CODE	LOCATION OF EIS REVISION(S)
48 - 2	None required.

RESPONSE

DOE agrees.

COMMENT CODE	LOCATION OF EIS REVISION(S)
48 - 3	Sections 2.1 and 2.3.1

RESPONSE

Chapter 2 has been revised to provide additional information and clarity.

See response to comment 45-14.

COMMENT CODE	LOCATION OF EIS REVISION(S)
48 - 4	None required.

RESPONSE

See response to comment 44-12.

COMMENT CODE	LOCATION OF EIS REVISION(S)
49 - 1	None required.

RESPONSE

Based on findings and recommendations of the International Commission for Radiological Protection (ICRP) and the National Council on Radiation Protection and Measurements (NCRP), DOE believes that there is an acceptable level of risk for exposure to radiation. DOE is committed to keeping radiation exposure to members of the public and workers from DOE activities to As Low As Reasonably Achievable (ALARA) levels.

COMMENT CODE	LOCATION OF EIS REVISION(S)
49 - 2	None required.

RESPONSE

The United States has decided, as a Nation, to maintain a nuclear deterrent as a cornerstone of its national defense. While DOE respects the right of individual citizens to hold a different point of view, DOE agrees with the President and the Congress that nuclear weapons have proven to be an effective deterrent over the past several decades.

COMMENT CODE	LOCATION OF EIS REVISION(S)
49 - 3	None required.

RESPONSE

DOE agrees that potential impacts from depleted uranium, which is simply uranium that is diminished in the U-235 isotope to levels below those of naturally-occurring uranium, need to be examined. The EIS includes a comprehensive examination of the potential impacts from use of depleted uranium at DARHT.

COMMENT CODE	LOCATION OF EIS REVISION(S)
49 - 4	None required.

RESPONSE

See response to comment 44-9.

COMMENT CODE	LOCATION OF EIS REVISION(S)
50 - 1	None required.

RESPONSE

DOE does not agree that a weapon system would become more reliable with age. In addition, nuclear deterrence remains a cornerstone of U.S. policy and has not lost any importance.

COMMENT CODE	LOCATION OF EIS REVISION(S)
50-2	Section 2.3.2

RESPONSE

The impediments are not so much in remanufacturing per se, but in reestablishing the manufacturing capability for processes that have been shut down, and in assuring that the products from replicated processes are sufficiently similar to the original products. Some processes, such as fabrication that occurred at Rocky Flats (now closed), would be quite expensive to replicate. For some remanufactured nuclear components, the only way to reduce uncertainty in their performance--short of nuclear testing--would be hydrodynamic testing.

COMMENT CODE	LOCATION OF EIS REVISION(S)
50-3	None required.

RESPONSE

The need to ensure the safety and reliability of the nuclear weapons stockpile deals with the future stockpile as it ages past its design life. The current stockpile is considered to be safe and reliable. See statements by Secretary O'Leary quoted in section 2.3.2 of the EIS.

COMMENT CODE	LOCATION OF EIS REVISION(S)
50-4	None required.

RESPONSE

See response to comment 17-4.

COMMENT CODE	LOCATION OF EIS REVISION(S)
51-1	None required.

RESPONSE

See response to comment 45-44.

COMMENT CODE	LOCATION OF EIS REVISION(S)
51-2	None required.

RESPONSE

Today, development of new-design nuclear weapons for introduction into the stockpile is counter to U.S. policy. However, it is also U.S. policy (see the DOD Nuclear Posture Review, EIS section 2.2.2) to maintain that capability. Because information on almost any aspect of weapons can be applied to design, it would be difficult to only study weapon safety and reliability without other possible uses for such data. DARHT is intended to aid in evaluating and certifying weapon safety, performance, and reliability, not to develop new weapons. Such development would be beyond the scope of current U.S. policy.

The function of the surveillance program is to maintain the status of systems and to identify any problems. If a problem is found in the future with nuclear components, hydrodynamic testing would be needed to address its performance. Enhanced hydrodynamic testing is judged to be a much more effective tool in the long run.

COMMENT CODE	LOCATION OF EIS REVISION(S)
51 - 3	None required.

RESPONSE

The Department does not consider the JASON Report to have a conflict of interest and respects the integrity of the report. The loss of underground testing certainly does leave a void that is necessary to fill. This is one of the objectives of the DARHT Facility.

COMMENT CODE	LOCATION OF EIS REVISION(S)
51 - 4	None required.

RESPONSE

The President has determined that the United States will not test or deploy new nuclear weapons, and the DOE is strictly adhering to this policy. Under current policy, DARHT will be used only for addressing the safety, performance, and reliability of existing weapons and will not be used to design new weapons.

COMMENT CODE	LOCATION OF EIS REVISION(S)
51 - 5	None required.

RESPONSE

DOE strongly disagrees. This is the very core of the justification for the DARHT Facility. The improved diagnostics are essential to obtaining data, especially with a moratorium on underground testing. Computational resources are used in conjunction with the hydrodynamic testing to continually provide a refinement of the computer modeling.

COMMENT CODE	LOCATION OF EIS REVISION(S)
51 - 6	None required.

RESPONSE

Even rebuilt weapons would have to be certified with respect to their safety and performance. In the absence of nuclear testing, an improved understanding for the physical processes during the late stages of an implosion would necessitate the use of hydrodynamic testing to certify systems.

COMMENT CODE	LOCATION OF EIS REVISION(S)
51 - 7	Section 2.3.2

RESPONSE

Chapter 2 is modified in the final EIS to clarify and better support the purpose and need. The additional information presented is attributable in part to the Stockpile Stewardship and Management Program Plan issued by the DOE in May 1995 and also to clarify some potentially sensitive issues.

See responses to comments 18-8, 18-9 and 18-29.

COMMENT CODE	LOCATION OF EIS REVISION(S)
52 - 1	None required.

RESPONSE

"Safe," in any practical use of the word, always carries with it a stated or implied level of acceptable risk. Safety of nuclear weapons implies a very low, but not unobtainably low, probability of accidental detonations.

COMMENT CODE	LOCATION OF EIS REVISION(S)
52 - 2	Section 2.3.2

RESPONSE

See response to comment 51-7.

COMMENT CODE	LOCATION OF EIS REVISION(S)
52 - 3	None required.

RESPONSE

See response to comment 17-4.

COMMENT CODE	LOCATION OF EIS REVISION(S)
52 - 4	None required.

RESPONSE

DOE has examined the potential environmental impacts of all of the aspects noted in this comment; results of these evaluations for all alternatives are presented in chapter 5. DOE believes that construction and operations of DARHT will not degrade nuclear safety but, in fact, will result in improved nuclear weapons safety with no unacceptable impacts to the environment.

COMMENT CODE	LOCATION OF EIS REVISION(S)
53 - 1	None required.

RESPONSE

The example given in section 2.3.2. of the DARHT EIS regarding weapons safety, the W68 high explosive aging, and the need to replace certain materials upon remanufacture, is drawn from the Miller Report.

See response to comments 18-29 and 18-8.

COMMENT CODE	LOCATION OF EIS REVISION(S)
53 - 2	Sections 3.3.2, 3.3.8, 5.1.8, 5.1.9, 5.4.8, 5.4.9, 5.4.10.3, 5.7.2.2, I.3.1, and J.6.1 Tables I-14 and I-5

RESPONSE

See response to comment 14-3.

COMMENT CODE	LOCATION OF EIS REVISION(S)
53 - 3	None required.

RESPONSE

See response to comment 13-5.

COMMENT CODE	LOCATION OF EIS REVISION(S)
53 - 4	None required.

RESPONSE

See response to comment 44-9.

COMMENT CODE	LOCATION OF EIS REVISION(S)
53 - 5	None required.

RESPONSE

See response to comment 13-3.

COMMENT CODE	LOCATION OF EIS REVISION(S)
53 - 6	None required.

RESPONSE

The World Court, formally named the International Court of Justice, was established by charter of the United Nations and is the UN's principal judicial body. Jurisdiction of its 15 judges is limited to legal disputes among the UN parties, but the Court may choose to consider cases involving political questions. In 1993, the Court agreed to give an advisory opinion on the question: "In view of the health and environmental effects, would the use of nuclear weapons by a State in time of war or other armed conflict be a breach of its obligations under international law including the [World Health Organization] Constitution?" The Court invited written statements from appropriate entities and extended the deadline for submitting these until June 20, 1995. The Court has not yet released copies of any statements received and has not indicated when, if at all, it intends to issue its opinion. The opinion is expected to be limited to the actual use of nuclear weapons, not the threat of nuclear weapons or other policy issues regarding nuclear weapons, nuclear deterrence, or nonproliferation. Any opinion issued would be advisory only, and not binding on any member of the UN. DOE does not expect that such an advisory opinion, in and of itself, would result in a reversal of the U.S. policy that nuclear deterrence will remain a cornerstone of this Nation's defense.

COMMENT CODE	LOCATION OF EIS REVISION(S)
53 - 7	None required.

RESPONSE

It is against current U.S. policy to design and develop new nuclear weapons, thus, DARHT is not now intended for that role. Previously, when this country was designing new nuclear weapons, a combination of hydrodynamic testing, nuclear testing, and other tools were necessary. The nuclear weapons role for DARHT now is to address issues concerning stockpile safety and reliability.

COMMENT CODE	LOCATION OF EIS REVISION(S)
53 - 8	None required.

RESPONSE

See EIS volume 2 section 1.5.

COMMENT CODE	LOCATION OF EIS REVISION(S)
53 - 9	None required.

RESPONSE

See response to comment 17-18.

COMMENT CODE	LOCATION OF EIS REVISION(S)
53 - 10	None required.

RESPONSE

DOE does not agree that the completion and operation of the DARHT facility at LANL "would influence" any decisions regarding locating nuclear weapons manufacturing facilities at LANL. First, DOE and its predecessor agencies have maintained hydrodynamic testing capability at LANL for over 50 years. While DARHT, and most of the other alternatives analyzed in this EIS, would provide enhanced diagnostic capability, the proposal would not involve changing the existing mission assignments at LANL. Second, because this Nation does not anticipate the need for new-design nuclear weapons in the foreseeable future, DOE has no need to redevelop a large-capacity nuclear weapons production complex at any site, let alone LANL. Third, while DOE recognizes the need to maintain and repair existing nuclear weapons and is directed by DOD to maintain the capability to manufacture some number of new nuclear weapons (see Notice of Intent, Stockpile Stewardship and Management PEIS, 59 FR 54175), DOE does not consider the capability to fabricate weapons components, whether this capability resides at LANL or elsewhere, as a connected action to provide enhanced hydrodynamic testing capability or to the construction and operation of DARHT, as that term is defined by regulation [40 CFR 1508.25(a)(1)].

See EIS volume 2 section 1.5.

COMMENT CODE	LOCATION OF EIS REVISION(S)
53 - 11	Section 2.6 and volume 2, section 1.5.

RESPONSE

Please refer to the text in section 2.6 and EIS volume 2 section 1.5 for information on the relationship of the DARHT EIS to other DOE EISs.

COMMENT CODE	LOCATION OF EIS REVISION(S)
53 - 12	None required.

RESPONSE

While the proposed facilities would be sited at an area (TA-15) without a deep borehole in the immediate proximity, to claim there is no information on the geology at the DARHT site is incorrect. The geology of the Los Alamos area is not random. It is entirely reasonable and appropriate to infer, based on continuity principles, that the layered, trending geologic structure that appears in the surrounding wells (e.g., DT-5A, DT-10, PM-2, and PM-4) will appear at the DARHT and PHERMEX locations also. Geologic inference based on interpolation of stratigraphies at various locations, coupled with an understanding of the formation processes of the geologic structures, provides a great deal of information. Furthermore, the modeling results for flow and transport in the vadose (unsaturated) zone are relatively insensitive to our uncertainty in the exact thickness of the various units, as the hydrologic properties of these units are not dramatically different.

The potential migration of heavy metals and radioactive materials into the ground water is presented in sections 5.1.4.2, 5.2.4.2, and 5.4.4.2.

COMMENT CODE	LOCATION OF EIS REVISION(S)
53 - 13	None required.

RESPONSE

The DOE has issued the "Interim Management of Nuclear Materials draft EIS" [DOE EIS-0220D, March 1995], which looks at alternatives for the stabilization of various isotopes of nuclear materials at its Savannah River Site (SRS). Currently, the materials are temporarily stored in solution form in tanks at SRS. Due to safety concerns, DOE proposes to process the materials into different forms that would be more suitable for long-term storage. One of the many isotopes analyzed in the Interim Management draft EIS is plutonium-242. The Interim Management EIS discusses various options for processing solutions containing plutonium-242 and analyzes the environmental impacts of the various options. DOE decisions on how to meet its need for enhanced radiographic hydrodynamic testing, including construction and operation of DARHT, do not depend on the decisions it will make regarding its need to stabilize plutonium solutions at SRS. Accordingly, reprocessing SRS plutonium-242 material, and its transport, are not "connected actions" within the meaning of NEPA [40 CFR 1508.25(a)(1)] to the DOE hydrodynamic test proposal and are not discussed in the DARHT EIS.

COMMENT CODE	LOCATION OF EIS REVISION(S)
53 - 14	Sections 3.3.2, 3.3.8, 5.1.9, 5.1.9.1, 5.1.9.2, 5.1.9.3, 5.4.9, 5.7.2.2, and I.3.1 Tables I-14 and I-15

RESPONSE

See response to comment 10-6.

COMMENT CODE	LOCATION OF EIS REVISION(S)
53 - 15	Section 3.4

RESPONSE

As stated in section 3.4, the DARHT EIS does include a consideration of simply upgrading PHERMEX in the No Action Alternative. The No Action Alternative is not static; under this alternative DOE would continue to use PHERMEX well into the next century to provide hydrodynamic test capability (but would not achieve the enhanced capability discussed in the DARHT EIS). This would include occasional maintenance and operating upgrades but would not include a major overhaul of the type of technology used at PHERMEX. The EIS has been revised to clarify this point. See section 3.4. The Upgrade PHERMEX Alternative, in contrast analyzes the environmental impacts that would be expected if DOE were to upgrade PHERMEX with the enhanced dual-axis radiographic capability proposed for DARHT (see Section 3.6), which could be characterized as "move DARHT to PHERMEX".

COMMENT CODE	LOCATION OF EIS REVISION(S)
53 - 16	None required.

RESPONSE

See response to comment 45-8.

COMMENT CODE	LOCATION OF EIS REVISION(S)
53 - 17	Section 3.10.3

RESPONSE

See response to comment 45-45.

COMMENT CODE	LOCATION OF EIS REVISION(S)
53 - 18	None required.

RESPONSE

See response to comment 17-4.

COMMENT CODE	LOCATION OF EIS REVISION(S)
53 - 19	None required.

RESPONSE

The purpose of the EIS is to examine the potential environmental impacts for the various alternatives for accomplishing the proposed action.

There are no agreements at this time for international oversight of DARHT or other aspects of U.S. stockpile stewardship, other than existing verification agreements on nuclear testing and certain agreements related to the phased dismantlement for START I and II levels. Such measures would only be applied to DARHT pursuant to hypothetical international agreements, which would be carefully reviewed to assure consistency with U.S. national security.

COMMENT CODE	LOCATION OF EIS REVISION(S)
53 - 20	Section 3.3

RESPONSE

The EIS examines the environmental impacts from various alternative operating modes to conduct the needed hydrodynamic tests and dynamic experiments. Some of these alternatives could constrain certain types of experiments that might be needed; these programmatic constraints are noted in the EIS in table 3-4, section 3.11. The Plutonium Exclusion Alternative examined the expected environmental impacts if DOE imposed a programmatic constraint to not use the DARHT facility for dynamic experiments involving plutonium; the EIS provides a "bounding analysis" of environmental impacts expected from the largest testing and experiment program that DOE believed could be needed. DOE recognizes - and the text of the EIS has been revised to clarify - that the actual testing program may have programmatic constraints due to a variety of reasons, such as annual testing needs, funding considerations, or amelioration of potential environmental impacts.

COMMENT CODE	LOCATION OF EIS REVISION(S)
53 - 21	None required.

RESPONSE

See response to comment 53-7.

COMMENT CODE	LOCATION OF EIS REVISION(S)
53 - 22	None required.

RESPONSE

See EIS volume 2 section 1.5.

COMMENT CODE	LOCATION OF EIS REVISION(S)
53 - 23	None required.

RESPONSE

DOE policy is to comply with all applicable environmental laws and regulations, both in current practice and in correcting problems arising from past practice. Some compliance problems necessarily take time and funds to remediate; these should not be a barrier to the current DOE mission. Under current U.S. policy, the DARHT Facility would not be used to design and develop new weapons.

COMMENT CODE	LOCATION OF EIS REVISION(S)
53 - 24	None required.

RESPONSE

The DOE supports U.S. policy to enter a comprehensive test ban along with alternate means to provide assurance of stockpile safety, reliability, and performance. Enhanced radiographic hydrodynamic testing and the ability to understand and analyze the stockpile are essential to its stewardship.

COMMENT CODE	LOCATION OF EIS REVISION(S)
53 - 25	None required.

RESPONSE

The United States has decided, as a Nation, to maintain a nuclear deterrent as a cornerstone of its national defense. While DOE respects the right of individual citizens to hold a different point of view, DOE agrees with the President and the Congress that nuclear weapons have proven to be an effective deterrent over the past several decades.

See response to comment 17-4.

COMMENT CODE	LOCATION OF EIS REVISION(S)
53 - 26	None required.

RESPONSE

As stated in the EIS, section 2.2.1, nuclear deterrence remains a cornerstone of U.S. policy, and the U.S. will continue to rely on DOE to maintain a safe, secure, and reliable nuclear weapons stockpile. Reliability of the stockpile is a key component of effective nuclear deterrence. DOE recognizes that individual citizens may disagree with this policy, as is their right.

COMMENT CODE	LOCATION OF EIS REVISION(S)
53 - 27	None required.

RESPONSE

DOE believes that its facilities, including LANL, should be operated in accordance with all applicable laws and in a way that protects the environment. Like essentially all Federal agencies, DOE has compiled a set of rules, regulations, orders, and procedures in an attempt to ensure all relevant laws and other requirements are met. DOE is now reviewing its orders and other requirements, as part of the administration's initiatives to reinvent government, to eliminate unnecessary paperwork and oversight.

COMMENT CODE	LOCATION OF EIS REVISION(S)
53 - 28	None required.

RESPONSE

DOE agrees.

COMMENT CODE	LOCATION OF EIS REVISION(S)
53 - 29	None required.

RESPONSE

DOE agrees.

COMMENT CODE	LOCATION OF EIS REVISION(S)
53 - 30	None required.

RESPONSE

We do not foresee "undiscovered" problems with one-point safety. However, there is a continuing need to evaluate safety in a variety of accident scenarios that previously may not have been considered or were unable to be analyzed.

COMMENT CODE	LOCATION OF EIS REVISION(S)
53 - 31	None required.

RESPONSE

The DOE is aware of the value of the Miller report. See section 2.3.2 in the final EIS.

COMMENT CODE	LOCATION OF EIS REVISION(S)
53 - 32	None required.

RESPONSE

Safety problems could also result from changes introduced in remanufacturing, or even aging, such as degradation of fire-resistant features. This aging example might not require enhanced radiographic hydrodynamic test capability to evaluate, but would need the enhanced capability to certify the reliability and performance of a remanufactured component.

COMMENT CODE	LOCATION OF EIS REVISION(S)
53 - 33	None required.

RESPONSE

DOE agrees that safety is a key concern regarding the future nuclear weapons stockpile. One-point safety is the assurance that if a weapon's high explosive is detonated at any one point, as could occur in an accident, there would be less than one-chance-in-a-million that more than four pounds (TNT equivalent) of nuclear yield could result. This is a key criterion for current U.S. weapons design. Four pounds of nuclear yield would be expected to cause localized dispersion of plutonium or other material, but would not release intense radiation. In the past, not all U.S. weapons were designed to be one-point safe.

COMMENT CODE	LOCATION OF EIS REVISION(S)
53 - 34	None required.

RESPONSE

DOE appreciates this comment.

COMMENT CODE	LOCATION OF EIS REVISION(S)
53 - 35	None required.

RESPONSE

See response to comment 28-1.

COMMENT CODE	LOCATION OF EIS REVISION(S)
53-36	None required.

RESPONSE

See response to comment 28-1.

COMMENT CODE	LOCATION OF EIS REVISION(S)
53-37	Section 3.3

RESPONSE

Static radiographs in the parlance used in the nuclear weapons program are radiographs taken when the weapon or mock weapon is in its initial condition before an experiment or a test, i.e. before the high explosive charge is detonated. Static radiographs, for instance, were routinely taken at the Nevada Test Site of devices to be tested underground and are routinely taken of the test assemblies in the above-ground hydrodynamic testing program. Dynamic radiographs, on the other hand, are defined as radiographs taken of test assemblies shortly after the high explosive has been set off and are often taken at the time of simulated maximum criticality.

The purpose of a static radiograph prior to a hydrodynamic test is to assure the experimenter that the test assembly has been constructed properly and/or has not suffered an unacceptable or unknown change since assembly or that the test assembly is properly aligned. Thus a static radiograph provides a picture of the initial condition of the test assembly and, hence, defines the initial condition of an experiment. Dynamic radiographs are compared to the static radiograph to evaluate the degree of change during experiment.

Static radiographs can also be part of a surveillance program, but these radiographs can be done without using DARHT facilities.

COMMENT CODE	LOCATION OF EIS REVISION(S)
53-38	None required.

RESPONSE

See response to comment 13-3.

COMMENT CODE	LOCATION OF EIS REVISION(S)
53-39	None required.

RESPONSE

There have been numerous issues related to weapon primary design or engineering that required evaluation to assure continued weapon safety and reliability. Without nuclear testing, such problems would often require hydrodynamic testing along with computations and other data or experiments as a principal means for evaluation and resolution. Of the weapon systems that have entered the stockpile since 1970, almost half required post-deployment nuclear testing to address, verify, or resolve issues associated with the safety or reliability of the weapon primary design. See discussion in section 2.3.2 of the EIS. "The seven weapons that will be in the enduring START II stockpile have already been retrofitted to varying degrees and some have had major components of the nuclear system replaced" (Secretary of Energy O'Leary, April 1995).

COMMENT CODE	LOCATION OF EIS REVISION(S)
53 - 40	Section 2.3.2

RESPONSE

See response to comment 13-6.

COMMENT CODE	LOCATION OF EIS REVISION(S)
53 - 41	None required.

RESPONSE

See response to comment 51-2.

COMMENT CODE	LOCATION OF EIS REVISION(S)
53 - 42	None required.

RESPONSE

As discussed in the EIS section 2.3, hydrodynamic testing is used to assess weapons safety, performance, and reliability; evaluate aging weapons; and increase understanding of weapons physics as well as other uses noted in section 2.3.4.

COMMENT CODE	LOCATION OF EIS REVISION(S)
53 - 43	None required.

RESPONSE

It is against current U.S. policy to use DARHT or PHERMEX to design new nuclear weapons. The descriptions of average annual expenditures of materials, such as depleted uranium, beryllium, lead, etc., as given in tables 3-4 and B-4, provide a better basis for estimating impacts to the environment because of the variability among individual tests as shown in table B-3.

COMMENT CODE	LOCATION OF EIS REVISION(S)
53 - 44	None required.

RESPONSE

The environmental impact analysis in the DARHT EIS is based on a "bounding analysis," that is, an analysis of the greatest number of test shots that would be anticipated under the foreseeable testing program. This analysis identifies the resulting environmental impacts and represents the upper boundary of impacts; essentially all actual impacts would be expected to be less, or within the boundary of impacts analyzed. DOE points out in several places in the DARHT EIS that the Nation does not intend to pursue new-weapon designs in the foreseeable future, and that DOE does not intend to use DARHT for this purpose. In chapter 5, DOE indicates that the actual impacts of hydrodynamic testing would vary depending on the number and size of tests, materials, and facility design; not by the intended application of test results.

COMMENT CODE	LOCATION OF EIS REVISION(S)
53 - 45	None required.

RESPONSE

DOE recognizes that not all individual citizens agree with the course of action directed by the President and Congress, particularly in matters related to nuclear deterrence and stewardship of the enduring nuclear weapons stockpile. The DARHT EIS presents a course of action that would meet the needs of the nuclear weapons stockpile. The suggested approach is not considered viable.

See response to comment 13-3.

COMMENT CODE	LOCATION OF EIS REVISION(S)
53 - 46	None required.

RESPONSE

While DOE agrees that the likelihood of all the weapons in the stockpile experiencing problems at the same time is extremely low, DOE would like to point out that this is not at issue. What is at issue is the safety and reliability that the nuclear weapons stockpile will be facing in the form of post-design life aging problems not previously encountered. This does not mean, however, that all weapons will fail at once.

COMMENT CODE	LOCATION OF EIS REVISION(S)
53 - 47	None required.

RESPONSE

See response to comment 13-3.

COMMENT CODE	LOCATION OF EIS REVISION(S)
53 - 48	None required.

RESPONSE

Although fundamental scientific knowledge about physical processes can be used for a variety of purposes, the DARHT capabilities are to be directed at understanding and resolving safety and reliability problems in the weapons stockpile. Hydrodynamic test capabilities were a known factor for parties to the nonproliferation treaty.

See response to comment 17-4.

COMMENT CODE	LOCATION OF EIS REVISION(S)
53 - 49	None required.

RESPONSE

See EIS volume 2 section 1.5.

COMMENT CODE	LOCATION OF EIS REVISION(S)
53 - 55	None required.

RESPONSE

See response to comment 18-8.

COMMENT CODE	LOCATION OF EIS REVISION(S)
53 - 56	None required.

RESPONSE

See EIS volume 2 section 1.5.

COMMENT CODE	LOCATION OF EIS REVISION(S)
53 - 57	None required.

RESPONSE

DOE agrees that the existing stockpile is not considered to be at risk and it is certainly not experiencing any post-design life aging problems since the weapons are retired prior to this occurrence. The concern remains with the future stockpile since current U.S. policy dictates that the existing stockpile will remain active past its design life.

See response to comment 13-3.

COMMENT CODE	LOCATION OF EIS REVISION(S)
53 - 58	Section 2.3.2

RESPONSE

See response to comment 13-3.

COMMENT CODE	LOCATION OF EIS REVISION(S)
53 - 59	None required.

RESPONSE

DOE believes that decisions regarding the DARHT proposal may proceed independently of the programmatic review to be provided in the Stockpile Stewardship and Management PEIS (see section 2.6). As stated in the NOI for the PEIS, under any alternative analyzed in that PEIS DOE would need to obtain enhanced hydrodynamic testing capability; therefore, decisions from the DARHT ROD would not prejudice the outcome of the SS&M PEIS.

DOE's agrees that there is no current crisis in safety and reliability, but believes that problems could arise within the stockpile as time passes. DOE is responsible for the stewardship of the enduring nuclear weapons stockpile and believes that it is prudent to deal with stockpile issues using adequate technology and tools before any crises develop.

See EIS volume 2 section 1.5.

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COMMENT CODE	LOCATION OF EIS REVISION(S)
53 - 70	Section 4.6 Tables 4-14 and 4-15

RESPONSE

See response to comment 26-2 and response below.

The environmental impacts to cultural and historic sites that could happen from any of the alternatives analyzed are discussed in chapter 5. DOE believes that one reason that archeological and cultural sites in LANL tend to be better preserved than those in surrounding lands is the fact that access to LANL has been controlled for over 50 years.

COMMENT CODE	LOCATION OF EIS REVISION(S)
53 - 71	None required.

RESPONSE

Archeologists do not always excavate cultural resource sites to extract research information. The preferred approach is to leave cultural resource sites undisturbed unless there is a need, such as new construction or because of the research value of a given site. The impact analysis indicates that surface contamination from DU or other expended material, while measurable, would not be sufficient to cause a hazard to people or wildlife that may be in the vicinity for any reason (including archeological field studies).

COMMENT CODE	LOCATION OF EIS REVISION(S)
53 - 72	None required.

RESPONSE

See response to comment 53-6.

COMMENT CODE	LOCATION OF EIS REVISION(S)
53 - 73	None required.

RESPONSE

See response to comment 28-1.

COMMENT CODE	LOCATION OF EIS REVISION(S)
53 - 74	Section 2.3.2

RESPONSE

See response to comment 13-9.

COMMENT CODE	LOCATION OF EIS REVISION(S)
53 - 75	Section 2.3.2

RESPONSE

See response to comment 13-2.

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COMMENT CODE	LOCATION OF EIS REVISION(S)
53 - 80	None required.

RESPONSE

Nothing happens to the unchecked items unless some unacceptable statistic is determined. Statistical sampling is based on the premise that the sample is representative of the total group, within a stated level of uncertainty.

COMMENT CODE	LOCATION OF EIS REVISION(S)
53 - 81	Sections 2.2.2 and 2.3.1

RESPONSE

The DARHT EIS has been revised to better explain the purpose and need for DOE's proposal for enhanced hydrodynamic test capability and the DARHT facility.

COMMENT CODE	LOCATION OF EIS REVISION(S)
53 - 82	None required.

RESPONSE

As a weapon ages, changes take place in a number of materials, including the high explosives, various stress cushions and plastics, as well as the plutonium in the pit. Hydrodynamic tests would be used to assess the effects of aging of materials such as the high explosives and stress cushions, and their effects on the hydrodynamics when the high explosives compress the mock pit. Aged weapons' plutonium cannot be used in these experiments because it would result in a nuclear explosion. We are exploring techniques to take aged systems from the stockpile and replace the fissile pit with a mock material so that aging experiments can be done. Next year, DOE is planning to conduct a hydrodynamic test using aged high explosives removed from a stockpiled unit. Another method to test aging effects is to accelerate the aging of test assemblies to determine the effects of aged nonfissile components on the pit implosion.

The effects of aging plutonium will be done in separate but complementary experiments that will focus on changes in plutonium's material strength, spall, equation-of-state, breakup, and other properties that can change with aging. These data will then be combined with information from full hydrodynamic tests using simulated materials to assess the effect of aging plutonium on weapon performance.

In the past year, no high explosives experiments were done to study the aging characteristics of plutonium. However, other laboratory experiments were conducted to look at how the properties of plutonium change with aging.

COMMENT CODE	LOCATION OF EIS REVISION(S)
53 - 87	None required.

RESPONSE

DOE notes that this comment presents an example of evolving capabilities and need for the nuclear weapons stockpile.

COMMENT CODE	LOCATION OF EIS REVISION(S)
53 - 88	Section 2.3.2

RESPONSE

DOE appreciates this assessment. The problems of materials availability or partially documented processes have been noted in the EIS.

COMMENT CODE	LOCATION OF EIS REVISION(S)
53 - 89	Section 2.2.2

RESPONSE

DOE is aware of the Nuclear Posture Review and has included a brief summary of pertinent points in section 2.2.2 of the EIS.

COMMENT CODE	LOCATION OF EIS REVISION(S)
53 - 90	None required.

RESPONSE

See EIS volume 2 section 1.5.

COMMENT CODE	LOCATION OF EIS REVISION(S)
53 - 91	None required.

RESPONSE

DOE acknowledges this article and its conclusions.

COMMENT CODE	LOCATION OF EIS REVISION(S)
53 - 92	None required.

RESPONSE

See response to comment 28-1.

COMMENT CODE	LOCATION OF EIS REVISION(S)
53 - 99	Section 6.9

RESPONSE

DOE's Assistant Secretary for Environment, Safety and Health sent letters to Cochiti, Jemez, Santa Clara and San Ildefonso Pueblos inviting them to participate in this process, and sent copies of the EIS to these and many other tribal governments in the general region. In addition, DOE and LANL have held a series of meetings and tours with representatives from various tribal organizations. These are listed in the DARHT EIS in section 6.9.

COMMENT CODE	LOCATION OF EIS REVISION(S)
53 - 100	Section 4.6 Tables 4-14 and 4-15

RESPONSE

See response to comments 26-2 and 53-70.

COMMENT CODE	LOCATION OF EIS REVISION(S)
53 - 101	None required.

RESPONSE

See response to comment 28-2.

COMMENT CODE	LOCATION OF EIS REVISION(S)
53 - 102	None required.

RESPONSE

See response to comment 20-9.

COMMENT CODE	LOCATION OF EIS REVISION(S)
53 - 103	None required.

RESPONSE

Sampling of uranium, beryllium, and lead in the soil around the PHERMEX firing site is described in appendix D, section D.2. Concentrations of beryllium and lead drop to background at about 200 ft (60 m) from the firing point; uranium does not. Using regression analysis, it was estimated that above-background concentrations of uranium would extend to about 280 ft (85 m); the 95-percent upper confidence level of this estimate was about 430 ft (130 m). It is estimated that about 70 percent of the depleted uranium and other materials within 200 ft (60 m) of the firing site are removed and disposed of during routine housekeeping. See section D.5.

COMMENT CODE	LOCATION OF EIS REVISION(S)
53 - 104	Sections Executive Summary, 1.3, 3.7, 5 Intro, 5.4.1.1, 5.4.1.3, 5.4.2.1.2, 5.4.3.3, 5.4.4.1, 5.4.4.2, 5.4.3.3, 5.4.5.1.1, 5.4.6.1.1, 5.4.7.2, 5.4.8.2, 5.4.9.2, 5.4.10, 5.4.10.3, 5.4.11.2, D.5, E3.5, H.5.2

RESPONSE

See response to comment 3-1.

COMMENT CODE **LOCATION OF EIS REVISION(S)**
53 - 105 None required.

RESPONSE
See response to comment 28-2.

COMMENT CODE **LOCATION OF EIS REVISION(S)**
54 - 1 None required.

RESPONSE
DOE agrees.

COMMENT CODE **LOCATION OF EIS REVISION(S)**
54 - 2 None required.

RESPONSE
DOE agrees.

COMMENT CODE **LOCATION OF EIS REVISION(S)**
54 - 3 None required.

RESPONSE
The DOE is aware of Dr. Kidder's testimony.

COMMENT CODE **LOCATION OF EIS REVISION(S)**
54 - 4 None required.

RESPONSE
The DOE is aware of the Miller report.

COMMENT CODE **LOCATION OF EIS REVISION(S)**
54 - 5 None required.

RESPONSE
The DOE is aware of the JASON report's assessments.

COMMENT CODE **LOCATION OF EIS REVISION(S)**
54 - 6 None required.

RESPONSE
DOE agrees with this comment.

About NEPA

The National Environmental Policy Act (NEPA) was enacted to ensure that Federal decision-makers consider the effects of proposed actions on the human environment and to lay their decision-making process open for public scrutiny. NEPA also created the President's Council on Environmental Quality (CEQ) to establish a NEPA review process. DOE's NEPA regulations (10 CFR 1021) augment the CEQ regulations (40 CFR 1500).

An environmental impact statement (EIS) documents a Federal agency's analysis of the environmental consequences that might be caused by major Federal actions, defined as those proposed actions that might result in a significant impact to the environment. An EIS:

- Explains the purpose and need for the agency to take action
- Describes the proposed action and the reasonable alternative courses of action that the agency could take to meet the need
- Describes what would happen if the proposed action were not implemented – the "No Action" (or Status Quo) Alternative
- Describes what aspects of the human environment would be affected if the proposed action or any alternative were done
- Analyzes the changes, or impacts, to the environment that would be expected to take place if the proposed action or an alternative were implemented, compared to the expected condition of the environment if no action were taken

The DOE EIS process follows these steps:

- Notice of Intent, published in the *Federal Register*, identifies potential EIS issues and alternatives and asks for public comment on the scope of the analysis
- Public scoping period, with at least one public meeting
- Implementation Plan, which gives the results of public scoping and provides a "roadmap" of how the EIS will be prepared
- Draft EIS, issued for public review and comment, with at least one public hearing
- Final EIS, which incorporates the results of the public comment period on the draft EIS
- Record of Decision, which states:
  - The decision
  - The alternatives that were considered in the EIS and the environmentally preferable alternative
  - All decision factors, such as cost and technical considerations, that were considered by the agency along with environmental consequences
  - Mitigation measures designed to alleviate adverse environmental impacts
- Mitigation Action Plan, which explains how the mitigation measures will be implemented and monitored.