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(10)

DEPARTMENT OF THE AIR FORCE
OFFICE OF AEROSPACE STUDIES (AFMC)
KIRTLAND AIR FORCE BASE, NM

FROM: OAS/XRN
2350 Maxwell Street
Kirtland AFB NM 87117-6008

8 October 1992

SUBJ: HPRF Phase 2 Kickoff Meeting Minutes

TO: Distribution

1. Enclosed is the meeting minutes from the HPRF Phase 2 Kickoff Meeting held on 10-11 September 1992 at Phillips Laboratory in Albuquerque, NM.

2. Capt Lamb and I would like to thank all who participated in the meeting. We look forward to working with you on the Phase 2 study.

3. Attachment 2 contains Restricted Data/Critical Nuclear Weapon Design Information.

4. This letter is UNCLASSIFIED when separated from Attachment 2.

ROGER F. KROPF, Major, USAF
Chief, Nuclear Weapons Concept Div

2 Atch
1. Distribution List (U)
2. HPRF Phase 2 Kickoff Meeting Minutes (U), 30 Sep 92, SECRET/RD/CNWDI/NOFORN, 1 cy

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NAME: [illegible]	2. CLASSIFICATION CHANGED TO:
2ND REVIEW-DATE: 5 Nov 99	3. CONTAINS NO DOE CLASSIFIED INFO
AUTHORITY: ADD	(4) COORDINATE WITH: DOD WPD
NAME: D. Coyle	5. CLASSIFICATION CANCELLED
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PL/WSR
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901 SAC Blvd, Suite 1F19
Offutt AFB NE 68113-5120

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OAS-MM-92-10 OAS-MM-92-10

High Power Radio Frequency (HPRF) Phase 2 Study

Kickoff Meeting Minutes (U)

30 September 1992

Captain William A Lamb

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ROGER F. KROPF, Major, USAF
Chief, Nuclear Weapons Concept Division

JERRY G. COLYER
Technical Director,
Office of Aerospace Studies

DOE, USAF,
DTRA

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High Power Radio Frequency (HPRF) Phase 2 Study

Kickoff Meeting Minutes (U)

30 September 1992

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Table of Contents

(U) Introduction 1

(U) Administration and Introductions 1

(U) HPRF Phase 2 Tasking and Requirements 1

(U) Phase 2 Study Organization 2

(U) Warhead Design Intro 2

(U) System Engineering Intro 2

(U) Vulnerability Intro 2

(U) Mission Analysis Intro 2

(U) Surety Intro 3

(U) Requirements Intro 4

(U) Threat Intro 4

(U) Working Group Meetings 5

(U) Executive Working Group 6

(U) Action Items 7

Appendicies

A: (U) Kickoff Meeting Agenda 9

B: (U) Kickoff Meeting Attendance List 11

C: (U) HPRF Phase 2 Tasking 17

D: (U) Working Group Members 25

E: (U) Warhead Design Intro 29

F: (U) System Engineering Intro 35

G: (U) Vulnerability Intro 39

H: (U) Mission Analysis Intro 43

I: (U) Working Group Presentations 49

Distribution List 63

Figures

Figure 1. (U) Working group structure 2

Tables

Table 1. (U) Proposed working group leaders 2

Table 2. (U) Specific tasking assignments 5

Table 3. (U) Proposed executive working group members 6

Table 4. (U) Action items from planning meeting 7

ACKNOWLEDGEMENTS

(U) I would like to take this opportunity to thank Mr Sam Gutierrez of Phillips Laboratory who helped me during the HPRF Phase 2 Kickoff Meeting. His efforts prior to and during the meeting helped immensely and were greatly appreciated.

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(U) INTRODUCTION

(U) The Nuclear Weapons Concept Division of the Office of Aerospace Studies (OAS/XRN) conducted the kickoff meeting for the High Power Radio Frequency (HPRF) Phase 2 study on 10-11 September 1992. The meeting was held at Phillips Laboratory on Kirtland AFB, NM. The purpose of the meeting was to review the tasking for the phase 2 study, refine the working group structure, identify memberships in each working group, and discuss the organization and structure. The individual working groups met to finalize their structure, goals and memberships. The agenda for the meeting is contained in appendix A.

(U) These meeting minutes document the kickoff meeting and include copies of presentations. Additionally, a list of attendees is provided in appendix B. The meeting highlights are presented in the following paragraphs.

(U) ADMINISTRATION AND INTRODUCTIONS

(U) Major Kropf opened the meeting by welcoming all in attendance. He then presented an overview of the importance of the HPRF Phase 2 study. Each of the attendees then introduced themselves and their organizations. The Navy was represented in this meeting but only as observers.

(U) HPRF PHASE 2 TASKING AND REQUIREMENTS

([redacted] LtCol Martin reviewed the draft Phase 2 Tasking Letter (see appendix C). Since there was no change to the tasking requirements presented in the planning meeting, LtCol Martin reviewed the contents of the finalized tasking. He reiterated the missions of interest that were not addressed in the phase 1 study and reemphasized the issues for phase 2. The approach to validation of lethality methodology must be reported to the Nuclear Weapons Council Standing Committee (NWCSC) within 90 days after the kick-off meeting. This will require reporting to the NWCSC by December 15th. Additionally, further examination of the delivery systems, packaging options, and damage expectancy with regards to mission effectiveness will be addressed.

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(U) PHASE 2 STUDY ORGANIZATION

(U) Capt Lamb proceeded to outline the working group structure for the Phase 2 study. Figure 1 shows the working group structure. Discussions centered around the need for a separate threat working group but a consensus was reached that there would be

[redacted]

enough information required from this area that the study would keep the working group. The chairs of each working group were presented with a list of members for each group taken from the attendees. The chair of each working group is presented in table 1. The lists of members are presented in appendix D

Working Group Structure

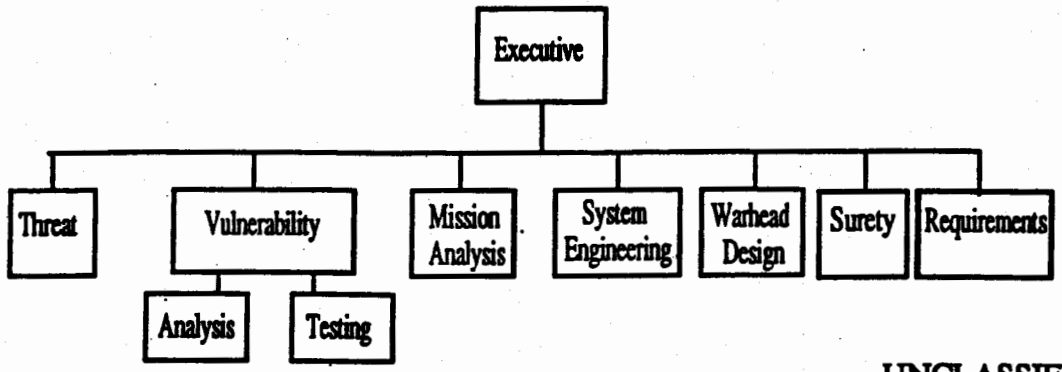

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Figure 1. (U) Working group structure

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(U) WARHEAD DESIGN INTRO

[redacted] Dr Jas Mercer-Smith (LANL) presented his view of the work in the warhead design area. His slides are included in appendix E.

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The issue that will need to be addressed in the warhead design working group is the certification process of the warhead design. Without an underground test, how will the warhead be certified? This issue will be addressed during the phase 2 study.

(U) SYSTEM ENGINEERING INTRO

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(U) VULNERABILITY INTRO

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Appendix G includes his slides. He reiterated the work completed during phase 1 and how this plays to phase 2. The basic premise of the phase 2 work is to provide quantified vulnerability data to the mission analysis working group (MAWG). He stated the need to address three areas of vulnerability and fill in more data in those three areas when the data become available.

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The prediction methods for determining vulnerabilities can then be verified and size of uncertainties reduced.

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Some concerns of the VWG are in post strike assessment and how it will be defined; and how collateral damage will be addressed.

(U) MISSION ANALYSIS INTRO

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(U) Future work will be very involved as it will require interactions between other working groups.

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(U) SURETY INTRO

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The main emphasis will be on the use control and surety themes that are involved in a phase 2 study. The SWG will work closely with system engineering to ensure the missile interface is identified. The further emphasis of the SWG will be in the safety technology area.

(U) REQUIREMENTS INTRO

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Further information will be provided at the next HPRF phase 2 meeting.

(U) THREAT INTRO

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(U) WORKING GROUP MEETINGS

(U) Before breaking into individual working groups, Capt Lamb provided the breakout of the tasking and in which working group the specific tasking should be addressed. The breakout is provided in table 2. The remainder of the day was spent in working groups determining members, charters, and working group plans. The results of the meetings is contained in appendix I.

Table 2. (U) Specific tasking assignments.

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(U) EXECUTIVE WORKING GROUP

(U) Capt Lamb presented the proposed memberships for the executive working group of the HPRF Phase 2 study. The provide representation from each working group along with representation from each organization involved in the study. Table 3 presents the proposed executive working group members.

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(U) ACTION ITEMS

Table 4. (U) Action items from kickoff meeting.

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NOTE: Numbers 1-10 were not included in this list as they originated from the planning meeting and not from this meeting.

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APPENDIX A

(U) KICKOFF MEETING AGENDA

Office of Aerospace Studies

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Office of Aerospace Studies

Agenda - September 11, 1992

0830	Sign-In	ALL
0845	Administration	Capt Lamb/OAS
0900	Working Group Presentations	Chair
	- Charters	
	- Schedules	
	- Memberships	
	- Estimated Costs	
1100	Action Items	ALL
1130	Summary	Capt Lamb/OAS

APPENDIX B

(U) KICKOFF MEETING ATTENDANCE LIST

HPRF Phase 2 Study
Kickoff Meeting, 10&11 September 1992
Attendance List

NAME	ORG./ADDRESS (for Classified Mailing)	PHONE #
1. WILLIAM LAMB	CAS/XRN BLDG 461 KIRTLAND AFB NM 87117-6008	Com: (505) 846-8233 DSN: 246-8233 FTS: FAX: (505) 846-6668
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APPENDIX C

(U) HPRF PHASE 2 TASKING

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SEP 02 '92 11:05 SAF AQQS(78919) P.3

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DOE,
USAF
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(U) The SAF/AQQ point of contact for this effort is Lt Col Charles R. Martin, SAF/AQQS, DSN 223-6303 or (703) 693-6303.

Patrick P. Caruana

PATRICK P. CARUANA, Major General, USAF
Director of Strategic, SOF, and
Airlift Programs
Assistant Secretary for Acquisition

3 Atch
1. NWCSC Letter to DOE (SFRD)
2. NWCSC Letter to Navy (SFRD)
3. Nominal Warhead Parameters (SFRD)

cc: OAS(AFMC)

2

[redacted]

b(3)

the Phase 2. In addition, I request the Study Group report at least yearly to the NWCSC on their progress and conclusions.

b(3)

DOE, USAF, DTRA

Sincerely,

John M. Birely
Acting Chairman

Enclosure

cc:
SAF/AQQ
AF/XOO

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DEPARTMENT OF DEFENSE
AND
DEPARTMENT OF ENERGY

NUCLEAR WEAPONS COUNCIL
STANDING COMMITTEE
WASHINGTON, DC 20301-3030

11 AUG 1992

b(3)

MEMORANDUM FOR CHIEF OF NAVAL OPERATIONS USAF

SUBJECT: High Power Radio Frequency (HPRF) Weapon Phase 2 Warhead Study

DOE, USAF
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(U) For this reason, I request the Navy join the Air Force in the HPRF Phase 2 Feasibility Study so that the study group can investigate both the ICBM and SLBM basing options.

John H. Birely
Acting Chairman

cc: SAF/AQQ
DAMO

Classified by: CG-W-5, Jan 84

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APPENDIX D

(U) WORKING GROUP MEMBERS

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APPENDIX E

(U) WARHEAD DESIGN INTRO

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Weapon Certification

- The Warhead Design Working Group will have to develop a methodology for certifying a special-purpose weapon in the absence of nuclear testing.

- Device certification may have a significant impact on the design of the physics package.

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APPENDIX F

(U) SYSTEM ENGINEERING INTRO

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System Engineering Working Group
Phase I Issues Review

High Power Radio Frequency Weapon

[redacted] USAF b(1)

10 - 11 September 1992
Phillips Lab
Kirtland AFB, NM

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Major SEWG Issues

	Description of Issue	Agency
I	General Issues	
A.	Implications of the President's Initiatives	DoD
B.	Implications of START	DoD
C.	Human Intent Decision	DoD/DOE
D.	Build Quantity (force structure issues)	DoD/DOE
E.	ABM Assumptions	DoD
F.	New MCs	DoD/DOE
G.	Delivery Options	DoD
H.	Other Mission Options	DoD
II	Delivery Requirements	
A.	Height of Burst	DOE
C.	Range Requirements	DoD/DOE
D.	Targeting Requirements (w/h integration driver)	DoD
III.	Warhead Packaging	
A.	External Case Options	
	1. Existing RVs	DoD
	2. Optimized Case	DoD/DOE
B.	Nuclear System Options	DOE
C.	Usage Requirement and Design	DOE/DoD
D.	Shielding Requirements	DOE
E.	Degradation Concerns	DOE
F.	Nuclear Surety	
	1. Enhanced Safety	DoD/DOE
	2. Use Control	DoD/DOE
H.	Warhead Electrical System	DOE
I.	LLCE	DoD/DOE
J.	Mechanical & Electrical Interfaces	DoD/DOE
K.	Maneuvering Capability	DoD/DOE
IV	Delivery Platform	
A.	Missile Interface	
	1. Mechanical	DoD/DOE
	a. Static Loading	
	b. Dynamic Loading	
	c. External Usage Design	

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	2. Electrical	DoD/DOE
	3. Software	DoD
B.	Impacts of Platform Modifications	DoD
	1. Singlet Conversion	
	2. Mk21/Mk4-5 Conversion	
	3. Guidance Electronics Upgrade (GEU)	
	4. Others	
C.	Flight Performance	DoD
	1. Range Capability	DoD
	2. PVB Maneuvering Capability	DoD/DOE
	3. Vehicle Stability	
	a. Critical HOB	
	b. Critical Vehicle Parameters	
	c. Tradeoffs	

APPENDIX G

(U) VULNERABILITY INTRO

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APPENDIX H

(U) MISSION ANALYSIS INTRO

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MISSION ANALYSIS

INTRODUCTION

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[redacted]

USER INTEREST

- SAC/XR LETTER, 18 APR 90
- SAC TNS, 10 SEP 91
- SAC/XO MESSAGE, JAN 92
- HQ ACC/DO LETTER TO USSTRATCOM J-5
- MNS - TBD

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WHAT WE NEED

- AGREEMENT ON MISSIONS OF INTEREST
- TARGET LIST FOR EACH MISSION
- MEASURE OF EFFECTIVNESS (MOEs)
- MOEs EVALUATION VIA SPECIFIC MODELING

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APPENDIX I

(U) WORKING GROUP PRESENTATIONS

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HPRF Phase 2 VAWG

Technical Objectives

1. **Develop Input Data for Mission Analysis Studies and Future Strategic Planning**

   - **Increase HPRF Effects Database on Specific System Vulnerabilities**

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2. **Measure Effectiveness of HPRF Weapons to Cause Damage**
   - **Provide Empirical Data to Labs on Best Weapons Characteristics**
   - **Explore Parametric Variations**
   - **Verify MAWG Analysis Tools by Test & Analysis**

3. **Address Possible Effects on US & Friendly Forces**

4. **Provide Feedback on Possible Methods of Damage Assessment**

HPRF Phase 2 VAWG

Working Group Structure

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HPRF Phase 2 VAWG

VTSG Questions

- Identify Past Tests
  - -- Applicability to HPRF Phase 2
  - -- Sufficiency of Data

- Identify of HPRF Phase 2 Testing
  - -- Funded
  - -- Planned but Unfunded
  - -- Other

- Testing Program Plan (Due in 90 days)
  - -- Time Schedule
  - -- Milestones
  - -- Costs/Funding

HPRF Phase 2 VAWG

VASG Questions

- Review of Target Lists
  - -- Which Systems are Completed?
  - -- Which Systems Need Work?

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- Analysis Questions
  - -- Further Refinement of P_E Methodology
  - -- Further Generic Testing/Validation?
  - -- How Validate MOE Predictions for MAWG?

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HPRF Phase 2 VAWG

Review Items

1. Charter
2. Objectives
3. Structure/Division of Responsibilities
4. Membership/Participants
5. Analysis Activities
6. Test Activities
7. Summary and Action Items

CHARTER FOR MISSION ANALYSIS
WORKING GROUP (MAWG)

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MAWG ISSUES

1. Identify Missions
2. Identify Potential Targets
3. Develop Credible Scenarios
4. Determine Measures of Effectiveness (MOEs)
5. Evaluate MOEs Through Modeling
6. Develop Mission Need Statement
7. Determine Post-Strike Assessment Methods with (VAWG)

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10. Determine if Damage Expectancy can be used for mission effectiveness with VAWG
11. Identify Appropriate Model and Associated Cost
12. Assist VAWG to Define Test-Bed
13. Test Analysis Should be part of MAWG

MAWG SCHEDULE

Last Week September Define Missions with USSTRATCOM
First Week October Identify VAWG Test-Bed

MAWG STRUCTURE

Mission Specific Subgroups

Subgroup members would identify targets, develop scenarios, determine MOE and conduct modeling to determine effectiveness.

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SURETY WORKING GROUP-PROPOSED CHARTER

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High Power Radio Frequency (HPRF) Phase 2 Study

Meeting #2 Minutes (U)

13 November 1992

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Captain William A Lamb

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Technical Director,
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b(3)

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High Power Radio Frequency (HPRF) Phase 2 Study

Meeting #2 Minutes (U)

13 November 1992

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TABLE OF CONTENTS

(U) Introduction 1

(U) Classification and Security 1

(U) Surety Working Group 1

(U) System Engineering Working Group 2

(U) Requirements Working Group 2

(U) Threat Working Group 2

(U) Warhead Working Group 3

(U) Mission Analysis Working Group 3

(U) Vulnerability Working Groups 3

(U) Additional Presentations 4

(U) Action Items 4

Appendicies

A: (U) Meeting #2 Agenda 9

B: (U) Meeting #2 Attendance List 11

C: (U) Surety Working Group 17

D: (U) System Engineering Working Group 25

E: (U) Requirements Working Group 31

F: (U) Warhead Working Group 45

G: (U) Mission Analysis Working Group 49

H: (U) Vulnerability Working Group 51

(U) Distribution List 59

FIGURES

Figure 1. (U) HPRF Phase 2 schedule 7

TABLES

Table 1. (U) Action items from meeting #2 5

Table 2. (U) Previous action items 6

(U) ACKNOWLEDGMENTS

(U) I would like to take this opportunity to thank Mr. Joseph Gazda of Headquarters Department of Energy, who helped me during the second meeting of the HPRF phase 2 Study. His efforts prior to and during the meeting helped immensely and were greatly appreciated.

(U) INTRODUCTION

(U) The Nuclear Weapons Concept Division of the Office of Aerospace Studies (OAS/XRN) conducted meeting #2 for the High Power Radio Frequency (HPRF) Phase 2 Study on 21 & 22 October 1992. The meeting was held at the Department of Energy (DOE) Headquarters in Germantown, Maryland. The purpose of the meeting was to convene working groups, review working group progress, and update the program status. The individual working groups met during the first day of the meeting, while a general session was held on the second day. The agenda for the meeting is contained in appendix A.

(U) These meeting minutes document meeting #2 and include copies of presentations. Additionally, a list of attendees is provided in appendix B. The meeting highlights are presented in the following paragraphs.

(U) CLASSIFICATION AND SECURITY

The study director, Capt Lamb, presented an overview of the classifications involved in the HPRF Phase 2 Study. Specifically, each individual involved in this study needs to be aware of the proper classification of the materials generated or produced. The classification guides for this study are listed on the front of this report. b(3)

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Information provided on the employment of such a device can also carry other caveats such as Not Releasable to Foreign Nationals (NOFORN) and Warning Notice - Intelligence Sources and Methods Involved (WNINTEL). Additionally, information concerning the nuclear design of the HPRF device most likely contains Critical Nuclear Weapon Design Information (CNWDI). It is imperative that all information that is classified be afforded the proper classification security protection. If there is any doubt as to the classification of any information, please take the time to investigate the classification guide or ask the proper knowledgeable individual. A request for information about classified material requires a need-to-know before access to the information can be provided. Make sure you have properly identified an individual's need to know. In regards to unclassified material associated with this program, please handle the information with care. Proper operation security (OPSEC) requires that the unclassified material not be released that can give uncleared individuals the required information to piece together classified information.

(U) SURETY WORKING GROUP

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The presentation slides are included as appendix C. The SWG met with the System Engineering Working Group (SEWG) during this meeting The

information from both working groups is important to the SWG. The charter for the SWG was reviewed and agreed upon and memberships to the SWG were updated. The results of the HPRF phase 1 study were also reviewed. The SWG plans to develop an evaluation strategy and attend the SEWG and Warhead Design Working Group (WDWG) meetings until a viable candidate system is finalized by the WDWG and SEWG. By attending the other working group meetings, the SWG will have advance information about the design and be able to complete the evaluation work on schedule. A draft of the SWG report is included in the appendix. The action items from the SWG are included in the action item section of this report.

(U) SYSTEM ENGINEERING WORKING GROUP

These inputs are provided as appendix D. As stated in the previous paragraph, the SEWG met with the SWG during the working group session. During the SEWG meeting, working group members reviewed the charter and the memberships, recapped the phase 1 design result, reviewed the nuclear safety theme, and discussed SEWG requirements, including the major issues for their group and interactions with other working groups. The level of Navy participation will have a major impact on the work of the SEWG. The SEWG action items are included in the action item section of this report.

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(U) REQUIREMENTS WORKING GROUP

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Her presentation is included as appendix E. Since this was the first meeting of the RWG, they reviewed their charter and memberships. It was noted that some organizations have not identified a representative for the RWG. The group then discussed draft military characteristics (MCs) as they applied to the HPRF Phase 2 Study. The draft MCs are included in appendix E. The HPRF Phase 2 Study also requires a stockpile-to-target (STS) sequence for the final report. The RWG will base their analysis of the STSs on the W78 STS until more information becomes available from the other working groups. The action items from the RWG are included in the action item of this report.

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(U) THREAT WORKING GROUP

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Table 2. (U) Action items from kickoff meeting.

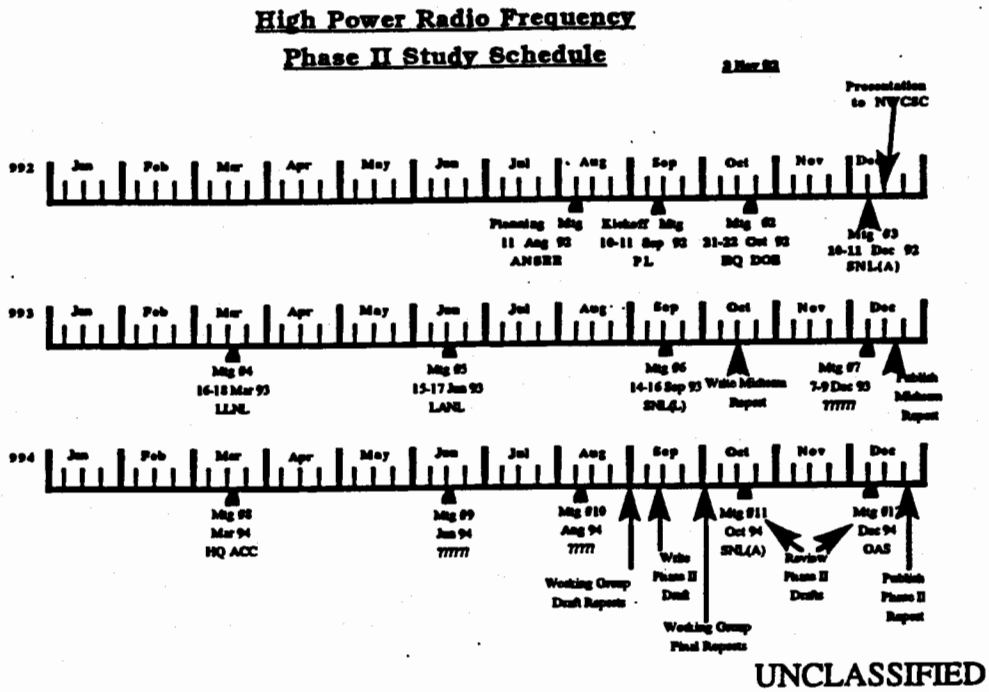

Figure 1. (U) HPRF Phase 2 Study Schedule

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APPENDIX A

(U) MEETING #2 AGENDA

APPENDIX B

(U) MEETING #2 ATTENDANCE LIST

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HPRF Phase 2 Study
Meeting # 2, 21 & 22 October 1992
Attendance List

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APPENDIX C

(U) SURETY WORKING GROUP

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Surety Working Group Meeting Summary--Oct 21, 1992

The Surety Working Group (SWG) met jointly with the Systems Engineering Working Group and plans to continue doing so until systems and warhead designs are sufficiently defined that meaningful evaluation of the candidates can begin. During the Surety part of the Oct 21 meeting, the group charter was reviewed and the membership updated. The results of the HPRF Phase 1 surety study were reviewed, and possible approaches to the Phase 2 surety evaluation discussed. The present status is that several Phase 1 candidates have been proposed and evaluated by the Phase 1 Surety Working Group. Until new developments from the Systems Engineering and Warhead Design Working Groups are provided, the most productive SWG activity appears to be to develop an evaluation strategy and to attend SEWG and WDWG meetings as background for subsequent SWG efforts. Viewgraphs and handouts from the SWG meeting, including Action Items are attached. Requests for imputs from other working groups are included in the Action Items.

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AGENDA

SURETY WORKING GROUP MEETING

DOE/HQ
10-21-92

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PROPOSED SURETY WORKING GROUP APPROACH

(1) Warhead Candidates not likely to be well defined for months.

(2) Meanwhile Propose
- SWG Members attend both System Engineering & Warhead Design working groups to understand candidates & their evolution
- SWG determines evaluation approach - i.e., PRA, QFD, Other for evaluating Surety (safety, use control, security)

ACTION ITEMS

REQUEST	RESPONSIBLE PERSON/GROUP
• MC's and STS's	RWG
• SURETY THEMES	WDWG SEWG
• DASMA PHASE 1's USE CONTROL THEMES	CUDERMAN
• SWG INPUTS FOR 90 DAY REVIEW - SCHEDULE & MAJOR MILESTONES	CUDERMAN

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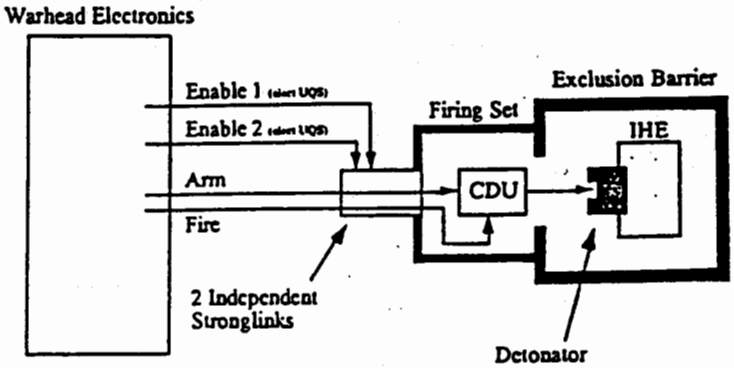

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Figure II.C-2. Exclusion Region Concept

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APPENDIX D

(U) SYSTEM ENGINEERING WORKING GROUP

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APPENDIX E

(U) REQUIREMENTS WORKING GROUP

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APPENDIX F

(U) WARHEAD DESIGN WORKING GROUP

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APPENDIX G

(U) MISSION ANALYSIS WORKING GROUP

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MAWG MEMBERSHIP

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APPENDIX H

(U) VULNERABILITY WORKING GROUP

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HPRF Phase 2 VAWG

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HPRF Phase 2 VAWG

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HPRF PHASE 2 TEST PROGRAMS

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HPRF Phase 2 VAWG
Sign Up Sheet

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