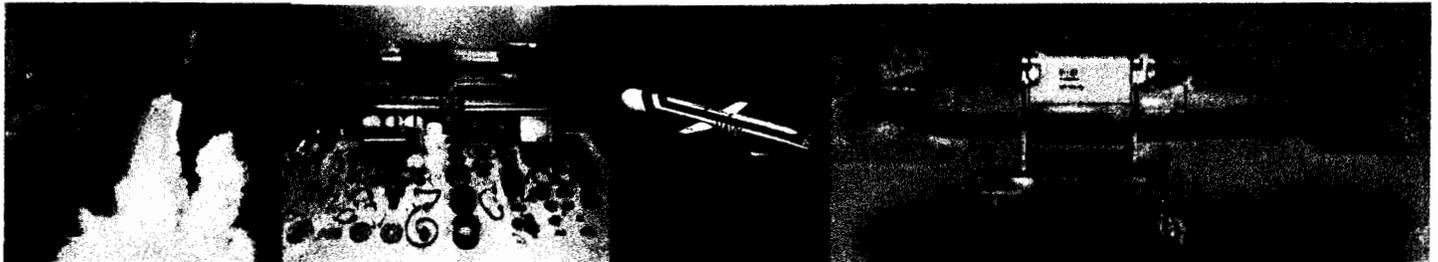


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FISCAL YEAR 2009 PROGRAM IMPLEMENTATION PLAN

DIRECTED STOCKPILE WORK RESEARCH AND DEVELOPMENT PROGRAM



**NATIONAL NUCLEAR SECURITY ADMINISTRATION
DEFENSE PROGRAMS
STOCKPILE RESEARCH, DEVELOPMENT, AND ENGINEERING
DIVISION**

**REVISION 3
AUGUST 26, 2009**



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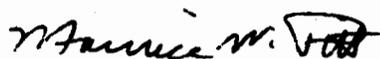
Name/Org: David M. Cameron, NA-121.3 Date: 7/17/2009
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REVISION SUMMARY

Revision No. & Date	Description of Change(s)	Approval Date
Rev 0, 06/30/08	Issue based on FY2009 President's budget request.	06/30/08
Rev 1, 03/31/09	Issue based on FY 2009 enacted appropriations.	03/31/09
Rev 2, 07/17/09	Issue revises title of Level 2 Milestone 3195 and resolves other typographical or clerical errors to Rev 1	07/17/09
Rev 3, 09/10/09	Corrected milestone titles and grading and exit criteria for several milestones.	

APPROVED



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Acting Director, Stockpile Research, Development and Engineering Division
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TABLE OF CONTENTS

1.0 Executive Summary 1
2.0 Introduction 4
3.0 Program Integration 5
4.0 DSW R&D Mission Assignments 7
5.0 Sub-Program Work Breakdown Structure 8
 5.1 Stockpile Systems 8
 5.2 Stockpile Services 10
6.0 Implementation Plan Work Scope 11
 6.1 Stockpile Systems 11
 6.2 Stockpile Services 12
7.0 DSW R&D Program Management 17
8.0 FY 2008 Accomplishments 19
9.0 Performance Measures and Level 1 and Level 2 Milestones 29
10.0 Detailed Activity Descriptions 34
11.0 Reporting and Change Control 35
12.0 Financial Plan 36
13.0 Open Issues and Pending Decisions 39
Appendices:
 A. LANL Activity Descriptions A-1
 B. LLNL Activity Descriptions B-1
 C. SNL Activity Descriptions C-1
 D. NTS Activity Descriptions D-1



LIST OF ACRONYMS

AD	Activity Description
ASC	Advanced Simulation and Computing Campaign
BEEF	Big Explosive Experiment Facility
CASA	Common Adoptable System Architecture
CDD	Component Description Document
CDM	Concurrent Design Manufacturing
CMS	Code Management System
DA	Design Agency
DoD	Department of Defense
DRAAG	Design Review and Acceptance Group
DSW	Directed Stockpile Work
DT	Deuterium-Tritium
ELNG	Electronic Neutron Generator
FENG	Ferro-Electric Neutron Generator
FFT	Full Functional Test
FPU	First Production Unit
FS	Firing Subsystem
FY	Fiscal Year
GTS	Gas Transfer System
IAW	In Accordance With
ICBM	Intercontinental Ballistic Missile
IDL	Integrated Data List
IPG	Integrated Phase Gate
ISM	Integrated Safety Management
JTA	Joint Test Assembly
LANL	Los Alamos National Laboratory
LASO	Los Alamos Site Office
LEO	Life Extension Option
LEP	Life Extension Program
LLNL	Lawrence Livermore National Laboratory
LSO	Livermore Site Office
LTD	Limited
MAR	Major Assembly Release
MeV	Million Electron Volts
M&O	Management and Operating
Mk	Mark
Mod	Modification
MRT	Milestone Reporting Tool
MTO	Molli Test Object
NEP	Nuclear Explosive Package
NG	Neutron Generator

NHTP	National Hydrodynamic Test Plan
NNSA	National Nuclear Security Administration
NS	National Security
NSO	Nevada Site Office
NSR&D	Nuclear Safety Research and Development
NSTec	National Security Technologies
NTS	Nevada Test Site
NWC	Nuclear Weapons Complex
NWCSSC	Nuclear Weapons Council Standing and Safety Committee
NSE	Nuclear Security Enterprise
PA	Production Agency
PIP	Program Implementation Plan
PM	Program Manager
PMM	Program Management Manual
POG	Project Officers Group
PRT	Product Realization Team
QER	Qualification Evaluation Release
QMU	Quantification of Margins and Uncertainties
QPR	Quarterly Program Review
R&D	Research and Development
RITS	Radiographic Integrated Test Stand
RL	Readiness Level
RRW	Reliable Replacement Warhead
RTBF	Readiness in Technical Base and Facilities
SFI	Significant Finding Investigation
SLBM	Submarine Launched Ballistic Missile
SNL	Sandia National Laboratories
SNM	Special Nuclear Material
SSO	Sandia Site Office
SS-21	Seamless Safety in the 21 st Century
TBSTP	Technical Basis for Stockpile Transformation Planning
TRL	Technology Readiness Level
TSL	Trajectory Strong Link
WBS	Work Breakdown Structure
WG	Working Group
WR1	War Reserve 1



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**DIRECTED STOCKPILE WORK RESEARCH AND DEVELOPMENT
FY 2009 PROGRAM IMPLEMENTATION PLAN
(STOCKPILE SYSTEMS, RELIABLE REPLACEMENT WARHEAD
AND STOCKPILE SERVICES)**

1.0 EXECUTIVE SUMMARY

The primary goal of the Directed Stockpile Work (DSW) Research and Development (R&D) Program is to ensure that the nuclear warheads and bombs in the U.S. nuclear weapons stockpile are safe, secure and reliable. DSW R&D activities support **five** major areas:

1. *Life Extension Programs* (LEPs) to upgrade and extend the life of weapons in the enduring stockpile;
2. *Stockpile Systems* which support R&D activities that maintain the certification basis of specific warheads, including testing, stockpile support and the annual assessment reporting process;
3. *Stockpile Services* which support technical and programmatic activities affecting more than one warhead, such as studies, training, infrastructure support;
4. Future warheads required to support the stockpile; and
5. Complex Transformation, which supports activities to modernize and downsize the nuclear Weapon Complex to achieve efficiencies required for the futures.

Consistent with management guidance, the FY 2009 Program Implementation Plan (PIP) is focused on *Stockpile Systems and Stockpile Services*. *Life Extension Program* implementation plan requirements are included in separate LEP Project Execution Plans.

The program activities described in this Program Implementation Plan (Plan) (Revision 1) support the planned program work scope and budget based on the FY2009 budget approved by Congress. The work described in this Plan is focused on the major DSW R&D program objectives to maintain a safe, secure and reliable stockpile, and to support the technology base necessary for future applications. Major ongoing activities of DSW R&D include:

- The annual assessment of enduring weapons systems in the stockpile including a report to the president addressing the safety, security and reliability of the stockpile and if an underground nuclear test is required to solve a problem.
- Improve the baseline understanding of the weapons in the stockpile.
- Continue to develop and demonstrate the application of Quantification of Margins and Uncertainties (QMU) to assessment, certification and other program needs.

- Support and conduct of laboratory and flight tests.
- Support the National Hydrodynamic Test Program.
- Identify and resolve Significant Finding Investigations (SFIs).
- Provide scientific and technical support to the production agencies to meet production directives.
- Design and develop Limited Life Components, neutron generators, gas transfer systems, energetics, and other replacement components.
- Identify and pursue synergistic areas for collaboration with the United Kingdom on future stockpile development.

The DSW R&D program execution has been successfully accomplished in prior years. Major accomplishments in FY 2008 included the completion of the Annual Assessment Report, resolution of SFIs, execution of the National Hydrodynamic Test Plan, development of gas transfer system and neutron generator technologies, timely scientific and technical support to the production agencies and support for the Complex Transformation initiative. Additional FY 2008 accomplishments can be found in **Section 8.0** of this Plan. It is important to note that the RRW initiative was terminated in early FY 2008 when funding for FY 2008 activities were not supported in the approved appropriations.

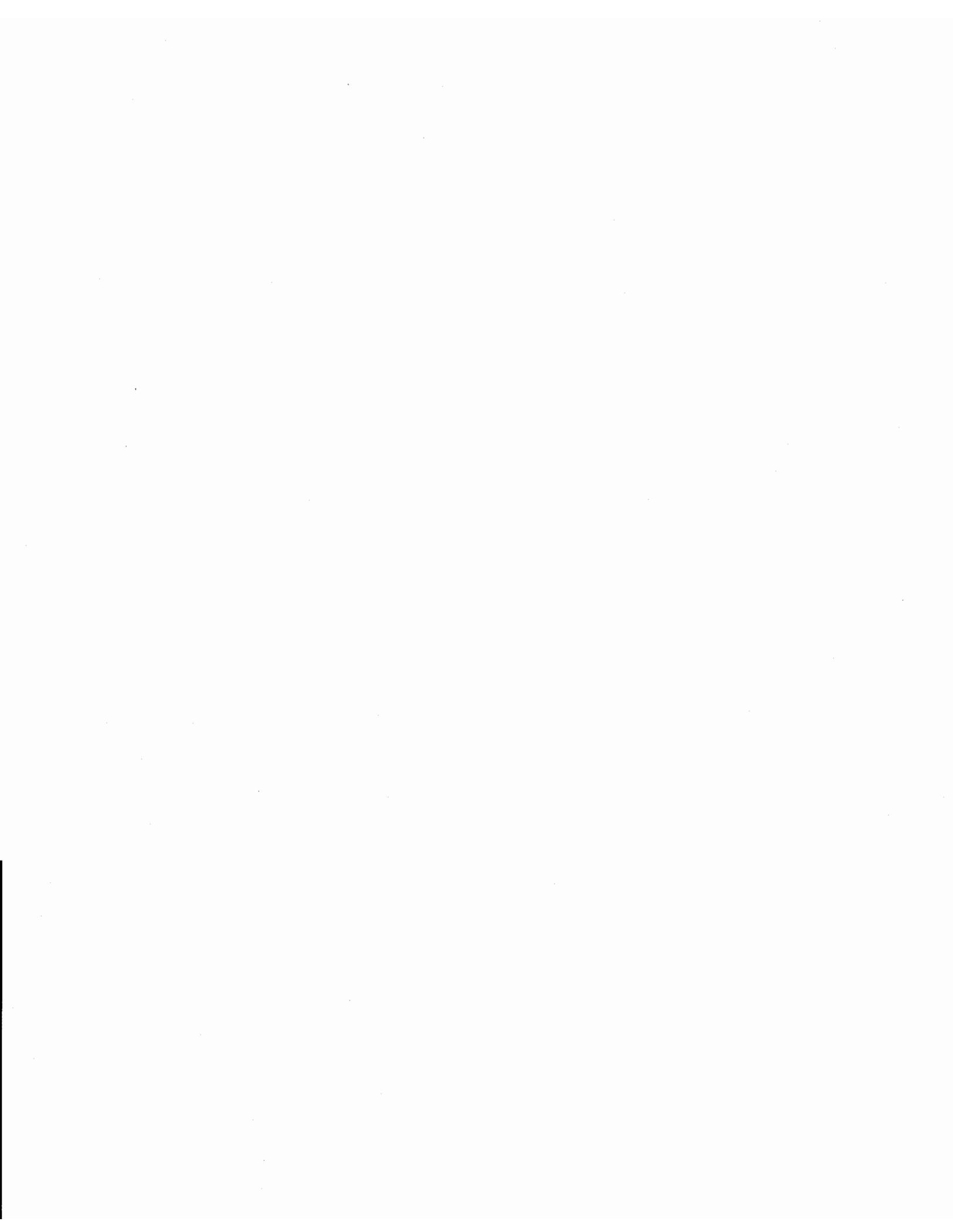
The large majority of the work covered by this Plan is performed by the national security laboratories (Los Alamos National Laboratory [LANL], Lawrence Livermore National Laboratory [LLNL] and Sandia National Laboratories [SNL]) and the Nevada Test Site (NTS). The laboratories and the NTS have been assigned DSW R&D program responsibilities which are detailed in this PIP and the Appendices which contain a detailed activity description for each Level 2 milestone. The activity descriptions provide a comprehensive understanding of the milestones, including grading and exit criteria, risk assessment and mitigation, and deliverables required from the Campaigns.

The NA-10 Program Management Manual (PMM Rev.1 dated November 18, 2005) provides the management framework for all NA-10 programs including DSW R&D. Day-to-day management and execution of the DSW activities discussed in this Plan has been delegated to the Stockpile Research and Development Branch (NA-121.31). The principal requirements of the PMM include the need: to prepare and annually update the DSW Program Plan, to annually prepare and maintain this Program Implementation Plan, to develop and manage the Level 2 milestones to support the higher level NA-10 Level 1 milestones, program priorities and the "Getting the Job Done" goals. The PMM also requires routine program reporting, cost control requirements, and issuance of Work Authorizations to the performing contractors specifying work scope and authorized budgets.

2.0 INTRODUCTION

The prime mission of NA-121.31 and the four principal DSW R&D M&O contractors (LANL, LLNL, SNL and the NTS) for *Stockpile Systems* and *Stockpile Services* activities is to work with the Nuclear Security Enterprise to assure the continued safety, reliability and performance of the stockpile. Prime responsibilities are:

- To certify and assess, with confidence, the safety and functional reliability of the enduring stockpile.
- To perform engineering and physics research.
- To develop and analyze support component, subsystem and system tests for future stockpile applications.
- To conduct advanced studies, as approved.
- To develop Limited Life Components and other replacement components.



3.0 PROGRAM INTEGRATION

The DSW R&D program is integrated with the Science and Engineering Campaigns, Readiness in Technical Base and Facilities (RTBF) and the Advanced Simulation and Computing Campaign (ASC). The ASC Campaign provides simulation tools to support the assessment of the safety, performance, and reliability of nuclear warheads. The Activity Descriptions in **Appendices A through D** in Revision 1 of the FY 2009 PIP provide warhead specific details of ASC integration with DSW R&D milestones.

Both DSW R&D and the Engineering Campaign play a critical role in the development of advanced technologies for eventual inclusion in stockpile systems. In this context, we define technology broadly to include components, subsystems, process technologies, systems, and software. DSW R&D Stockpile Services has responsibility for neutron generator and gas transfer system technologies, components, and sub-systems, while the Engineering Campaign has responsibility for surety, weapons systems engineering, enhanced surveillance, and nuclear survivable technologies and components. With a number of near-term technology insertion opportunities on the horizon, the proper maturation of these technologies on time scales consistent with those insertion needs has become increasingly important. Additionally, the need to quantify the technological risk associated with the use of these maturing technologies in a particular system application has also become an important management challenge.

The technology readiness level (TRL) is a management tool that is being employed to track the maturation of technologies, and to quantify the risk associated with the inclusion of that technology in a particular environment. Illustrated in **Figure 1**, the TRL is defined on a scale of 1-9, and includes both the level of integration that has been achieved as well as the set of environments the technology has been proven in. The business model being employed within Defense Programs defines DSW R&D and the Engineering Campaign as responsible for maturing identified high-priority technologies to TRL6, indicating that the technology is mature enough to prove the deliverable works for a set of environments relevant to the system need under consideration. As technology development progresses through the readiness levels, the emphasis shifts from fundamental discovery to engineering and the aggregation of materials and sub-components. Once the technology is matured to TRL6 for any component or sub-system, application of the technology to an integrated system can proceed with the focus shifting to systems engineering (TRL7), certification (TRL8), and eventual operational use (TRL9). Final maturation from TRL7 through TRL9 is the responsibility of the specific DSW tail number.

It is important to note that modeling and simulation tools and experimental facilities play a key role throughout the technology development cycle (TRL1 to 9) in the assessment of the technology maturity and remaining performance uncertainty. This assessment combines experimental results, modeling and simulation, and expert engineering analysis to establish the maturity level.

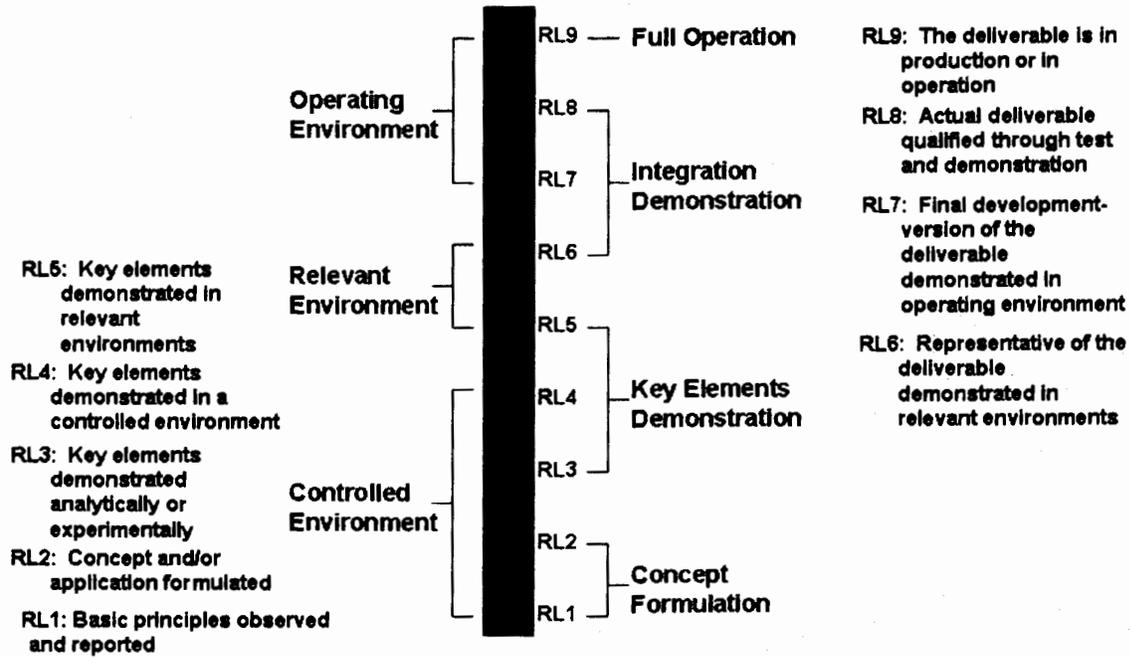


Figure 1 – Technology Readiness Levels

4.0 DSW R&D MISSION ASSIGNMENTS

DSW R&D work is conducted at the three National Security (NS) laboratories and the Nevada Test Site with principal responsibilities as follows:

- **LANL** has *Stockpile Systems* responsibilities for four enduring weapons systems: the B61 family of bombs, W76, W78 and W88, and *Stockpile Services* responsibilities within R&D Certification and Safety and R&D Support.
- **LLNL** has *Stockpile Systems* responsibilities for four enduring weapons systems including: W62, W80, B83, and W87, and *Stockpile Services* responsibilities for R&D Certification and Safety and R&D Support.
- **SNL** has *Stockpile Systems* responsibilities for all eight weapons in the enduring stockpile, and *Stockpile Services* responsibilities for R&D Certification and Safety and R&D Support.
- **NTS** has *Stockpile Services* responsibilities to support LANL and LLNL sub-critical experiments and dynamic plutonium experiments in support of the enduring stockpile. NTS also provides diagnostics support to SNL related to dynamic plutonium experiments.



contains the following tasks: (1) Assessments, (2) Certification and (3) Significant Finding Investigation (SFI) Resolution. The application of the QMU methodology in assessing reliability of the nuclear explosive package, as well as providing a methodology in certification, reliability estimates, and assessing the impacts of the SFIs to the systems, will continue to be developed and refined at the design agencies such that QMU supports the assessments in the absence of nuclear testing. Modeling, simulation, testing, and expert judgment also support certification and qualification.

5.1.2 Maintenance

This ongoing activity provides Design Agency oversight of traditional NNSA maintenance activities and has four areas: (1) Production Liaison with Production Plants (Manufacture and Assembly of components); (2) Military Liaison interactions with the Department of Defense (DoD); (3) ISM/SS-21 systematic review and revalidation of warhead assembly and disassembly at Pantex; and (4) General Stockpile Support including Use Control Systems Development, Joint Test Assembly (JTA) Development, and Small Neutron Generator Development.

5.1.3 Surveillance

DSW R&D Surveillance support has two principal objectives. The first is to obtain information needed to determine whether or not the reliability, performance, and safety of the stockpile have changed since the system first entered stockpile. The second is to identify potentially undesirable changes before they can affect warhead reliability or safety and do this well in advance of the time required for corrective action to be taken. NNSA is implementing actions aimed at modernizing the surveillance program to more effectively support the stockpile.

The core surveillance program issues sampling and evaluation requirements in support of ongoing warhead reliability and safety assessments. Design agency representatives provide on-site presence during warhead and component level disassembly and inspection activities at the plants. Annual reports are compiled and distributed to the wider assessment community based on destructive, functional, and non-destructive test results and evaluations. Data from surveillance assessments is also used as an input to life extension planning and decisions regarding production planning.

5.1.4 Baselineing

This is a continuous process to update and assess the modeling of a warhead's nuclear explosive package performance and engineering response to environmental conditions. Baselineing is a key foundation for the other DSW elements such as assessments, certification, life extension programs, and resolving SFIs. The elements of baselineing, include model development and validation, analysis, documentation, and peer review. Baselineing also serves as a way to transfer knowledge to the next generation of weapon scientists and engineers.



5.2 Stockpile Services

DSW R&D work in Stockpile Services supports and develops capabilities for multi-weapon system benefits that do not directly support a specific weapon in the enduring stockpile. Activities include the following:

5.2.1 R&D Certification and Safety

The Stockpile Services R&D Certification and Safety activities provide the core competencies and capabilities for R&D efforts not directly attributable to a single specific warhead system. Efforts span all systems and include weapon component development for multiple systems; maintaining capabilities necessary for design, fabrication, and execution of hydrodynamic tests; NTS support and execution of Subcritical Experiments and other experiments defined by the LLNL and LANL; participating in cooperative research activities such as the joint munitions research program in accordance with DoD agreements; conducting primary and secondary modeling and assessment, safety and surety, weapons effects and system analysis studies, and nuclear safety R&D activities; providing engineering and information infrastructure support, production liaison and oversight, and material science support; and archiving legacy and current knowledge pertaining to warheads.

5.2.2 R&D Support

The R&D support includes non-warhead specific programmatic work that provides the necessary infrastructure to directly support research, development, design, certification, and qualification activities conducted internal to that site; work that supports two or more weapon types; work that is essentially the same for each weapon-type and association of project costs to a weapon type would be arbitrary, not directly identified or allocated to specific weapon types. Specific activities include R&D infrastructure support, management and integration of R&D activities, multi-system surveillance, and R&D support to production agencies.

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6.0 IMPLEMENTATION PLAN WORK SCOPE

The scope of this Plan includes DSW R&D *Stockpile Systems* for each enduring weapon system in the stockpile, and *Stockpile Services* program activities. DSW R&D LEP activities are included in separate LEP Project Execution Plans.

6.1 Stockpile Systems

The specific work to be conducted for each of the enduring weapon systems for FY 2009 is described below:

6.1.1 B61 Stockpile System

The B61 aircraft delivered gravity bombs are the oldest weapons in the enduring stockpile. The B61 family includes five modifications with two distinct categories. The strategic category includes the B61 Mods 7 and 11, with the Mod 11 being the only active earth penetrating weapon. The non-strategic category includes the Mods 3, 4 and 10.

In FY 2009, enduring stockpile R&D activities include: a focus on conducting a Life Extension Phase 6.2/2A study to address aging and reliability issues; supporting the annual assessment, and certification process; providing laboratory and management support to the Project Officers Group (POG) and DoD Safety Studies; developing upgrades to the JTA; and supporting resolution of SFIs.

6.1.2 W76 Stockpile System

The W76 is the warhead used in the Navy's Mk4 reentry body on Trident II Submarine Launched Ballistic Missile (SLBM).

In FY 2009, enduring stockpile R&D workload efforts will include: supporting the annual assessment and certification process; providing laboratory and management support to the POG and DoD Safety Studies; and supporting resolution of SFIs.

6.1.3 W78 Stockpile System

The W78 is a warhead used in the Air Force's Mk12A reentry vehicle on the Minuteman III Intercontinental Ballistic Missile (ICBM).

In FY 2009, enduring stockpile R&D workload efforts will include: supporting the annual assessment and certification process; providing laboratory and management support to the POG and DoD Safety Studies; and supporting resolution of SFIs.

6.1.4 W80 Stockpile System

The W80-1 is a warhead used in the Air Launched Cruise Missile deployed by the Air Force and the W80-0 is a warhead used in the Tomahawk Land Attack Missile-Nuclear deployed by the Navy.

In FY 2009, enduring stockpile R&D workload efforts will support the POG and DoD safety studies; development of the JTA8; and annual assessment and certification activities and resolution of SFIs.

6.1.5 B83 Stockpile System

The B83 is an aircraft delivered gravity bomb deployed by the Air Force.

In FY 2009, enduring stockpile R&D activities include: supporting the annual assessment and certification process; providing laboratory and management support to the POG and DoD Safety Studies; and supporting resolution of SFIs.

6.1.6 W87 Stockpile System

The W87 is a warhead used in the Air Force's Mk-21 re-entry vehicle on the Minuteman III ICBM. W87 redeployment on the Minuteman III missile began in early FY 2007.

In FY 2009, enduring stockpile R&D activities include: supporting the annual assessment process and certification activities; providing laboratory and management support to the POG and DoD Safety Studies; completing development of the JTA4; and supporting resolution of SFIs.

6.1.7 W88 Stockpile System

The W88 is the warhead used in the Navy's Mk5 re-entry body on the Trident 11 SLBM.

In FY 2009, enduring stockpile R&D activities include: providing laboratory and management support to the POG and DoD Safety Studies; supporting resolution of SFIs; Completing development of the JTA2; and supporting the annual assessment and certification process.

6.2 Stockpile Services

DSW R&D work in Stockpile Services supports more than a specific weapon system in the enduring stockpile and includes the following activities:

6.2.1 R&D Certification and Safety

R&D Certification and Safety activities provide underlying capabilities for R&D efforts at design laboratories and the NTS in support of the stockpile. These activities include the basic

research required for developing neutron generators, gas transfer systems and other components, surveillance activities, the base capability for conducting hydrodynamic experiments and subcritical experiments. The neutron generator and gas transfer research is typically beyond the basic research of a Campaign and is the first stage of technology weaponization.

In FY 2009, DSW R&D program community (NNSA and sites) will provide support and information to the JASON Defense Advisory Group to complete the Congressionally-directed Life Extension Program Study.

In FY 2009, activities include: performing nuclear safety R&D studies; weapons effects studies; preparing and providing the infrastructure for conducting hydrodynamic tests in support of enduring stockpile systems and life extension programs; continuing to support neutron generator development (electronic and small explosively actuated generator types); designing gas transfer systems; continuing to develop arming, fuzing and firing subsystems; developing sensor and telemetry subsystems for JTAs; conducting qualification/certification and computer modeling and simulation activities that are required; conducting system/component surveillance evaluations to analyze results obtained from component and flight testing supporting the Department of Energy/DoD Munitions Memorandum of Understanding; continuing primary, secondary, chemistry, materials, and systems analysis in support of the stockpile and Annual Assessments; conducting the safety assessments for the W62 and W84; and support of the dynamic plutonium experiment program.

In FY 2009, LANL will continue research and development of long life gas transfer systems, continue to mature surety technologies for future stockpile insertion, and further develop safe operating criteria and weapon response for continued operation of the weapons enterprise facilities.

In addition, LANL will continue core competencies and capability development necessary to maintain, analyze, and perform major integrated dynamic experiments associated with the hydrodynamic test program. This work is in addition to that necessary to meet the associated milestones and includes such items as diagnostics, engineering, and specialized research associated with experiments.

In FY 2009, LLNL DSW R&D Certification and Safety supports Nuclear Safety Research and Development (NSR&D), provides chemistry and materials science support to the weapons systems, supports plutonium experiments, hydrodynamic testing, secondary analysis activities common to multiple weapons systems, and primary design document archiving. NSR&D includes probabilistic HE initiation threshold development and modeling of direct arc HE initiation. The chemistry and compatibility effort supplies experts to the weapons systems and conducts compatibility research with a common interest to LLNL's weapons systems. Dynamic plutonium experiments support includes experiment fielding, experimentation, targets and apparatus as well as preparatory experiments. Hydrodynamic testing includes scaled experiments, management, hardware fabrication and procurement, and fielding. Due to



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California environmental law and classification requirements, all LLNL weapon system hydrodynamic tests are paid for with DSW R&D Certification and Safety funding.

In FY 2009 NTS will provide project management; authorization basis documentation; test bed design, development, and construction; procurement; design, development, and operation of diagnostic systems; data acquisition and recording; and to a limited degree, data analysis to support LLNL, LANL, and SNL operations. NTS will also conduct development activities required to support National Laboratory future experiments, including diagnostics, control systems, data acquisition, and data analysis. The major work planned in FY09 is:

Develop a Barolo diagnostic test bed in the Armando zero room using the existing infrastructure left over from the Armando DPE and the Thermos series of experiments. The LANL Barolo experiment series will be conducted in "Armando-like" vessels using Cygnus radiography and an "Armando-like" suite of diagnostics. NSTec will provide the Authorization Basis documentation and refurbish the test bed to LANL specifications in preparation for a confirmatory experiment and a Barolo Plutonium experiment expected to occur in the fourth quarter of FY09.

Support LLNL execution of three Full Functional Test (FFT) experiments in FY09 with two experiments planned by the conclusion of 3Q FY 09 focused on characterization of symmetry and efficiency of the load. This information will be used to validate the numerical models used to calculate the performance of the load and the complex interactions between the load, generator and power flow systems. The Phoenix FFT experiments use a high performance explosive pulsed power system capable of delivering 100 million amps of current to the load.

Support and operate the Radiographic Integrated Test Stand (RITS) for SNL to test the efficiency and practicality of diodes operating in the range of 6 to 12 MeV with the goal of producing more than 400 R at one meter with a spot size of 2.7 mm or less. Additional diagnostics will be developed and added to the suite now existing as needed. This effort will support the Sandia National Laboratory collaboration with the British Atomic Weapons Establishment. Los Alamos National Laboratory will benefit from RITS work as diode tests are in support of both the U.K. Hydrus program and Cygnus. The Hydrus facility is deemed essential to aiding in DPE decisions in the 2015-2017 time frames. Additionally, near term research related to optimization of the Cygnus machines at U1a will be conducted as required to support LANL experiments.

In FY 2009, Sandia National Laboratories will conduct activities that mature the critical technologies and capabilities necessary to support future systems maintenance, surveillance, quantification of margins and uncertainties, and development, in support of NNSA's objectives in the Enduring Stockpile, Stockpile Transformation, and Complex Transformation. These activities are applicable to multiple weapons systems, current or future, and focus on enhancing Surety and Reliability, as well as reducing future Stockpile Stewardship costs. The activities will focus on Sandia's five Core Products: Weapon System Engineering & Integration; Neutron Generators; Gas Transfer Systems; Arming, Fuzing, and Firing systems; and Surety Systems. Architectures and technologies developed will be applied to next insertion

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opportunities such as the potential B61 and W88 LEPs and Limited Life Component Exchange requirements. Specific activities include:

- **Systems Engineering and Integration Core Product:** Sandia will continue to advance the Common Architecture development supporting enhanced surety, reliability, and adaptability and apply it to air delivered or reentry delivered system designs and to guiding technology maturation under other core products. Sandia will also create demonstration vehicles that exercise the systems engineering competency and that mature technologies to TRL5/6. Additional studies will be supported that address stockpile issues identified by NNSA or by internal stockpile review or planning.
- **Technology and Competency Readiness for other Core Products:** Conduct technology maturation activities that ensure the Technology Insertion Readiness and Development Competency Readiness necessary to support NNSA's future transformation objectives. These activities are focused by the Common Architecture development as well as by anticipated common needs of systems in the stockpile. Technology areas of focus include non-nuclear engineering and design, code management systems, use control systems, GTS technologies, surety and firing mechanisms, arming and fuzing technologies, neutron generators, energetic components, micro-electronics technologies, and data instrumentation and telemetry.
- **Capabilities readiness:** these activities support environmental test facilities such as the LIHE test facility (Light Initiated High Explosive), as well as supporting capabilities necessary for future production and development, such as micro-electronics capability sustainment and neutron generators.
- DoD/DOE MOU.

6.2.2 R&D Support

R&D Support includes ongoing activities that directly support the internal design laboratory site-specific R&D mission. It includes stockpile studies and programmatic work that provide the necessary administrative or organization infrastructure to support internal laboratory R&D activities.

In FY 2009, activities include: R&D infrastructure support, providing the understanding and integration of DSW, Campaigns, and RTBF requirements, and support of quality assurance programs for multiple systems.

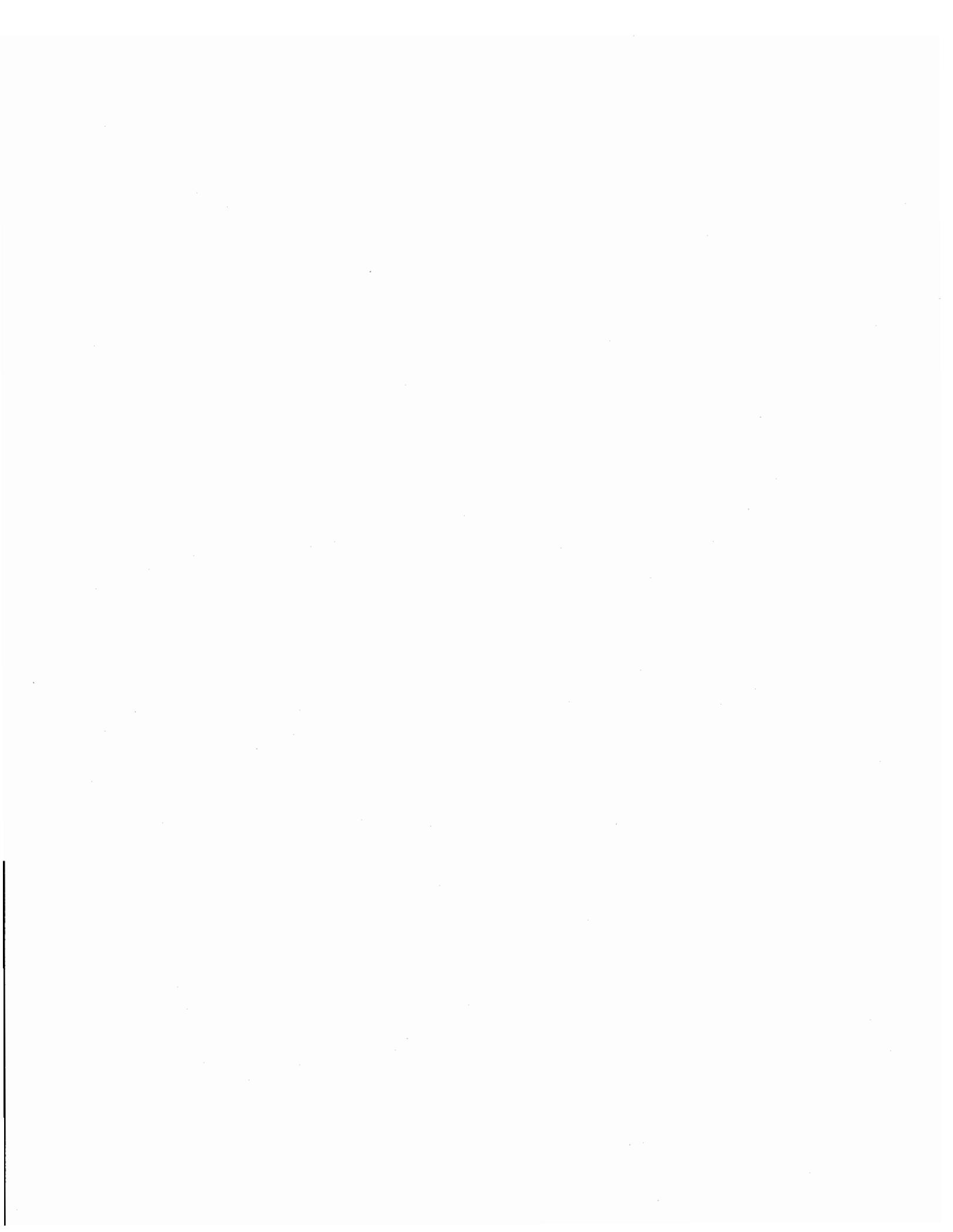
In FY 2009 LANL will continue to provide analysis and support to the production agencies necessary for multi system operations. This includes all weapon component design agency quality and related activities.

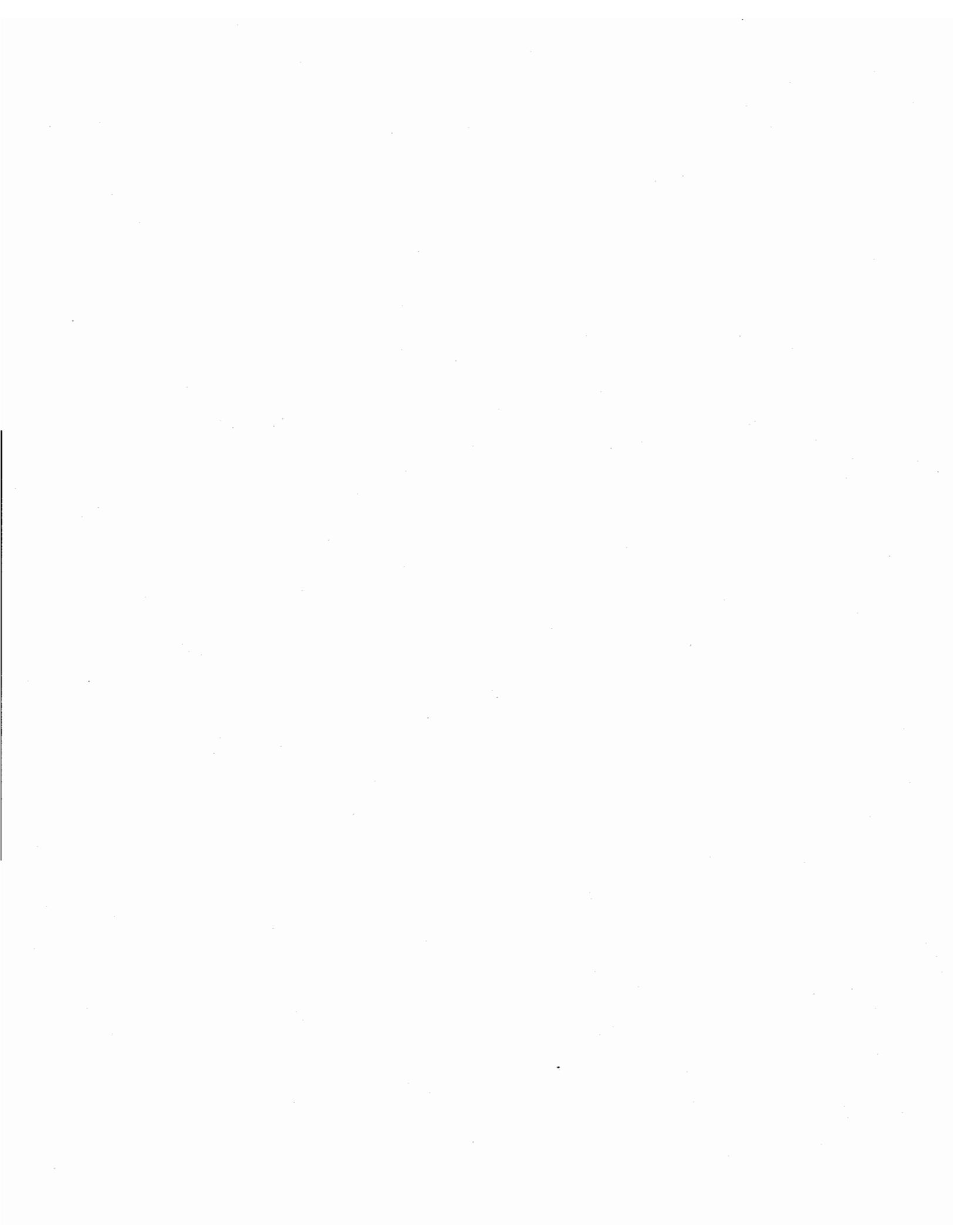
In FY 2009, LLNL R&D Support includes support to the DoD, surveillance, production and QA support, infrastructure supporting DSW and DSW R&D management. DoD support includes supporting Project Officer Groups (POGs) and Nuclear Weapons Safety Study Groups

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(NWSSGs). Design agency detonator surveillance and CEPPCs are supported within surveillance. Infrastructure supporting DSW includes information management personnel and hardware, document management, and support of test and drafting capabilities. These activities support all LLNL weapons activities.

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LLNL

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8.0 FY 2008 ACCOMPLISHMENTS

Significant work activities accomplished by the M&O contractors in FY 2008 are detailed below by contractor organization.

Los Alamos National Laboratory FY 2008 Level 2 Milestone Accomplishments

- Issued the Annual Assessment Report and Director's Annual Assessment letter for the B61/W76/W78/W88.
- Identified and completed continuous activities necessary for supporting current/future assessments for the B61/W76/W78/W88.
- Submitted draft Life Extension Option (LEO) tables for the FY 2009 Component Description Document (CDD).
- Provided input to the FY 2008 Nuclear Safety R&D (NSR&D) Working Group (WG) and conducted FY 2008 NSR&D activities in accordance with the NSR&D WG Report.
- Analyzed, evaluated, assessed and closed out High Priority SFIs in accordance with (IAW) approved baseline closure plans.
- Developed the FY 2008 Joint National Hydrodynamic Test Plan (NHTP).
- Conducted Hydrodynamic tests in accordance with the NHTP.
- Performed Gas Transfer System (GTS) Design Agency (DA)/Production Agency (PA) activities IAW the GTS R&D Plan
- Provided scientific and technical assistance to the production complex to support meeting established DoD and NNSA commitments IAW the Directive Schedule.

FY 2008 Additional Important LANL Accomplishments

- Completed key activities identified for Surveillance Transformation
- Provided input to Complex Transformation efforts. Specifically the Weapon Surveillance Facility, the Uranium Production Facility and the Pantex Storage Consolidation projects.

Lawrence Livermore National Laboratory
FY 2008 Level 2 Milestone Accomplishments

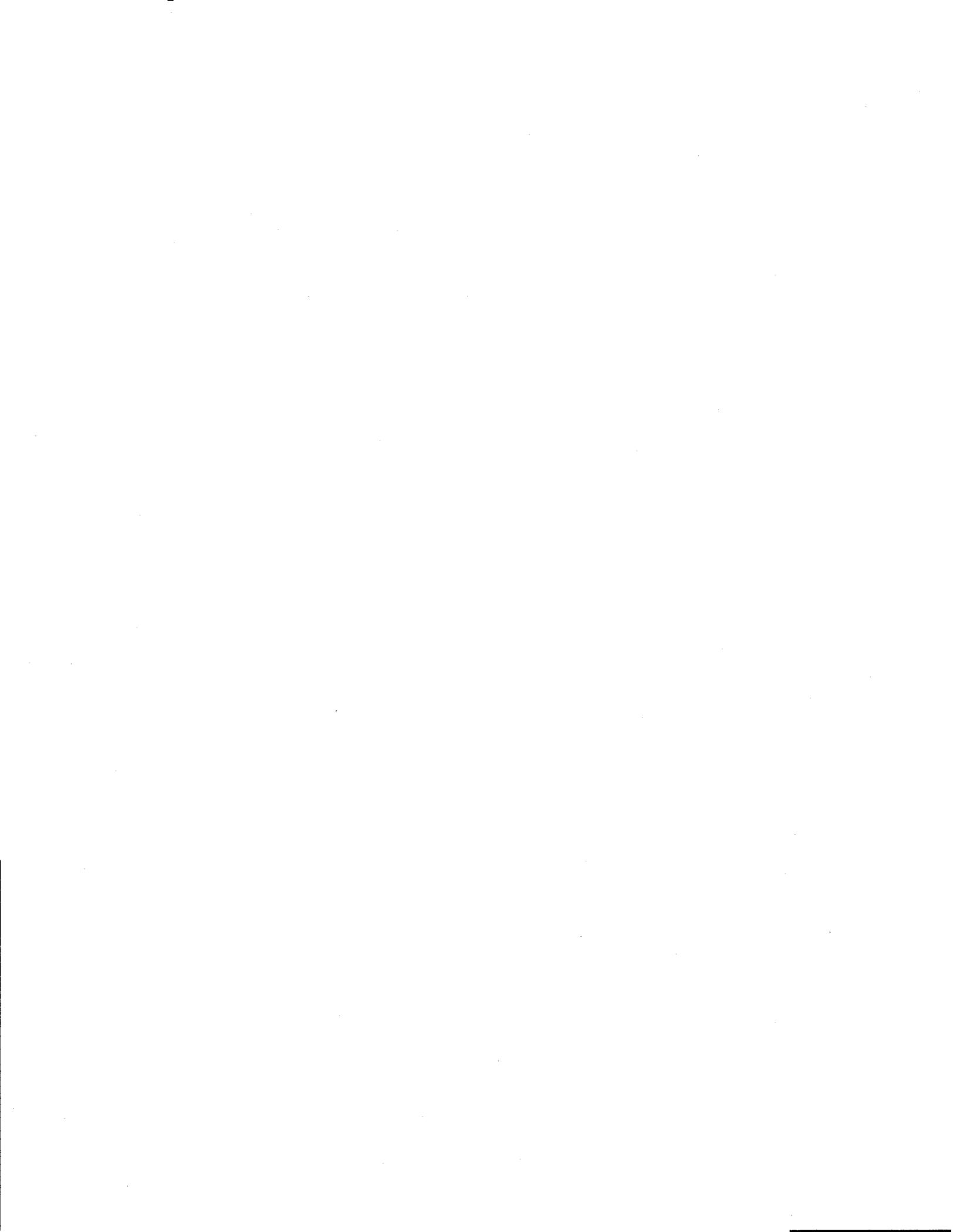
- Issued the Annual Assessment Report and Director's Annual Assessment letter for the W62/W80/B83/W87.
- Identified and completed continuous activities necessary for supporting current/future assessments for the W62/W80/B83/W87.
- Completed and released annual safety assessment report for the W84.
- Submitted draft LEO tables for the FY 2009 CDD.
- Provided input to the FY 2008 NSR&D WG and conducted FY 2008 NSR&D activities in accordance with the NSR&D WG Report.
- Developed the FY 2008 Joint NHTP.
- Conducted Hydrodynamic tests in accordance with the NHTP.
- Supported the LANL and LLNL plutonium experiments plan and dynamic plutonium experiment activities identified in the FY 2008 LANL and LLNL Program Implementation Plans.
- Provided scientific and technical assistance to the production complex to support meeting established DoD and NNSA commitments IAW the Directive Schedule.
- Completed WR1 Stage 1 of Phase 2A Study.

FY 2008 Additional Important LLNL Accomplishments

- Conducted the last B83 highly instrumented SNM JTA laydown test at TTR.
- Issued 575 Engineering Authorizations (EAs) in support of the Nuclear Weapons Complex needs for meeting the NNSA Directive Schedule
- Provided Full Toss fielding support.

Sandia National Laboratories
FY 2008 Level 2 Milestone Accomplishments

- Issued the Annual Assessment Report and Director's Annual Assessment letter for all active systems.
- Identified and completed continuous activities necessary for supporting current/future assessments for all systems.
- Completed annual safety assessment activities for the W84.
- Completed W88 JTA-2 Refresh QER.
- Submitted draft LEO tables for the FY 2009 CDD.
- Provided input to the FY 2007 NSR&D WG and conducted FY 2008 NSR&D activities in accordance with the NSR&D WG Report.
- Analyzed, evaluated, assessed and closed out High Priority SFIs IAW approved baseline closure plans.
- Demonstrated continued readiness in implementing the design, development and certification mission in cross-cutting non-nuclear technologies consistent with future system requirements supporting NNSA's Complex 2030.
- Performed second year of expanded capability maturation and converged to most promising technologies for the Electronic Neutron generator (ELNG) Project and established process capabilities in support of the design and development options for Neutron Generator (NG) development.
- Developed and demonstrated development work principles for applying QMU to present and future NG product & performance.
- Conducted capability maturation implementation for the Small Ferro-Electric Neutron Generator (FENG) project including characterizing and evaluating technologies to assure the issue related to high voltage breakdown has been resolved and to improve the understanding of design margin.
- Completed the final phase of CMS implementation.
- Developed the Common Adaptable System Architecture (CASA) as a key enabler of transformation of the non-nuclear portion of the stockpile.
- Completed WR1 Stage 1 of Phase 2A Study.



FY 2008 Additional Important SNL Accomplishments

Enhanced Technical Basis and QMU activities. Sandia's quantification of margins and uncertainties (QMU) and technical basis accomplishments in support of Annual Assessment and completion of continuous activities work in FY08 led to a significant increase in Sandia's knowledge of the stockpile's performance margin and an improved understanding of its technical basis. Sandia further expanded the Integrated Data List (IDL) originated in FY07, which provided the prioritization for the technical basis activities completed in FY08. Sandia clarified the utility of the IDL for the conduct of the technical basis work in the December 2007 review and the subsequent status update for NNSA headquarters. The QMU and technical basis work were closely coupled, leveraging existing systems and component surveillance data, materials data from the CME program, component test data from reacceptance tests and shelf-life data as well as utilizing improved QMU tools. Sandia completed enhanced tech basis and QMU work for the B61, B83, W76-0, W80, W78, W88, W87 weapons systems. The extended work in Enhanced Technical Basis was possible due to carry-over funding from FY07.

Authorized Stockpile Refurbishments: W76-1/Mk4A LEP - Sandia completed all W76-1 qualification activities, developed a plan for and successfully qualified alternative Y-12 materials for use in the W76-1/Mk4A design, which achieved system level First Production Unit (FPU) on September 26, 2008, and initiated activities to support full-scale production. During this review period, Sandia completed the engineering activities to evaluate the impact and re-qualify essential portions of the W76-1/Mk4A design which would incorporate the alternate Nuclear Explosive Package (NEP) material identified by LANL to address a Code Blue issue. Sandia successfully completed these activities on time and within cost with no resulting redesign required to the W76-1/Mk4A. A separate Code Blue activity addressed an additional technical issue that threatened to delay the W76-1/Mk4A First Production Unit (FPU), the impact of electro-static discharge on explosive components during Pantex Plant operations. Sandia worked closely with LANL and Pantex to achieve W76-1/Mk4A FPU before October 1st, 2008. Accomplishments in preparation for W76-1/Mk4A Phase 6.6 Full-scale Production included completion of the final Inter-laboratory Peer Review and Response, the draft Final Weapon Development Report (FWDR), and the Major Assembly Release (MAR). The draft FWDR and the MAR also supported preparations for the October 2008 DoD Design Review and Acceptance Group (DRAAG). Sandia supported the First Prototype Builds (FPBs) at Pantex in order to ensure readiness to build the FPU providing evidence for the mechanical assembly Qualification Evaluation Release (QER) in September 2008. In addition, Sandia delivered all hardware and engineering support required for KCP to achieve JTA1 Telemetry Instrumentation FPU in April 2008 and the subsequent JTA1 AF&F subsystem deliveries to Pantex in July 2008. Sandia supported the successful PT3665 tester upgrades and issued an acceptable QER to support resumption of MC4710 ISL WR deliverables. Sandia provided weapon response technical expertise in resolution of electro-static discharge issues and materials expertise to address connector weld issues in support of Pantex production. Sandia implemented design modifications that improved the MC4711 Trajectory Strong Link (TSL) technical performance to help KCP address loose fasteners. The Sandia Firing Subsystem (FS) and CDM teams investigated the root cause of a cracked sprytron that resulted in a post-test electrical test failure during FS-level



under an NNSA study umbrella, were presented to Dr. Wayne Brasure in August 2008. Dr. Brasure, accompanied by executive management from the three labs, provided the follow-on presentations to Mr. Tom D'Agostino and Mr. Robert Smolen on September 30, 2008.

Development and application of advanced design options for a transformed stockpile

Accomplishments include completing all Level II Milestones as well as the following related activities, grouped by the five Sandia core products.

Systems Engineering and Integration:

- Sandia completed the baseline description of the Common Adaptable System Architecture (CASA) (Level II Milestone #2684), and engaged systems engineers from both air delivered (AD) systems and reentry systems (RS) to review and apply the principles developed by CASA. Activities stretching beyond the Level II Milestone include the following:
 - Sandia conducted an independent peer review which included AD and RS engineers in July 2008 and which resulted in feedback that Sandia incorporated into the design of CASA.
 - Sandia completed a high-level functional mapping leading toward understanding the limits of and opportunities for commonality across multiple weapon systems.
 - Sandia began application of CASA principles to the B61 Phase 1 study activities in planning for the potential Phase 2/2A.
 - Sandia began to incorporate CASA principles into the roadmaps and designs for FY09 and the future for both Air Delivered Transformation and Reentry Vehicle/Reentry Body (RV/RB) demonstration vehicle projects.
- Air Delivered Systems Transformation supported activities targeting future air delivered system refurbishment or development, including supporting the NWC tasked 90-day Phase 6.2/6.2A planning study for the B61 refurbishment, developing straw-man air delivered system architectures for consideration in any future air delivered activity, evaluating options for the B61 refurbishment and presenting them to NNSA and DoD customers, and coordinating technology maturation for air delivered applications.
- Sandia initiated Reentry System Transformation as an activity that bridges from CASA concepts into RV/RB technology maturation and system implementation, providing reentry systems pull to tech maturation. Sandia created a system demonstration project to advance architectures and focus technology maturation in support of transformation in reentry systems. An initial design and project plan was created for management review.
- Joint Test Assembly Technologies – Sandia's accomplishments include first prototype and environmental testing of the Integrated Telemetry Transmitter, the first prototype of the Micro-DAS telemetry package, and first prototype of a new B61 JTA data recorder using MicroModular telemetry modules. The technologies will provide the basis for all future JTA instrumentation designs, including a possible B61 or W88 LEP.

Arming, Fuzing, and Firing Subsystems (AF&F):

- Sandia successfully developed prototype radar receiver and transmitter Radio Frequency Integrated Circuits (RFIC) using Low Temperature Co-fired Ceramic substrate in a multi-chip module. This technology will be used to significantly improve radar reliability and reduce parts

count and production costs of future radar systems. Sandia demonstrated the receiver in a system test setup in fulfillment of the radar portion of Level II Milestone #2680, 5 months ahead of schedule.

- Sandia redesigned various state machines used for the W76-1 Arming and Fuzing Subsystem to be parametrically configured in order to support adaptability to various future weapon system requirement needs.
- Sandia developed System 2 aircraft interface concepts.
- Sandia developed a ruggedized firing set with integral diagnostics.
- Maturation work continues on a number of Firing Set and Electro-mechanical technologies. The team is maturing MEMS passive shock sensor device designs, including packaging (in partnership with KCP), testing, failure analysis capabilities, and is thoroughly documenting progress and results. In FY08, the stronglink team qualified new glass ceramic headers, which are a design improvement and major cost reduction for the W76-1 Intent Stronglink. The stronglink design group, together with Atomic Weapons Establishment (AWE, United Kingdom) partnership, is also maturing improved Magnetic and Electrical stronglink designs for future Systems insertion programs. Sandia assembled and tested the micro firing set prototype in FY08 – this prototype included the new state of health and self testing module which gives internal performance data during build and test of the fire set.
- Packaging Technologies – Sandia developed methods for increasing the density of electronic packaging, on joining metals to electronic packaging substrates, on the improved use of encapsulants, adhesives, conformal coatings, and composite materials in mechanical packaging, and on meso-scale packaging of optical components.
- Power Sources – FY08 efforts resulted in a multi-cell stack being tested and full battery prototype designs suitable for B61 performance requirements to be scheduled for demonstration in FY09. Advances in developing rechargeable chemical batteries, and identifying a replacement battery for Ag/ZnO batteries used in JTA applications, led to prototypes and replacements now in testing. Additionally, completion and testing of instrumented batteries led to high-fidelity validation of thermal battery simulations.
- Explosive Components – Sandia completed detonator redesigns for a laser-initiated Exploding Bridge Wire detonator (B61 refurbishment) and a Semi-Conducting Bridge detonator (future systems) to eliminate manufacturing issues, and for the laser-diode initiator (targeted by SNL's Air Delivered Transformation efforts) to incorporate modern diode technology. Testing is scheduled for FY09. Sandia built and tested an advanced design for a chip-slapper detonator (W88) in a WR-1 architecture; SNL measured hard-fire performance margins. Science-based studies conducted to understand the underlying initiation processes for chip-slapper detonators and the MC4807 actuator are advancing Sandia's knowledge base for assessing QMU and specifications. Sandia measured critical preload force and margins for the powder on the MC4807 header, required for reliable initiation (supports B83 QER). Other FY08 accomplishments include a tester designed, built and validated for measuring the ESD sensitivity of explosive powders used in initiators; and a modeling toolbox consisting of SNL and commercial models soon to be available to explosive component designers.
- Sandia successfully completed Enhanced ViArray (Eiger) design and fabrication for WR insertion and AWE Joint Collaboration in April 2008. This new product platform enables



- Advanced material characterization – FY08 work focused on assessing the requirement for high-energy rate forging (HERF) of reservoir material. HERF vs. non-HERF material comparisons are underway. Additionally, Sandia continued to advance its computational capability to predict the diffusion of hydrogen isotopes into metals.
- Tritium Thermal Generator power device – Sandia developed a preliminary conceptual design for a tritium-based power supply. Sandia is partnering with the Power Source Group in NM to advance the technical readiness of this concept and to identify potential system applications.

Neutron Generators:

In addition to meeting level II milestones, the Responsive Neutron Generator Product Deployment Center (2700) received the Shingo Prize, the first Shingo Prize awarded to a public sector organization. The Center's Product Assurance Model (PAM) employs a risk-based approach to eliminate assurance waste. Several projects implemented PAM, resulting in a savings in labor hours and the elimination of the need for a replacement tester. The Purchased Product Value Stream continues to improve in the use of statistical methods and data to reduce costs and cycle times through the use of outside inspection suppliers. Production Stability is resulting in a better understanding of the Center's operations, a reduction in yield variation, improved flow, and resolution of production stoppages resulting in decreased span times. Lean tools are applied across all the shared services reducing injuries, costs and creating better alignment. HS-64 recognized Center 2700 during the FY08 ES&H independent assessment as "best in the complex" for implementation of "state of the art" work control and waste management processes.

Nevada Test Site **FY 2008 Milestone Accomplishments**

NTS supported the LANL and LLNL plutonium experiments plan and dynamic plutonium experiment activities identified in the FY 2008 LANL and LLNL Program Implementation Plan.

- Conducted the full Thermos series of 12 plutonium experiments within a 12-week schedule, yielding excellent high-quality data on all channels in each experiment.
- Achieved significant milestones (Thermos series) including the 500th firing of the Cygnus machines, 202 runs (the most runs in a shot series, to date), and the firing of two shots per week for a total of eight shots.
- The NTS Powder Gun Project completed a major milestone with the installation of the containment barrier in the new drift in U1a; enlarging the 102d Zero Room, mining an alternate access, mining an entombment area for expended SNM.
- During September 2008, the project team successfully completed taking radiographic images at U1a of the Barolo/Molli Test Object (MTO).



- The LLNL Hydro Experiment, VEGA, was successfully executed at the Big Explosives Experimental Facility (BEEF) on April 30, 2008.
- The LLNL Phoenix Full Functional Test (FFT2) was successfully executed at the Big Explosives Experimental facility (BEEF) on February 14, 2008.
- LLNL Phoenix Full Functional Test (FFT3) systems were ready for the integrated dry runs when priority shifted to the Full Toss experiment and postponed the test.
- BEEF capabilities were expanded by increasing the electro magnetic interference rack diagnostic channel capability, adding additional channels of current-monitoring diagnostics, and modifying the advanced helical generator stand and the seed bank to increase the voltage isolation.
- SNL LTD Source CY08 Accomplishments: Completed over 16,000 experiments on 6 different switch designs, modifying the Lifetime Switch Test System to accommodate the new hardware. Provided hardware upgrades including installation of new high voltage power supplies, a redundant trigger system, a multiple gas switch purge system, oscilloscope upgrades, and larger Marx bank capacitors. Software upgrades include data analysis batch processing routines, statistical switch performance analysis, support for the above hardware changes, new software drivers for new oscilloscopes, and increased user system control.
- The DPF achieved a major milestone the week of November 12, 2007, by producing intense, short fusion bursts with deuterium-tritium (DT) gas as the fuel with a 14-MeV neutron emitted per fusion and 3×10^{12} 14MeV neutrons produced per pulse.
- In February 2008, the DPF Team achieved “first light” on the “Tall-Boy” DPF at North Las Vegas, making Tall-Boy ready to support customers requiring reliable production of 2.4 MeV neutrons.





Table 2 – FY 2009 DSW R&D Stockpile Systems and Stockpile Services

Level 1 and 2 Milestones

Sub-program	Level	Milestone ID	Milestone Description	Due Date	DP Priority	SNL	LANL	LLNL	NTS
Stockpile Systems	1		MRT # 334 - Annually, assess the safety, security, and reliability of the stockpile and provide the required assessments of certification and reports to the Secretary for submission to the President. MRT # 332 - Meet the delivery requirements established in the Production and Planning Document with particular emphasis on meeting established joint DoD and NNSA commitments in accordance with the Directive Schedule	Annually	1, 2	•	•	•	•
B61 Stockpile Systems	2	3165	Issue the Annual Assessment Report and Director's Annual Assessment letter for the B61.	9/30/09	1, 2	•	•		
B61 Stockpile Systems	2	3166	Identify and complete continuous activities necessary for supporting current/future Annual Assessment Reports for the B61.	9/30/09	1, 2	•	•		
W76 Stockpile Systems	2	3167	Issue the Annual Assessment Report and Director's Annual Assessment letter for the W76.	9/30/09	1, 2	•	•		
W76 Stockpile Systems	2	3168	Identify and complete continuous activities necessary for supporting current/future Annual Assessment Reports for the W76.	9/30/09	1, 2	•	•		
W78 Stockpile Systems	2	3169	Issue the Annual Assessment Report and Director's Annual Assessment letter for the W78.	9/30/09	1, 2	•	•		
W78 Stockpile Systems	2	3170	Identify and complete continuous activities necessary for supporting current/future Annual Assessment Reports for the W78.	9/30/09	1, 2	•	•		
W80 Stockpile Systems	2	3171	Issue the Annual Assessment Report and Director's Annual Assessment letter for the W80-0/1.	9/30/09	1, 2	•		•	
W80 Stockpile Systems	2	3172	W80-0/1 - Identify and complete continuous activities necessary for supporting current/future assessments.	9/30/09	1, 2	•		•	
B83 Stockpile Systems	2	3173	Issue the Annual Assessment Report and Director's Annual Assessment letter for the B83.	9/30/09	1, 2	•		•	



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Directed Stockpile Work Research and Development
Program Implementation Plan

Revision 3
September 10, 2009

Sub-program	Level	Milestone ID	Milestone Description	Due Date	DP Priority	SNL	LANL	LLNL	NTS
B83 Stockpile Systems	2	3174	B83 - Identify and complete continuous activities necessary for supporting current/future assessments.	9/30/09	1, 2	●		●	
W87 Stockpile Systems	2	3175	Issue the Annual Assessment Report and Director's Annual Assessment letter for the W87.	9/30/09	1, 2	●		●	
W87 Stockpile Systems	2	3176	W87 - Identify and complete continuous activities necessary for supporting current/future assessments.	9/30/09	1, 2			●	
W88 Stockpile Systems	2	3177	Issue the Annual Assessment Report and Director's Annual Assessment letter for the W88.	9/30/09	1, 2	●	●		
W88 Stockpile Systems	2	3178	Identify and complete continuous activities necessary for supporting current/future Annual Assessment Reports for the W88.	9/30/09	1, 2	●	●		
W62 Stockpile Systems	2	3180	Issue the Annual Assessment Report and Director's Annual Assessment letter for the W62.	9/30/09	1,2	●		●	
Stockpile Services	2	3181	Complete annual safety assessment for the W84.	9/30/09	1	●		●	
Stockpile Services	2	3182	Submit Refurbishment Options Discussions and Tables for the FY 2010 Technical Basis for Stockpile Transformation Planning Document.	6/16/09	1	●	●	●	
Stockpile Services	2	3183	Provide input to the FY 2009 NSR&D WG Annual Report and conduct FY 2009 NSR&D activities in accordance with the FY 2009 NSR&D WG Annual Report.	9/30/09	1	●	●	●	
Stockpile Services	2	3184	Analyze, evaluate, assess and closeout High Priority SFIs IAW the currently approved baseline closure plans.	9/30/09	2	●	●	●	
Stockpile Services	2	3185	Issue FY 2009 Joint NHTP, Conduct Hydrodynamic Tests In Accordance With The FY 2009 NHTP, And Provide Quarterly One-Table Updates.	3/31/09	8		●	●	
Stockpile Services	2	3186	Support the LANL plutonium experiments and dynamic plutonium experiment activities identified in the FY 2009 Joint LANL/LLNL DPE Plan.	9/30/09	8				●

31
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Sub-program	Level	Milestone ID	Milestone Description	Due Date	DP Priority	SNL	LANL	LLNL	NTS
Stockpile Services	2	3187	Support the LLNL plutonium experiments plan and dynamic plutonium experiment activities identified in the FY 2009 Joint LANL/LLNL DPE Plan.	9/30/09	8			•	•
Stockpile Services	2	3189	Support the Joint Plutonium Experiments plan and dynamic plutonium experiment activities identified in the FY 2009 Joint LANL/LLNL DPE Plan.	9/30/09	8				•
Stockpile Services	2	3190	Perform Gas Transfer System (GTS) DA/PA activities in accordance with the GTS R&D Plan.	9/30/09	2		•		
Stockpile Services	2	3192	Implement Neutron Generator Modeling and Simulation Plan that was developed in FY 2008 (conditioned on Aleph transport capability being funded under verification and validation in FY 2009 and becoming available for tolerance studies in mid FY 2009).	9/30/09	2	•			
Stockpile Services	2	3193	Complete development of a miniaturized Data Acquisition System (MicroDAS) to TRL-6 for Joint Test Assembly (JTA) applications.	9/30/09	2	•			
Stockpile Services	2	3194	ELNG. Achieve TRL 4 for the multi-program Electronic Neutron Generator (ELNG) capability maturation project for the B61/B83	9/30/09	2	•			
Stockpile Services	2	3195	Develop a plan to replace current neutron generator in W87/MK21 Warhead with Small Ferro-Electric Neutron Generator (SFENG) in support of a March 2012 FPU	9/30/09	2	•			
Stockpile Services	2	3196	Apply the Common Adaptable System Architecture (CASA) to an air delivered system architecture.	9/30/09	2	•			
Stockpile Services	2	3197	Establish a Technology Maturation Demonstration Project to sustain Systems Engineering capabilities and to focus component technology maturation culminating in technology demonstration vehicles in the future.	9/30/09	2	•			

10.0 DETAILED ACTIVITY DESCRIPTIONS

Detailed Activity Descriptions (ADs) have been prepared for each FY 2009 Level 2 milestone. The ADs provide significant detail for each milestone including the work to be performed, lower level milestones, integration and interface discussions and a risk assessment. The key contractor manager(s) and contact information is also included. The ADs are organized by performing contractor and can be found as follows:

- Appendix A – Los Alamos National Laboratory
- Appendix B – Lawrence Livermore National Laboratory
- Appendix C – Sandia National Laboratories
- Appendix D – Nevada Test Site



11.0 REPORTING AND CHANGE CONTROL

NNSA has established the following systems and processes for program management and control of the DSW R&D program. These systems and processes are provided below:

- FY 2009 Level 1 and Level 2 milestones status is reported to NA-10 and other senior NNSA managers at the Quarterly Program Review (QPR) using the Milestone Reporting Tool (MRT). In preparation for each QPR, the laboratories and NA-121.31 program managers will update milestone status and their assessment (green, yellow, red or blue) along with support for that assessment.
- Monthly cost/expenditure data will be reported by NA-62.
- Two regularly scheduled program reviews will be supported. The Mid-year Program Review normally occurs approximately halfway through the fiscal year; the Annual Program Review normally occurs either shortly before or after the end of the fiscal year. For FY 2009, these reviews are tentatively scheduled for April/May 2009 and September/October 2009, respectively.
- Special technical and program reviews requested by NNSA Program Managers and other senior NNSA officials for oversight and program management responsibilities will be supported by the sites.
- NA-121.3 also conducts a weekly classified video teleconference to discuss upcoming meetings and to provide an opportunity to exchange information of programmatic interest and need.
- Change control for program activities conducted within this PIP will be managed in accordance with the provisions of the PMM and threshold limits established by Congress. Appendix D of the NNSA PMM defines cost, schedule and scope control thresholds and Approval Authorities, as well as the process to be used to manage change control.
- Based on Congressional action to date, the budget control levels allow the federal Program Managers to shift funding within DSW subprograms. The M&O contractors also have the authority shift funding within DSW subprograms. This provides them needed financial flexibility to manage program activities. All requests to shift resources between or out of or in to *Stockpile Systems* or *Stockpile Services* **must** be approved in advance by the appropriate NNSA Program Manager(s) and Congressional notification or approval may be required.

12.0 FINANCIAL PLAN

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Figures 3 & 4 show projected obligations and cost from April 1 through September 30 2009. Numbers are based on approved appropriations for Stockpile Systems and Stockpile Services.

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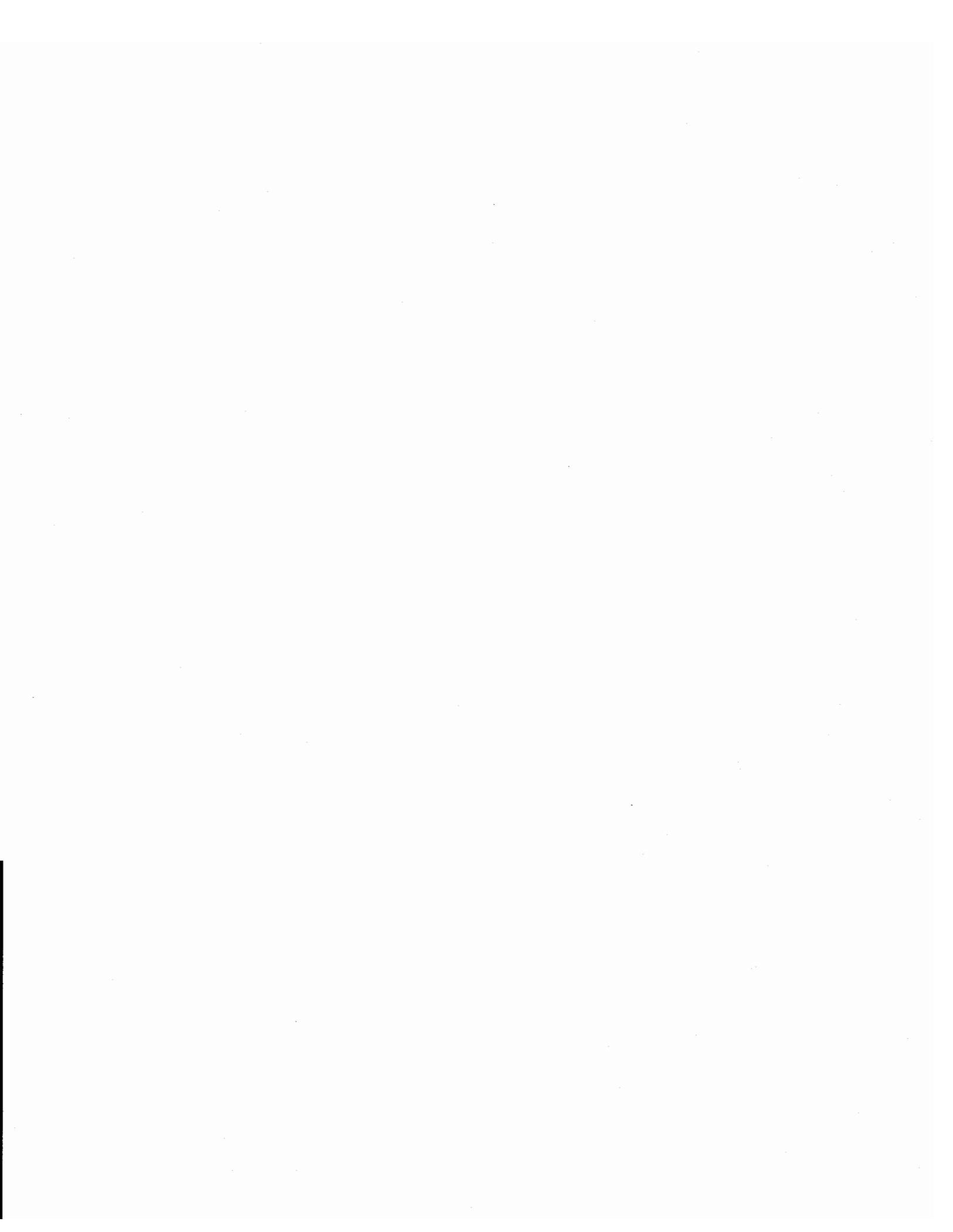
Figure 3: Obligation Plan for FY 2009

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Figure 4: Cost Plan for FY 2009



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13.0 OPEN ISSUES AND PENDING DECISIONS

None identified at this time.

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