The Secretary of Energy
Washington, DC 20585

July 5, 1994

The Honorable John T. Conway
Chairman
Defense Nuclear Facilities Safety Board
625 Indiana Avenue, N.W.
Suite 700
Washington, D.C. 20004

Dear Mr. Chairman:

Enclosed is the Department of Energy Implementation Plan for Recommendation 93-6, Maintaining Access to Nuclear Weapons Expertise.

There are significant changes underway to the Department's mission, budget, and projected staff in the nuclear weapons area. We recognize that the reduction in size of the nuclear weapons stockpile and other related changes have safety-related consequences. To avoid future safety problems, we must develop programs which retain access to capability and capture the unique knowledge of individuals who have been involved for many years in defense nuclear activities. The Department is addressing these issues through the development of a Stockpile Stewardship Strategy and the Stockpile Management Plan. These initiatives will guide future activities of the weapons complex and ensure weapons stockpile safety is maintained. The Implementation Plan for Recommendation 93-6 also discusses the future release of the Stockpile Stewardship Strategy and the Stockpile Management Plan and includes a provision for future funding impacts. These provisions, discussed in the Change Control Section, provide a method for addressing significant changes in the Department's baseline assumptions and adjusting the Implementation Plan in an appropriate manner.

We will keep the Board informed of the Department's implementation progress through quarterly reports and other deliverables detailed in the Plan.

Sincerely,

Hazel R. O'Leary

Enclosure:
Implementation Plan for
Recommendation 93-6

DEPARTMENT OF ENERGY

IMPLEMENTATION PLAN FOR

DNFSB RECOMMENDATION 93-6

MAINTAINING ACCESS TO NUCLEAR

WEAPONS EXPERTISE IN THE

DEFENSE NUCLEAR FACILITIES COMPLEX

July 1, 1994

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EXECUTIVE SUMMARY

On December 10, 1993, the Defense Nuclear Facilities Safety Board transmitted Recommendation 93-6, Maintaining Access to Nuclear Weapons Expertise, to the Department of Energy, which was accepted on February 2, 1994. On May 18, 1994, the Department notified the Board that a 45-day extension to submit an implementation plan was necessary to ensure development of an integrated and effective approach to all of the issues. This Implementation Plan focuses on ensuring that the Department maintains the capability to conduct safe dismantlement, modification, assembly, and testing operations. The Department is also developing living documents, Stockpile Stewardship Strategy (SSS) and Stockpile Management Plan (SMP), that will provide broad guidance for all future weapon activities within Defense Programs. These programs address problems caused by the aging and downsizing of the engineering and design staffs, as well as Defense Programs personnel. These documents recognize the need to establish programs to record information that may be critical in the future to evaluate any safety or performance concerns that may arise, as well as to develop safe operational procedures for dismantlement or modification and testing, if directed. This Implementation Plan will complement the Stockpile Stewardship Strategy and the Stockpile Management Plan by providing action steps to maintain safety-related competency as the weapons complex evolves. This Implementation Plan was developed in recognition of the urgent need to act to maintain and document the high level of competency necessary to ensure safe operations. It enables the Department to capture and document the complex and unique skills and knowledge before they are lost as a result of personnel reductions and reduced operations. The retention of these skills and knowledge will not only provide a means to maintain competency in the near term, but they will also provide an essential element in training a new generation of scientists and engineers. New scientists and engineers will further benefit from umbrella guidance provided by the Stockpile Stewardship Strategy and the Stockpile Management Plan. These documents go beyond the maintenance of today's competencies to the development of new competencies in the absence of system development programs and underground nuclear testing, reduction of test facilities, and the aging cadre of weapons systems engineers.

In order to preserve vital skills and knowledge already developed within the Department workforce and to ensure that capability is maintained to disassemble or modify and test nuclear weapons safely, this Implementation Plan:

Assigns Dr. Everet H. Beckner, DP-2, as the Implementation Plan integrator.

Provides a formal and enduring Integrated Safety Skills and Knowledge Platform (ISSKP) that identifies and maintains a record of the needed skills and knowledge before those skills and knowledge are lost and establishes a method for continually reviewing and updating the record as the nuclear weapons complex scientists and engineers retire or leave the program.

Integrates the ISSKP with the development of safe disassembly procedures. This integration strengthens the disassembly process by including all system-specific knowledge and increases the involvement of design laboratory experts.

Maintains expertise in operations key to safety of nuclear testing at the Nevada Test Site.

Initiates a review process of the administrative controls and the engineered safeguards currently in place that provide the positive measures to ensure nuclear explosive safety at the Nevada Test Site.

The Department's actions, identified above, address the Board's concerns and provide a formal process to maintain competency within the Department. This Implementation Plan will complement future policy, budget, and operational evolutions developed in the forthcoming stockpile documents.

INTRODUCTION

On December 10, 1993, the Defense Nuclear Facilities Safety Board issued Recommendation 93-6, which focuses on retaining access to capability and capture of the unique knowledge of individuals who have been engaged in certain critical defense nuclear activities in order to avoid future safety problems in these and related activities. The Department of Energy accepted Recommendation 93-6 on February 2, 1994. Recommendation 93-6 Implementation Plan does not supersede existing initiatives or commitments under other Board-accepted implementation plans. The Department is also developing a Stockpile Stewardship Strategy and Stockpile Management Plan that will provide broad guidance for all future weapon activities within Defense Programs. In part, they discuss the challenges facing all personnel and the need to record information critical to evaluate safety and operational concerns. The revised draft of the Stockpile Stewardship Strategy will be completed in July 1994, with the final draft expected in late summer of 1994. The initial development of the Stockpile Management Plan will begin in July 1994. This development process will generate a delivery schedule for the draft and final Stockpile Management Plan that will be provided to the DNFSB. The Stockpile Stewardship Strategy states the design and system engineers' responsibilities, which span from nuclear weapon design to final retirement. These engineers are called upon to help assess potential problems that are detected in stockpile systems, devise fixes to problems, modify systems to meet new requirements, and provide expert advice during dismantlement, modification, and testing operations. Those engineers who are responsible for modification or improvement programs often face challenges that are much more difficult than those faced in new system development because their options are limited by constraints imposed by the existing warhead design and the existing interface with the delivery system. In meeting the requirements to extend the lifetime of the enduring stockpile, DOE Headquarters personnel, nuclear weapon system engineers, and dismantlement and testing personnel will be challenged, as never before, by the need to anticipate aging problems and provide repairs and fixes that do not degrade system performance. At the same time, the Department will be unable to verify, by underground nuclear testing, the effect those changes may have on the operation of the system.

Although the DNFSB letter of May 27, 1994, raises concerns over the loss of key personnel from the national weapons laboratories and the Nevada Test Site, it also identifies the need for efforts to address the real-time loss of technical competence within Defense Programs, especially Headquarters staff. The Department shares the Board's concern for the loss of capability within Defense Programs and will conduct an immediate review to determine the effect of this loss. The Department will also take an aggressive approach to supplement the Defense Programs organization with additional, technically competent personnel, as appropriate.

A goal of the Department of Energy Strategic Plan is to maintain nuclear weapons technology and competency that are responsive to national security needs, within expected fiscal constraints. The Department supports the

concept of the Stockpile Stewardship Strategy and Stockpile Management Plan by outlining a strategy to develop and implement a program to assure confidence that the stockpile remains safe, secure, and reliable without underground nuclear testing. This Implementation Plan will complement the Stockpile Stewardship Strategy and the Stockpile Management Plan by developing programs to document skills and knowledge of departing personnel to maintain safety-related competency as the nuclear weapons complex evolves and to maintain that competency through training, exercises, and recruitment of new personnel to the nuclear weapons complex.

The following assumptions were used in the development of this plan: (1) Current national and DOE policy regarding dismantlement, modification, and test readiness; (2) Full funding for dismantlement, modification, and maintenance of test-readiness activities will be available; (3) For dismantlement, modification, and testing activities, that this plan applies to personnel of the national weapons laboratories and relevant Management and Operating contractors, as well as Federal employees of the Department of Energy; (4) In considering the near- and long-term safety of dismantlement and modification operations at Pantex and Y-12, that all weapons (retired, inactive, and active) will be included. (5) That nuclear system includes both primary, secondary, and components containing special nuclear material (SNM); and (6) No underground nuclear testing, but that fully integrated exercises and hydronuclear experiments will be conducted at the Nevada Test Site for the purpose of maintaining the safe conduct of nuclear test operations.

NEAR-TERM INITIATIVES

The Department recognizes the importance and magnitude of the changes discussed in this Implementation Plan. Efforts have been started to complete near-term initiatives that can quickly achieve momentum and demonstrate success in implementing this Plan. The Department has established working groups, along operational responsibilities, to facilitate the development of this Implementation Plan. Discussions between the Defense Nuclear Facilities Safety Board staff and the Department confirmed that the completion of near-term activities is instrumental for the success of long-term efforts.

In order to achieve the goals of this Implementation Plan, the following initiatives will be completed in the next 6 months. A select number from the Plan is listed below:

* **Readiness Exercise/Activity Schedule** — July 1994
  Develop a schedule that describes the exercise/activity location, purpose, description, and date of every exercise and activity related to the safe conduct of nuclear testing operations.

* **Management Responsibility for Archiving** — July 1994
  Identification of line management responsibility for the archiving mission.

* **Stockpile Evaluation Program Description** — July 1994
  Letter that provides supporting documentation on the accelerated aging and Stockpile Evaluation Programs to the Board.

* **Dismantlement and Modification Safety Functional Areas** — August 1994
  Develop a list of critical functional areas that support safe dismantlement or modification procedures.

* **Testing Key Positions** — August 1994
  Develop a list of key positions critical to the safe conduct of nuclear testing operations.

* **Defense Programs Headquarters Staffing** — August 1994
  Review the current status of the Defense Programs Headquarters staff and make recommendations concerning the need for additional staff.

* **Weapons Disassembly List** — September 1994
  Develop a prioritized list of weapon systems and timeframe for disassembly.

* **Methodology** — September 1994
  Develop a formal approach to identify skills and knowledge relating to the critical safety functional areas.

* **Structured Interview Process** — September 1994
  Develop a structured interview process to ensure consistent and usable information.

* **Y-12 Archive Process** October 1994
The Y-12 Plant will review its process to capture and document the skills and knowledge from critical functions.

* **Process to Gather Hazard Information** October 1994
Develop a formal process to gather hazard information to incorporate into weapon disassembly procedures.

* **Retirement Policy Statement** October 1994
Develop a Department of Energy policy statement concerning the availability of retired personnel for archiving purposes.

* **Y-12 Critical Functional Areas** November 1994
The Y-12 Plant will review its existing list of critical functional areas and the associated skills and knowledge requirements related to disassembly of critical weapons components.

* **Identification of Dismantlement Skills and Knowledge** November 1994
Identify and document the skills and knowledge required to dismantle or modify nuclear weapons safely at Pantex.

* **Identification of Testing Skills and Knowledge** November 1994
Identify and document the skills and knowledge required to conduct operations safely at the Nevada Test Site.

MAJOR TASK INITIATIVES

INTEGRATED SAFETY SKILLS AND KNOWLEDGE PLATFORM

PURPOSE:

To identify personnel of the national weapons laboratories, relevant Management and Operating contractors, and Federal staff of the Department of Energy who have critical and unique skills and knowledge essential to the safe dismantlement or modification of nuclear weapons and the safe conduct of nuclear testing operations to ensure access to these individuals and their experiences and knowledge through the establishment of a formal program to capture and document these skills and knowledge. This includes the skills and knowledge to conduct relevant safety analyses.

DISCUSSION:

Integrated Safety Skills and Knowledge Platform, ISSKP, which relates to the first five items of Recommendation 93-6, is a life-cycle process. It is designed to capture and document safety-related weapons expertise, furnish this information for application within Tasks 6, 7, 8 and 9, and provide a mechanism for the feedback of additional guidance within the nuclear weapons complex. For Tasks 6 and 9, ISSKP will ensure that current expertise, including, as far as practical, individuals involved in the original weapon design, is applied in the development of safe dismantlement and modification procedures for all remaining weapons in the U.S. stockpile. For Tasks 7 and 8, ISSKP will ensure the availability of expertise to resume nuclear testing safely if authorized by the President. Because all skills and knowledge cannot be captured instantaneously, the first priority for ISSKP will be to capture and document the skills and knowledge of retirees, personnel still employed but working on other programs, personnel about to leave the program, and those leaving within the next year. The capture of skills and knowledge from an individual will take place in several forms. One process will be to involve the individual in formal dismantlement, modification, or hydronuclear/exercise activities where their unique knowledge can be directly shared and captured. This occurs in Task 6 for dismantlement and modification and in Task 7 for nuclear testing. For those departing soon and where access could be lost, a program will be developed and conducted as part of the out-processing procedure of ISSKP and the record made available for later use in Tasks 6, 7, and 9. This program will use methods such as individual tasking, interviews, and other possible methods to most effectively elicit information in the individuals' area(s) of expertise.

Figure 1, ISSKP, i.e., Tasks 1-5, depicts the relationship among the platform tasks and their integration with Tasks 6, 7, 8, and 9. The structured ISSKP process is outlined by the activities shown in the area bounded by the dotted line.

The ISSKP process operates in the following manner. ISSKP 1 identifies skills and knowledge required to develop safe dismantlement and modification procedures. ISSKP 2 identifies the skills and knowledge necessary to conduct safe nuclear testing operations. The results of ISSKP 1 and ISSKP 2 are used in ISSKP 3 to identify those individuals with the appropriate skills and knowledge either presently in those positions or recently departed. ISSKP 4 establishes a DOE policy for obtaining short-term access to archive information from departed or soon to depart individuals. ISSKP 5 does the actual collection and recording of the safety-related information from those identified in ISSKP 3. The material application of the skills and knowledge of the personnel identified in ISSKP 1, ISSKP 2, and ISSKP 3, along with the incorporation of archival information from ISSKP 5, takes place in Tasks 6, 7, 8, and 9.

ISSKP 1, ISSKP 2, ISSKP 3, and ISSKP 5 are repeated until all the skills and knowledge of the identified key personnel have been documented. The process naturally focuses first on those personnel who have left or are about to leave the nuclear weapons program and continues to capture information from those individuals leaving the program in future years.

A short summary of the five ISSKP steps follows:

ISSKP 1 identifies critical and unique skills and knowledge needed to develop and verify safe dismantlement and modification procedures, as well as those necessary to conduct relevant safety analyses. Emphasis is on the skills and knowledge that can identify potential hazards, whether inherent in the design or dismantlement/modification processes, or from known or anticipated stockpile degradation.

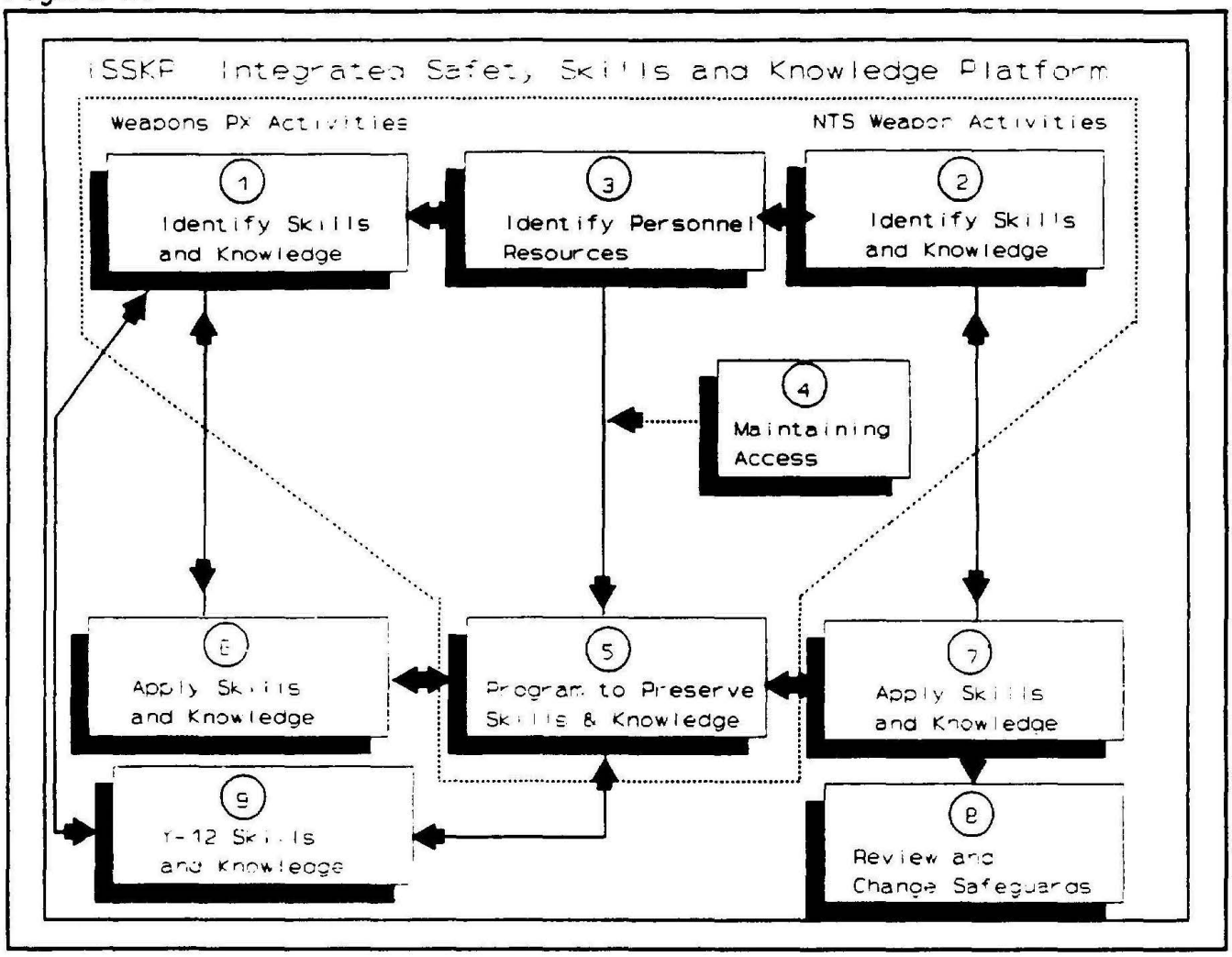
ISSKP 2 identifies critical and unique skills and knowledge needed to conduct nuclear testing operations safely. Emphasis is on the skills and knowledge to conduct operations safely such as assembly, onsite transportation, insertion/emplacement, arming and firing, timing and control, and post-shot operations.

ISSKP 3 mandates the establishment of a review process to review the loss of skills and knowledge and also identifies specific personnel of the national weapons laboratories, relevant Management and Operating contractors, and Federal staff of the Department of Energy with the critical and unique skills and knowledge as determined by this program.

ISSKP 4 establishes the policy for the short-term access of the identified personnel.

ISSKP 5 captures the experiences of identified personnel for the development of safe dismantlement and modification procedures and for the safe conduct of nuclear testing operations if authorized by the President.

Figure 1:


ISSKP Integrated Safety, Skills and Knowledge Platform
Weapons PX Activities
NTS Weapon Activities
1
Identify Skills and Knowledge
3
Identify Personnel Resources
2
Identify Skills and Knowledge
4
Maintaining Access
6
Apply Skills and Knowledge
5
Program to Preserve Skills & Knowledge
7
Apply Skills and Knowledge
9
Y-12 Skills and Knowledge
8
Review and Change Safeguards

ISSKP 1 Identify Disassembly Skills and Knowledge

Responsibility:

The Albuquerque Operations Office is responsible for the implementation of this section, subject to approval from the Deputy Assistant Secretary for Military Application and Stockpile Support. Relevant Albuquerque Management and Operating contractors and the national weapons laboratories will provide assistance as required.

Commitment 1.1 - Identify critical functional areas that support safe dismantlement and modification procedures, including the performance of relevant safety analyses at Pantex. Currently defined functional areas for assembly, disassembly, modification, retrofit, and stockpile evaluation programs will be reviewed and selected based on their applicability to development of safe dismantlement and modification procedures.

Deliverable: List of critical functional areas.

Due Date: August 1994

Commitment 1.2 - Using the list of critical functional areas developed in Commitment 1.1, the Albuquerque Operations Office will specify the critical functional areas, including the ability to perform relevant safety analyses, in a tasking letter to the design agencies and Pantex. The tasking letter will require them to identify skills and knowledge required to perform the specified functional areas and to document the approach used. Although different approaches may be used due to the inherent differences in personnel management systems used by the design and production agencies, the tasking letter will specify criteria for matching skills and knowledge to functional areas and the format for the report so that the reports will have a basis for comparison review and be readily compiled. DOE Headquarters and Albuquerque will identify functional skills associated with program direction, guidance, and management related to the specified, critical functional areas.

Deliverable: A tasking letter from the Albuquerque Operations Office to the design agencies and Pantex and from DOE Headquarters to Headquarters staff and the Albuquerque Operations Office to identify skills and knowledge and document the approach.

Due Date: September 1994

Commitment 1.3 - Compile input from Commitment 1.1 and perform a comparison review to identify areas that may need immediate attention or feedback. Compiled input will then be made available for use in ISSKP 3.

Deliverable: Report from Albuquerque to DOE Headquarters indicating compilation was completed and summarizing any significant findings.

Due Date: November 1994

ISSKP 2 Identify Testing Skills and Knowledge

Responsibility:

The Nevada Operations Office is responsible for the implementation of this section, subject to approval from the Deputy Assistant Secretary for Research and Development. Relevant Nevada Management and Operating contractors and the national weapons laboratories will provide assistance as required.

Commitment 2.1 - Through application of Nevada Operations Office Order NV56XE.1, Underground Nuclear Testing, that defines the responsibilities and process for the conduct of underground testing, each nuclear test organization (DOE Headquarters, Nevada Operations Office, national laboratories, Management and Operating contractors) will identify skills and knowledge associated with the job content of key positions critical to the safe conduct of nuclear testing operations. The following process will be used to accomplish this commitment:

Commitment 2.1.1 - Identify key positions associated with the critical safety activities, functions, and operations, with emphasis on the skills and knowledge to conduct operations safely such as assembly, onsite transportation, insertion/emplacement, arming and firing, timing and control, and post-shot operations for preparation of an underground nuclear test.

Deliverable: List of key positions critical to the safe conduct of nuclear weapons testing.

Due Date: August 1994

Commitment 2.1.2 - Each testing organization, including DOE Headquarters, will identify and document the skills and knowledge of the key personnel presently employed in the critical positions identified in 2.1.1 above. Those identified personnel will document their skills and knowledge, and management will review and validate that document. This information will form a data base that will be used to contribute to the development of a training and qualification plan. This document will also provide input to the Nevada Operations Office to aid in the implementation of ISSKP 3, ISSKP 5, and Task 7.

Deliverable: Description of skills and knowledge for each key position.

Due Date: November 1994

ISSKP 3 Identify Personnel Resources

Responsibility:

The Deputy Assistant Secretary for Resource Management is responsible for the implementation of this section. All operations offices, Management and Operating contractors, and the national weapons laboratories will provide assistance as required.

Commitment 3.1 - To address the DNFSB letter of May 27, 1994, Defense Programs will conduct an immediate review to determine the effect of the recent loss of Headquarters personnel. This review will be a qualitative assessment to determine the current status of Defense Programs staffing and the need for additional, technically competent personnel within Defense Programs.

Deliverable: Letter to the DNFSB stating current status of Defense Programs staffing and recommendations for additional staff.

Due Date: August 1994

Commitment 3.2 - Each organization involved in dismantlement/modification and nuclear testing activities will identify presently employed and recently departed (VERIP, etc.), as appropriate, personnel that have the skills and knowledge as identified by ISSKP 1 and ISSKP 2. The parent organizations will identify people who have the skills and knowledge that are required for each critical functional area or key position. The deliverable to organizations outside of the parent organizations will be a list of the number of Full-Time Equivalents (FTEs) with years of professional experience for each critical functional area or key position. Personnel on these lists are, in turn, used in ISSKP 5 to determine who will participate in the processes that capture and document skills and knowledge and in Tasks 6, 7, and 9.

Deliverable: List of the number of key position/critical function FTEs with years of professional experience.

Due Date: January 1995

Commitment 3.3 - Consistent with the intent of the Stockpile Stewardship Strategy and the Stockpile Management Plan, develop and issue a Defense Programs Policy Statement requiring that a formal process be instituted for the review of critical and unique skills, knowledge, and personnel as identified by ISSKP 1, ISSKP 2, and ISSKP 3. The information developed by this review will be used as a management tool for the completion of Tasks 6, 7, and 9.

Deliverable: Policy statement that requires an annual review and report that updates the lists developed in ISSKP 1, ISSKP 2, and ISSKP 3.

Due Date: January 1995

ISSKP 4 Maintaining Access

Responsibility:

The Deputy Assistant Secretary for Resource Management with assistance from the Assistant Secretary for Human Resources and Administration is responsible for the implementation of this section. The cognizant Secretarial Officers, Operations Offices, the Office of Intelligence and National Security, Management and Operating contractors, and the national weapons laboratories will provide assistance as required.

Commitment 4.1 - Develop a Department of Energy Policy Statement concerning the availability of those individuals who have retired (VERIP, etc.) or are scheduled to retire who have been identified as having critical and unique skills and knowledge in the design, assembly/disassembly, and testing of nuclear weapons to be utilized to implement ISSKP 5. The policy will be accompanied by guidance on administrative flexibilities available to obtain/retain employees who have the critical and unique skills and knowledge necessary to perform the duties described as well as procedures for maintaining active clearances for one year after retirement for those individuals scheduled to retire from the nuclear weapons complex.

Deliverable: Department of Energy Policy Statement that provides guidance for access to departed personnel whose skills and knowledge, identified in ISSKP 1, ISSKP 2, and ISSKP 3, are critical to safe dismantlement, modification, disassembly, and testing operations.

Due Date: October 1994

ISSKP 5 Documentation of Skills and Knowledge

Responsibility:

The Assistant Secretary for Defense Programs has the overall programmatic responsibility for this section. DOE Headquarters is responsible for implementation of this section. Relevant DOE Management and Operating contractors and the national weapons laboratories will provide assistance as required.

The goal of ISSKP 5 is to archive the safety-related experiences and knowledge of the critical personnel previously identified from the data generated from ISSKP 1, ISSKP 2, ISSKP 3, and made available by ISSKP 4.

Commitment 5.1 - The Assistant Secretary for Defense Programs will establish, at Headquarters, the overall management structure that will oversee and coordinate the archiving efforts. As a management function, the line manager will conduct annual reviews of this archiving program.

Deliverable: Identification of line management having responsibility to coordinate the archiving mission within Defense Programs.

Due Date: July 1994

Commitment 5.2 - Consistent with the intent of the Stockpile Stewardship Strategy and the Stockpile Management Plan, the line management office identified in Commitment 5.1 will develop and coordinate a program to document the experience and knowledge of personnel identified in ISSKP 3. This program will include an archiving schedule, milestones, and performance metrics, and will use methods such as individual tasking, interviews, and other possible methods to most effectively elicit information in the individuals' area(s) of expertise. The focus of this program is on documenting experience and knowledge that may affect the development of safe dismantlement and modification procedures at Pantex,

disassembly activities at Y-12, and the safe conduct of operations at the Nevada Test Site. The program will ensure capture and documentation of consistent and usable information. Priority will be as follows:

1. Retirees
2. Personnel still employed but working on other programs
3. Personnel planning to leave the program
4. Those leaving within the next year
5. Those remaining in the program with knowledge pertinent to the weapon systems in the enduring stockpile who will leave the program after October 1995.

Deliverable: Structured information recovery program to document skills and knowledge including schedules, milestones, and performance metrics.

Due Date: September 1994

Commitment 5.3 - Implement the process developed in Commitment 5.2. The process will be a multistep approach of collecting safety-related information from those personnel identified in ISSKP 3. Program information will be updated and provided in the Recommendation 93-6 quarterly reports.

Deliverable: Archiving program status report comparing accomplishments against the program developed in Commitment 5.2.

Due Date: March 1995

TASK 6. DEVELOPMENT OF WEAPONS DISASSEMBLY PROCEDURES AND LABORATORY SUPPORT TO PANTEX

Purpose:

Task 6 assures that all applicable safety hazard information and known experiences and knowledge are considered when developing weapon dismantlement or modification procedures. Accomplishment of this task will have the added benefit of further strengthening and formalizing the participation of design laboratory experts in concert with production and evaluation experts in the safety aspects of weapons dismantlement and modification.

Discussion:

Safety hazards are grouped into four categories. They are: (1) those inherent in the original design, (2) hazards introduced through aging, (3) hazards associated with conducting normal dismantlement or modification operations, and (4) hazards associated with credible abnormal operational conditions (i.e., damage). Step 5 of ISSKP, which is the prioritized archiving effort of knowledgeable personnel with system-specific expertise, will be an added means of identifying these hazards. The Albuquerque Operations Office will upgrade and formalize the disassembly and modification procedure development process to ensure every category of safety hazard information is considered. Incorporation of safety hazard information will be addressed in both Disassembly and Inspection (D&I) (Weapon Phases 4 through 6) procedures and Disassembly and Disposal Engineering (Weapon Phase 7B) procedures.

The disassembly and modification procedure development process starts with the D&I procedures written by the original design and production team within the first 12 months of Phase 4 (Production Engineering Phase). The early development of D&I procedures assures original designers are involved in their development and ensures disassembly procedures are available prior to the weapon being actually produced in Phase 5 (First Production Unit). These D&I procedures are updated as safety, hazard, procedure, and other information is gained by using them over the life (Phase 5 and 6) of the weapon system. In Phase 5, the D&I procedures are used to disassemble and inspect weapons built to war reserve (WR) specifications for design review and acceptance by DOE. During Phase 6, the D&I procedures are used to disassemble and inspect weapons as part of the Stockpile Evaluation Program (SEP).

In addition to the SEP, the laboratories conduct accelerated aging tests that subject production units to environmental conditions that simulate longer term (i.e., accelerated aging) storage and handling. These tests provide various information regarding potential aging effects. Aging effects are also documented in laboratory-prepared stockpile sample analyses reports. Information (including safety-related information) gained from the SEP and aging effects studies is used to update the D&I procedures as required. In this manner, the D&I procedures, together with the analyses reports, equal a weapon system-specific, documented-life history that includes identification of hazards.

The SEP hazard information analyses and laboratory-accelerated aging test analyses address the Board's concern for analyses of the possibility of hazards from degradation of nuclear weapons remaining in the enduring stockpile with time. See Commitment 6.1 for related deliverables.

The weapon system disassembly procedure development process that occurs in Phase 7B (Disassembly and Disposal Engineering) includes full involvement of both design and production personnel and review of appropriate documentation and hazards analyses. As such, this procedure development process uses the D&I procedures as the starting point for disassembly and disposal procedure development. By doing so, the proven (Phases 5 and 6) disassembly procedures are evaluated to determine if the process is efficient, in part or whole, for use in Phase 7.

The present Phase 7B procedure development process currently considers those hazards listed at the beginning of this discussion except those identified by ISSKP 5 and certain abnormal operational conditions. Information documented from ISSKP 5 will be added to the other safety hazard information currently utilized as input in Phase 7B procedure development. Conversely, if changes to required ISSKP 1 skills and knowledge are identified through development of the disassembly procedures, that information will be fed back to enhance the ISSKP (i.e., Items 1 through 5).

The Stockpile Stewardship 21 (SS-21) program is being developed to further enhance the disassembly and modification processes. A feature of the SS-21 program will require the consideration of hazards associated with credible, abnormal occurrences identified by the design and production team. Consideration of credible, abnormal occurrences will be addressed in requirements for the design of disassembly tools, fixtures, and procedures. Because credible, abnormal occurrences have varying levels of impact, they may result in modifications to normal processes and procedures or cause the development of a whole new contingency process that is separate from, but supports, the normal process. The SS-21 program, when finalized, will be documented in the Albuquerque Operations Office Supplemental Directive, AL 56XB, the Development and Production Manual (D&PM). (When the SS-21 program is incorporated in the D&PM, a copy of that chapter will be furnished the Board.) The Albuquerque Operations Office will also ensure that identified hazards associated with credible, abnormal occurrences are addressed in the disassembly and modification procedure development process.

Prior to using disassembly procedures (D&I or Disassembly and Disposal) on a WR weapon, the final procedures are also subject to multiple reviews. These reviews assure the process was properly developed and is safe for implementation. They include: design laboratory review and concurrence through the Qualification Evaluation processes directed in the D&PM; a Nuclear Explosive Safety Study (NESS) (if a nuclear explosive is involved) conducted by an independent group of experts from DOE Headquarters, Albuquerque Operations Office, the design laboratories, and Pantex; and the Pantex Internal Assessment. These reviews must be conducted, the NESS approved by Headquarters, and all immediate findings closed and validated prior to the Albuquerque Operations Office providing approval to initiate the operation.

The Albuquerque Operations Office will use the dismantlement schedule directed in the Retirement Disposal Program Control Document (RD PCD) to set priorities for applying the formal procedure development process that incorporates the additional safety hazard information from ISSKP 5 and credible, abnormal occurrences in the D&I and Disassembly and Disposal procedures. The RD PCD schedule will be used as the guide because it was developed and is updated using safe operations as the primary consideration. Additionally, the RD PCD dismantlement schedules do not need to be altered to accommodate a departing person since ISSKP 3 and ISSKP 5 steps are prioritized to ensure that weapon system functional experts' knowledge and experiences are documented prior to their departure. Under RD PCD schedule priorities, current D&I procedures for the enduring stockpile will be reviewed and revised, as necessary, to ensure incorporation of identified hazards information (including that from ISSKP 5). Disassembly and disposal procedures for enduring systems will be completed as a Phase 7B process as described above, which starts about 2 years prior to the First Disposal Unit directed in the RD PCD. This approach ensures relevant safety information is incorporated in effective D&I procedures. It also enables the Phase 7B procedure development process to take advantage of newer technologies and improved safety features and other enhancements that may become available between now and when the system will actually be disassembled.

The current weapon dismantlement and modification procedure development process is documented in the Albuquerque Operations Office Supplemental Directive, AL 56XB, Development and Production Manual. Chapter 3.2, Phases 3 through 7, specifies responsibilities for Phase 7 Dismantlement; Chapter 3.7, Qualification Evaluation Weapon Assembly/Disassembly Safety, addresses critical safety functional areas for weapons operations, and Chapter 8.1, New Material and Stockpile Evaluation Test Program, directs programs to identify problems that could affect the safety and reliability of nuclear weapons in the enduring stockpile. The SS-21 program will specify laboratory expertise/involvement at the very beginning of tool, fixture, process, and procedure design for weapon operations.

The D&PM, Chapter 3.7, establishes requirements and guidance for determining readiness to start up, restart, or continue weapon assembly or disassembly operations at the Pantex Plant. The requirements and guidance apply to all Albuquerque Operations Office organizations, design agencies, and production agencies having responsibility for weapon assembly or disassembly at the Pantex Plant.

The Qualification Evaluation (QE) is the primary focus of D&PM, Chapter 3.7. The QE is a formal, systematic, performance-based examination of tooling, equipment, procedures, personnel, and management control systems to ensure that weapon disassembly (QED), production (QEP) and surveillance (QES) will be performed in a safe and predictable manner. Where the ISSKP 1 process identifies skills and knowledge necessary to perform the functional areas necessary to develop dismantlement and modification procedures (ranging from hazard and risk analysis to criticality safety), the QED and Nuclear Explosive Safety Study provide a verification check that safety hazard information has been incorporated.

This formalized dismantlement and modification procedure development process will strengthen design laboratory experts participation in the safety aspects of disassembly and are key to the implementation of this task.

Responsibility:

The Albuquerque Operations Office is responsible for the implementation of this task, subject to the final approval and acceptance from the Deputy Assistant Secretary for Military Application and Stockpile Support. Relevant Management and Operating contractors and the nuclear design and engineering laboratories will be integral to the implementation of this task.

Commitment 6.1 - The Albuquerque Operations Office will provide supporting documentation on the Stockpile Evaluation Program (including the Accelerated Aging program) to the Board.

Deliverable: Letter to the Board that summarizes the programs.

Due Date: September 1994

Commitment 6.2 - The Albuquerque Operations Office shall review and revise, if necessary, the current weapon dismantlement schedule. This prioritized schedule will then be used to support implementation of the final information gathering process that will maximize use of identified personnel while they are readily available. Safety will remain the primary consideration for developing schedule priorities.

Deliverable: Dismantlement schedule for all weapon systems that depicts when the First Dismantlement Unit is planned for the retired systems and when the D&I review is planned for the enduring systems.

Due Date: September 1994

Commitment 6.3 - Consistent with the intent of the Stockpile Management Plan, update and formalize the dismantlement and modification procedure development process. The formalized process will integrate the results of ISSKP 5 (criticality safety hazard information) with all other safety hazard information into the disassembly procedure development process. The process will cause current dismantlement and modification procedures (either non-enduring stockpile disassembly or enduring D&I procedures) to be validated and updated. The process shall include a review of these documents by the original design teams, SEP teams, and original production teams, as available, and specify how the process will be accomplished. The process shall specify participants by expertise (including those identified in ISSKP 3), criteria

to meet the objectives, documentation to be reviewed (including that documented by ISSKP 5, accelerated aging analysis and SEP sample analysis reports), and the process deliverable (final disassembly or revised D&I procedures).

Deliverable: Documented process for developing safe dismantlement and modification procedures. The process will be formalized by its incorporation in the Development and Production Manual.

Due Date: October 1994

Commitment 6.4 - Develop or revise safe disassembly procedures to be used by Pantex for each weapon system, retired and enduring, that uses the formalized process developed under Commitment 6.3.

Commitment 6.4.1 - Develop or revise disassembly procedures that incorporate hazards information for all retired systems using the process described as a result of Commitment 6.3. These procedures are required to be developed in a timely manner to allow full review by the QED, NESS, and Pantex Internal Assessment prior to First Disposal Unit or restart as directed in the RD PCD.

Deliverable: Notification, prior to FDU for each retired system, that the disassembly procedures have been validated and updated using the formalized process.

Due Date: Prior to FDU or restart as directed in the RD PCD.

Commitment 6.4.2 - Review and revise, as necessary, D&I procedures that incorporate hazards information for all enduring systems using the process described as a result of Commitment 6.3. If the procedures are revised, the changes will be reviewed to ascertain if the current NESS remains valid, and a Qualification Evaluation will be conducted prior to their use in SEP or a modification. If the change invalidates the NESS, a NESS study will also be conducted prior to utilization of the revised D&I procedures.

Deliverable: Notification, for each retired system, that the disassembly procedures have been validated and updated using the formalized process.

Due Date: September 1995

TASK 7. NUCLEAR TEST SAFETY READINESS CAPABILITIES:

PURPOSE:

Establish a method for maintaining expertise to conduct an underground nuclear test safely at the Nevada Test Site, if and when the resumption of nuclear testing is approved. This capability will utilize and maintain the expertise of the key personnel possessing the skills and knowledge previously identified in ISSKP.

DISCUSSION:

The previous sections identified the skills and knowledge critical for maintaining safe operations (ISSKP 2) and for collecting and archiving critical data (ISSKP 5). Existing procedures will be modified using the ISSKP data, where appropriate, along with "lessons learned" from other sources, such as the "History of Underground Testing" and the "History of the Containment Evaluation Panel" (both currently are being compiled). The final step in maintaining an inherently safe operational capability is the retention of qualified, well-trained personnel. The Department of Energy believes that providing meaningful and challenging work, which allows personnel to practically apply the knowledge from training and procedures, is the preferred method of retaining a skilled workforce and safe operating methods. Procedures and activities will be the foundation upon which a safe operational capability will be maintained.

Hydronuclear experiments are the preferred method of maintaining a long-term safety capability for all functions associated with underground nuclear weapons testing. In the absence of hydronuclear experiments, functional area exercises and full-scale exercises will be conducted which, in the short term, will maintain the capability to conduct underground nuclear tests safely.

This program is consistent with the direction proposed in the Stockpile Stewardship Strategy, which includes the major objective to maintain the quality of the technical staff and the broad skill base to address the complex set of issues related to the underground testing of nuclear weapons.

RESPONSIBILITY:

The Nevada Operations Office is responsible for the implementation of this task, subject to approval from the Deputy Assistant Secretary for Research and Development. Relevant Nevada Management and Operating contractors and the national weapons laboratories will provide assistance as required.

Commitment 7.1 - The Nevada Operations Office has recently established the DOE/NV Test Readiness Policy that maintains the readiness capability to conduct underground nuclear test operations safely. Implementation of this

policy will be accomplished by the conduct of test-related field operations. The following schedules, reports, and reviews will be produced:

(1) Exercise schedule;
(2) Exercise plan;
(3) Completion report and lessons learned for each exercise or hydronuclear experiment. Lessons learned will be incorporated into follow-on exercises; and
(4) Annual review and completion report by the Nevada Operations Office of accomplishments in developing and maintaining skills and knowledge of personnel in critical positions.

Commitment 7.1.1 - Readiness Exercise/Activity Schedule that describes the exercise/activity location, purpose, description, and date of every exercise and activity related to the safe conduct of nuclear testing operations.

Deliverable: Readiness Exercise/Activity Schedule

Due Date: July 1994

Commitment 7.1.2 - Annual Test Readiness Exercise/Activity Plan that ensures the personnel identified in ISSKP 3 based upon the critical and unique skills and knowledge identified in ISSKP 2 are exercised. The purpose of this plan is to provide a projection to maintain safety-related capabilities of operations personnel, facilities, hardware, software, management systems, and controls.

Deliverable: Test Readiness Exercise/Activity Plan

Due Date: January 1995

Commitment 7.1.3 - Annual completion report that summarizes the accomplishments and lessons learned of the exercises and experiments conducted at the Nevada Test Site.

Deliverable: Annual completion report.

Due Date: January 1995

TASK 8. ADMINISTRATIVE CONTROLS/ENGINEERED SAFEGUARDS

Purpose:

To determine if traditional dependence on administrative controls to ensure nuclear explosive safety at the Nevada Test Site would be adequate and appropriate if nuclear testing should be resumed at a later time.

Discussion:

Underground nuclear testing has depended upon a layered defense of administrative controls and engineered safeguards to assure nuclear explosive safety. Because every test is unique, positive measures have evolved and varied over the years. Skilled, knowledgeable personnel can only effectively implement the positive measures if they understand the relationship of the measure to the safety and operational aspects of each test configuration.

Defense Programs will assess the administrative controls and engineered safeguards, in place, that provide the positive measures to ensure nuclear explosive safety at the Nevada Test Site and those possibly adaptable from fielded weapons in light of the future loss of skilled and knowledgeable personnel. The following major areas will be addressed in the assessment:

* A history of engineered safeguards and administrative controls in place;
* The current administrative controls that are required for nuclear explosive safety and why they are in place;
* The critical and unique skills and knowledge requirements needed to fulfill the present administrative controls using data generated by other task groups;
* The current engineered safeguards for nuclear explosive safety that are required and why they are in place;
* Critical comparison between current measures and the engineered safeguards that exist in a modern, fielded weapon;
* Recommended mix of engineered safeguards and administrative controls to ensure nuclear explosive safety.

Responsibility:

The Deputy Assistant Secretary for Military Application and Stockpile Support is responsible for the implementation of this task, in coordination with the Nevada Operations Office and the national weapons laboratories.

Commitment 8.1 - Defense Programs will conduct the study described in Task 8 discussion and provide a final report documenting the evaluation, results, recommendations, and implementation plan for changes, if necessary, to engineered safeguards and administrative controls.

Deliverable:	Final Report. Applicable recommended changes will be incorporated into the hydronuclear program or integrated exercises authorized and conducted under Task 7.
Due Date:	February 1995

TASK 9. PRESERVATION OF ASSEMBLY AND DISASSEMBLY SKILLS AT OAK RIDGE

Purpose:

Review and upgrade, as required, programs that preserve processing, assembly, and disassembly capabilities at the Oak Ridge Y-12 Plant. Accomplishment of this task will ensure consistency, throughout the Department, in maintaining access to capabilities and capturing the unique skills and knowledge of individuals who have been engaged in critical defense nuclear activities.

Discussion:

Defense Programs will develop the Stockpile Maintenance Plan to ensure continued safety and to maintain assembly and disassembly skills and knowledge. This includes identifying and formally cataloging critical process knowledge for nuclear component production (especially nuclear safety information) that is presently informally retained by key individuals. This information will be preserved in text, videotapes, computer-based expert systems, or other formats as appropriate. In addition, the Department will utilize Stockpile Evaluation data (includes past dismantlement data), the Production Capability Assurance Program (PCAP), and other ongoing training programs.

To avoid safety-related consequences, utilization of our Stockpile Evaluation Program data (procedures, videos, and evaluation reports) will contribute directly to the maintenance of skills for the remaining personnel. Another safety-related effort that will minimize the impact of lost personnel includes an ongoing training program where qualification requirements (entry level, job and duty fundamentals, job assignment, and continuing training requirements) have been identified. The Operational Readiness Review process will also aid in assuring that the critical and unique skills necessary for startup activities are in place. This process includes involvement from the design laboratories of Los Alamos, Livermore, and Sandia for review of procedures and response to problems that might be encountered.

Responsibility:

The Oak Ridge Operations Office is responsible for the implementation of this task, subject to the final approval and acceptance from the Deputy Assistant Secretary for Military Application and Stockpile Support. Relevant Management and Operating contractors and the national weapons laboratories will be integral to the implementation of this task.

Commitment 9.1 - The Y-12 Plant will review its existing list of critical functional areas and the associated skills and knowledge requirements related to disassembly of all weapons and will document the methods used in preparation of this listing. These will be submitted to the design laboratories for review and for their determination of whether there are key positions at the laboratories associated with these critical functional areas. If so determined, these critical areas will be incorporated into the ISSKP by the laboratories.

Deliverable: Y-12 list of critical functional areas and associated skills and knowledge requirements and methods used in preparation of the list.

Due Date: November 1994

Commitment 9.2 - The Y-12 Plant will review its process to capture and document the skills and knowledge from critical functional FTEs identified by this task. A status report will be issued annually.

Deliverable: Status report

Due Date: October 1994

Commitment 9.3 - The Y-12 Plant will prepare a list of presently employed and recently terminated or retired personnel, as appropriate, who possess the skills and knowledge required to accomplish the functional tasks of dismantlement. Using this list as a starting point, Y-12 will determine which of these personnel should be included in the process for capture and documentation of skills and knowledge and will prepare a schedule for completion, including annual reviews, of the process. Y-12 will also document the methods used in determining this reduced listing.

Deliverable: Y-12 list of critical functional FTEs with years of professional experience to be included in the process for capture and documentation of knowledge and skills, documented method used for preparation of this list, and a schedule for completion of the process.

Due Date: January 1995

REPORTING REQUIREMENTS

The Department will prepare quarterly reports updating the progress and significant accomplishments made in implementing Recommendation 93-6 initiatives. Defense Programs will issue the first report by October 31, 1994, to cover activities from the issuance of the Plan through September 30, 1994. Subsequent reports will be generated to cover quarterly periods and will be submitted within 30 days at the end of the reporting period. The quarterly reports will highlight ongoing efforts, review completion dates and upcoming milestones, discuss upcoming activities, note any concerns, and will be approved by the Assistant Secretary for Defense Programs. After September 1995, the Department will issue semiannual reports. The purpose of these reports will be to ensure continued tracking and accountability of the issues covered under this Recommendation.

The revised draft of the Stockpile Stewardship Strategy will be completed in July 1994, with the final draft expected in late summer of 1994. The initial development of the Stockpile Management Plan will begin in July 1994. When completed, both documents will be provided to the DNFSB for its review.

CHANGE CONTROL

Recommendation 93-6 Implementation Plan is a complex and long-range plan. Flexibility is needed to address changes in commitments, actions or completion dates where modifications are necessary due to additional information, project refinements, or changes in the Department's baseline assumptions. If outyear funding, full-time equivalent levels, or mission changes occur, the original date for commitments may require modification. Any significant changes in completion dates and Departmental commitments will be promptly brought to the attention of the Board prior to the passing of the completion date formally discussed in the quarterly progress reports including appropriate corrective actions and, where appropriate, submitted to the Board as a revision to the Implementation Plan.

ATTACHMENT A: GLOSSARY

This glossary is intended to provide clarity to the Implementation Plan. It is recognized that some of the terms listed below may be defined in other ways. The definitions provided below reflect the meaning of the term as used in this Plan.

Engineered Safeguards	Precautionary and mitigatory devices or physical features.
Functional Area	A specific category representing a group of activities or functions that must be performed.
Hazard	A source of danger with the potential to cause illness, injury, or death to personnel or damage to a facility or to the environment.
Modification	A change to a major assembly that alters its operational capabilities. This kind of change involves the user and requires positive control to ensure that the operational capability is clearly defined. A change in operational capability results from a design change that affects yield, delivery, fuzing, ballistics, or logistics.
Nuclear Explosive	Any assembly containing fissionable and/or fusionable materials and main charge, high explosive parts or propellants capable of producing a nuclear detonation (e.g., a nuclear weapon or test device) (Reference DOE Orders 5610.10 and 5610.11).
Nuclear Test Organization	An organization made up of 17 different entities formed for the purpose of conducting nuclear tests at the Nevada Test Site, the composition of which may be readily adjusted or changed in response to the needs and technical objectives of the U.S. Department of Energy Nuclear Test Program (Reference NTS-SOP-1102).
Nuclear Weapon	A nuclear explosive configured for operational use by the Department of Defense.
Positive Measures	Safety restrictions, design features, procedures, or other controls used individually or collectively to enhance system safety.

ATTACHMENT B: LIST OF ACRONYMS

AL	Albuquerque Operations Office
D&I	Disassembly and Inspection
D&PM	Development and Production Manual
DNFSB	Defense Nuclear Facilities Safety Board
DOE	Department of Energy
FTE	Full-Time Equivalent
ISSKP	Integrated Safety Skills and Knowledge Platform
NESS	Nuclear Explosive Safety Study
NTS	Nevada Test Site
NV	Nevada Operations Office
QE	Qualification Evaluation
QED	Qualification Evaluation for Dismantlement
QEP	Qualification Evaluation for Production
QES	Qualification Evaluation for Surveillance
PCAP	Production Capability Assurance Program
RD PCD	Retirement Disposal Program Control Document
SEP	Stockpile Evaluation Program
SMP	Stockpile Management Plan
SS-21	Stockpile Stewardship 21
SSS	Stockpile Stewardship Strategy
U.S.	United States
VERIP	Voluntary Early Retirement Incentive Program
WR	War Reserve