



**Department of Energy**  
Albuquerque Operations Office  
P.O. Box 5400  
Albuquerque, New Mexico 87185-5400

99-0000701

March 15, 1999

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DNF SAFETY BOARD

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:

DOE's initiatives to enhance formality of nuclear explosive operations at Pantex include commitments to issue several new Chapters to AL Supplemental Directive 56XB, the Development and Production (D&P) Manual. I issued four of these chapters with the attached memorandum.

These Chapters were developed using the process defined in the letter from Mr. Gene Ives to you, dated 10 August, 1998. This process ensured participation from DOE offices in Washington, Albuquerque and Amarillo, MHC, LLNL, LANL, SNL and the Defense Board staff. Comments from all organizations are compiled in resolution matrices. The comments have either been incorporated, or explanations for not incorporating the comments are included in the matrices.

With the large number of participants and their differing views on how nuclear explosive operations should be performed, it was not possible or prudent to accommodate all comments. The attached Chapters represent an approach that all participating organizations have said they can and will support.

Three Chapters of the D&P Manual and AL SD 452.2 remain under development. All of these documents are in the internal review process. Among these documents, my highest priority is to complete and issue Chapter 11.4 to establish expectations for authorization basis for nuclear explosive operations.

Please call me at (505) 845-6045 if you have any questions.

A handwritten signature in cursive script that reads "R E Glass".

Richard E. Glass  
Director,  
Weapon Programs Division

Attachment  
Cc: See Page 2

cc:

B. Twining, DOE-AL

K. Carlson, ONDP

S. Goodrum, AAO

M. Whitaker, S-3.1

E. Morrow, DP-3

E. Ives. DP-20

J. McConnell, DNFSB

625 Indiana Avenue, NW

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Washington, D.C. 20004-2901

United States Government

Department of Energy

# memorandum

Albuquerque Operations Office

DATE: March 15, 1999

REPLY TO:  
ATTN OF: WPD:RH

SUBJECT: AL Supplemental Directive 56XB, Development and Production Manual, Section 11, "Management of Nuclear Explosive Operations at the Pantex Plant"

TO: Glen Mara, LLNL, L-125  
John Stichman, SNL, Org 2100  
Rick Wayne, SNL, Org 2200  
Lou Salazar, LANL, NW-SS  
William Weinreich, General Manager, MHC, Pantex Plant

DOE is adding a new section to the D&P Manual to establish expectations for activities performed in support of Nuclear Explosive Operations at Pantex. DOE anticipates Section 11 will have the following chapters when fully implemented:

- 11.0 Section 11 Table of Contents and Definitions
- 11.1 Standing Management Team (SMT)
- 11.2 Integrated Weapons Activity Plan (IWAP)
- 11.3 Seamless Safety Process (SS-21)
- 11.4 Authorization Basis for Pantex Plant Nuclear Explosive Operations
- 11.5 Target Level of Controls (TLC)
- 11.6 Coordinated Review Process for Nuclear Explosive Operations at the Pantex Plant

Chapters 11.0, 11.1, 11.2, and 11.5 are provided for implementation with this memorandum.

DOE Orders provide requirements for all nuclear explosive operations. These D&P Manual Chapters provide additional requirements that are unique to Pantex operations, and establish roles for various organizations involved in performance or support of Pantex nuclear explosive operations. These D&P Manual Chapters are not intended to prescribe how the requirements will be met. Where it is appropriate to establish common processes to meet these requirements, these processes will be promulgated in the 900 series Technical Business Practices.

DOE recognizes the requirements established in these Chapters may have to be revised to take advantage of experience gained in the coming months. If you have concerns about the requirements established, suggestions for improvements, or lessons learned from their application, please submit recommended changes to the Director, WPD. Recommended changes should suggest specific wording changes and provide the rationale for these changes.

The remaining chapters will be provided to you electronically. Access to these chapters and the rest of the D&P Manual can be found at [www.explorer.doe.gov:1776/htmls/supplementaldir.html](http://www.explorer.doe.gov:1776/htmls/supplementaldir.html). Additionally, future changes to the attached chapters and all other D&P Manual chapters will be provided at the web address above. Electronic notification will be sent concurrently to various DOE and NWC contractor organizations when new or updated chapters are posted. An electronic mailing list is in use and directs updates to previously established D&P Manual site points of contact. Each site's POC has already been tasked to notify the appropriate personnel within their organization when a D&P update has occurred.

If there are questions regarding the D&P Manual update process, please call Rod Heimgartner at (505) 845-6601.



Richard E. Glass  
Director,  
Weapon Programs Division

#### Attachment

cc w/attachment:

S. Puchalla, DP-20  
D. Rhoades, DP-24  
S. Goodrum, AAO  
D. Schmidt, AAO  
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AL Appendix 56XB

# Development and Production Manual

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| 2.0 | Definitions              |
| 3.0 | Description              |
| 4.0 | Responsible Organization |

### 1.0 PURPOSE

The purpose of this chapter is to describe section eleven of the Development & Production Manual and list all definitions used within this section.

### 2.0 DEFINITIONS

Accident: An unplanned sequence of events that results in undesirable consequences. [DOE-STD-3009-94]

Activity Based Controls Document (ABCD): An ABCD establishes the controls for nuclear explosive operations that DOE believes are necessary to prevent or mitigate accidents with consequences that meet or exceed the Nuclear Explosive Operations (NEO) Evaluation Guidelines. The goal of the ABCD for a nuclear explosive operation at the Pantex Plant is consistent with the goal for Technical Safety Requirements specified in DOE O 5480.22.

Administrative Controls (AC): Provisions relating to organization and management, procedures, record keeping, assessment, and reporting necessary to ensure safe operations. [DOE-STD-3009-94]

Authorization Agreement (AA): The AA documents the DOE and Contractor agreement to the conditions of operation and as a minimum will:

- Define the scope of operations,
- List the applicable Authorization Basis documents,
- List other documents that support the decision to authorize operations, such as applicable readiness review reports, Nuclear Explosive Safety review reports, National Environmental Policy Act documents, and certification that all nuclear explosive surety standards are met, and
- Define any other terms and conditions.

Authorization Basis (AB): For nuclear explosive operations, the AB is defined as the applicable SER, SAR (or equivalent interim document), Pantex Plant TSR, HAR, and ABCD. These documents control the aspects of the operation relied upon by DOE.

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**BIO Upgrade Program Plan:** A plan supported by the individual Project Teams which describes in detail the scope of the project, the associated schedule and costs, and a work breakdown structure. The individual Project Plans, that support the overall Program Plan, define in greater detail, the expectations set forth by the Amarillo Area Office. The Program Plan must be approved by the Manager, Amarillo Area Office. It is a living document with configuration control applied to each document version.

**Hazard:** A source of danger (i.e., material, energy source, or operation) with the potential to cause illness, injury, or death to personnel or damage to an operation or to the environment (without regard for the likelihood or credibility of accident scenarios or consequence mitigation). [DOE 5480.23]

**Hazard Analysis:** The determination of material, system, process, and plant characteristics that can produce undesirable consequences, followed by the assessment of hazardous situations associated with a process or activity. Largely qualitative techniques are used to pinpoint weaknesses in design or operation of the facility that could lead to accidents. [DOE-STD-3009-94]

**Hazard Analysis Report (HAR):** A report that draws conclusions from the hazard analysis and constitutes a portion of the AB for nuclear explosive operations performed at the Pantex Plant.

**Integrated Weapons Activities Plan (IWAP):** An integrated plan that includes all nuclear weapon system activities that must be supported by the Pantex Plant and the National Laboratories. Items to be incorporated in the IWAP include weapon modifications and alterations, dismantlement, surveillance activities, and facility authorization basis upgrades/modifications that support weapon operations. Project Plans for each weapon system and facility authorization basis upgrade will contain the details of the work to be completed at the Pantex Plant (scope, cost & schedule).

**Nuclear Explosive Operations (NEO) Evaluation Guidelines:** The objective of the NEO Evaluation Guidelines is to identify accidents with potentially significant consequences to the worker, the public, or the environment. The NEO Evaluation Guidelines are:

- Inadvertent nuclear detonation,
- High explosive detonation/deflagration,
- Fire leading to plutonium dispersal.
- Death or serious worker injury resulting from non-standard industrial hazards

**Nuclear Explosive Safety:** The application of positive measures to control or mitigate the possibility of unintended or unauthorized nuclear detonation, high-explosive detonation or deflagration, or fire in a nuclear explosive area. [DOE O 452.1A]

**Nuclear Explosive Safety Study (NESS):** A formal evaluation of the adequacy of positive measures to meet DOE nuclear explosive Safety Standards. [DOD O 452.1A]

**Nuclear Explosive Safety Study Group (NESSG):** The team responsible for conducting a NESS.

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**Project Team:** An interagency team tasked with completing a specific project by DOE.

**Safety Basis:** For the purposes of this document, the safety basis consists of the AB and all information serving as the foundation for the AB, including the Weapon Safety Specification (WSS), design information, engineering analysis, fire hazard analysis, and technical background information.

**Safety Basis Review Team (SBRT):** The SBRT evaluates AB documents for the proposed nuclear explosive operation as a service to the DOE approval authority of the documents. The review focuses on verifying a comprehensive identification of hazards, analysis of a complete set of credible accidents, and the establishment of appropriate controls. The SBRT process is an interactive approach with the Project Team (PT). The SBRT will review draft documents as available and provide informal comments to the PT. The SBRT also provides an independent opinion of the technical adequacy of the AB via the Safety Evaluation Report.

**Safety Evaluation Report:** The SER, for a given facility or operation, documents that an appropriate review of the AB documents was conducted. The SER also documents the bases for approving the documents and specifies any conditions of approval. [DOE-STD-1104-96]

**Standing Management Team (SMT):** A group of experienced line/program managers from appropriate AL, LANL, SNL, LLNL and Pantex Plant organizations. The Chair of the SMT is the Weapon Programs Division Director. The Co-Chair is the Amarillo Area Office Area Manager. Permanent membership includes the Weapon Programs Division, Weapons Surety Division, AL Office of Safety and Security, LANL, LLNL, SNL, and the Pantex Plant operating contractor. The SMT provides advice to DOE line managers, and institutional commitments on behalf of the weapon laboratories and the Pantex operating contractor.

**Weapon System Project Plan:** A plan written by the Project Team which describes in detail the scope of the project, the associated schedule and costs, and a work breakdown structure. The Project Plan defines, in greater detail, the expectations set forth by the Standing Management Team. The Project Plan must be approved by the Director, Weapon Programs Division. It is a living document with configuration control applied to each document version.

## 3.0 DESCRIPTION

### 3.1 Chapter 11.1 Standing Management Team (SMT)

Chapter 11.1 describes the roles and responsibilities of the SMT and their relationship with the Project Teams. Milestone expectations are also delineated.

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3.2 Chapter 11.2 Integrated Weapons Activity Plan (IWAP)

Chapter 11.2 describes the IWAP, the project plans that make up the IWAP, and the change control process used. The IWAP is the overall agreed upon plan that includes scope, cost and schedule for Nuclear Explosive Operations and associated activities at the Pantex Plant.

3.3 Chapter 11.3 Seamless Safety Process (SS-21)

Chapter 11.3 describes the requirements of the SS-21 process for Nuclear Explosive Operations and associated activities at the Pantex Plant, and the roles and responsibilities of the Project Teams.

3.4 Chapter 11.4 Authorization Basis for Pantex Plant Nuclear Explosive Operations

Chapter 11.4 describes the Authorization Basis requirements for Nuclear Explosive Operations and associated activities conducted at the Pantex Plant.

3.5 Chapter 11.5 Target Level of Controls (TLC)

Chapter 11.5 describes the philosophy and appropriate application of TLC. TLC is a tool to be used on Nuclear Explosive Operations and associated activities at the Pantex Plant that will provide a consistent basis that an operation can be conducted safely.

3.6 Chapter 11.6 Coordinated Review Process for Nuclear Explosive Operations at the Pantex Plant

Chapter 11.6 describes the requirements of the independent reviews necessary to provide the authorization official confidence that the Nuclear Explosive Operations at the Pantex Plant are safe.

## 4.0 RESPONSIBLE ORGANIZATION

WPD is responsible for this chapter.



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### 1.0 PURPOSE

The purpose of this chapter is to describe the Standing Management Team (SMT). The SMT includes experienced line/program managers from appropriate AL, LLNL, LANL, SNL and Pantex Plant organizations. The SMT Chair and Co-Chair will establish the integrated safety methodology for Pantex Plant nuclear explosive operations within the policy set forth by Headquarters, Defense Programs (DP), and with input from the SMT members. The SMT will direct progress towards that methodology by establishing clear expectations for each successive project and will ensure those expectations are met through participation in general and milestone meetings.

### 2.0 POLICY

It is Department of Energy (DOE) policy that nuclear explosive operations be developed with safety as the primary consideration. Implementation of Integrated Safety Management philosophy calls for all aspects of nuclear explosive operations at Pantex to systematically integrate safety into practices. Limited resources, including budget, personnel, and facilities, combined with increasing expectations for safety, reliability, and performance, necessitate the development and execution of an integrated and optimized plan for nuclear weapons operations. To the extent possible, expectations regarding the acceptability of the end product will be provided by the SMT to the Project Teams charged with executing the project.

### 3.0 DEFINITIONS

See Chapter 11.0 for definitions.

### 4.0 RESPONSIBILITIES

DOE has two primary objectives in establishing the SMT. The first is to strengthen the DOE line management role by providing advice from senior managers from the laboratories and Pantex operating contractor to the WPD Director (weapon process issues) and AAO Manager (site operations issues). The

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second is to provide these DOE line managers an effective forum to obtain institutional commitments from the laboratories and the Pantex operating contractor.

In general, the SMT will oversee the development and execution of the Integrated Weapon Activity Plan (IWAP) and will serve as the Change Control Board for specified requirements and processes. The SMT will use the IWAP to define expectations well in advance of each upcoming activity, and to ensure execution of each project is in accordance with these expectations. Specific decisions and/or actions required by the SMT are defined under each specific milestone. In general, the intent of the milestone meetings is to ensure SMT criteria and expectations are met.

The SMT members will evaluate the pros and cons and associated risks of proposed activities, and make recommendations to the Chair (for weapons process issues) or Co-Chair (for site-operations issues). Each member has an obligation to make an effective case for their preferred course of action before decisions are made. Once the Chair or Co-Chair makes a decision, each member becomes obligated to take all practical actions to ensure the selected path is successful. Minority opinions will be documented in the SMT minutes and will be included verbatim as submitted by the author.

#### 4.1 Chair, SMT

The WPD Director is the Chair of the SMT. The Chair is the final decision-maker and single point of accountability. The Chair, through an Action Officer, is responsible for setting the agenda, issuing the minutes, and ensuring the execution of the SMT member's responsibilities. The Chair is also responsible for approving all weapon system project plans as described in the Integrated Weapons Activity Plan (reference D&P Chapter 11.2).

The Chair is responsible for obtaining assertion of readiness to move past the milestone from all SMT members within two weeks after each milestone meeting. The written directive becomes final and effective upon signature of the Assistant Manager for the Office of Nuclear Defense Programs (ONDP).

#### 4.2 Co-Chair, SMT

The AAO Manager is the Co-Chair of the SMT. The Co-Chair is the decision-maker for Pantex Plant site-operations issues. The Co-Chair is also responsible for approving all site-operations project plans (e.g. BIO Upgrade) as described in the Integrated Weapons Activity Plan (reference D&P Chapter 11.2).

The Co-Chair will provide assertion of readiness for nuclear explosive operations by concurrence on the written directive notifying the Project Team that they have approval to move past the milestone.

The Co-Chair will ensure a structured review of lessons learned is documented and distributed for each project. The Co-Chair will also ensure the lessons learned are effectively implemented on subsequent projects.

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#### 4.3 Permanent DOE Members

The remaining DOE Members are the Deputy Assistant Manager, Office of Safety and Security; Director, Weapons Surety Division; and the Deputy Director, Weapon Programs Division. Membership is permanent and the member will take responsibility on behalf of his or her parent organization. The member will attend all milestone meetings and may have a designated alternate; however, the alternate must have the same authority as the primary SMT member.

The DOE members will provide assertion of readiness for nuclear explosive operations by concurrence on the written directive notifying the Project Team that they have approval to move past the milestone. The assertion is required within two weeks of the milestone meeting.

#### 4.4 National Laboratories

For consistent application of SMT requirements and expectations among LANL and LLNL weapon programs, all three national laboratories are members of the SMT regardless of the original weapon design team. Membership is permanent and each member will take responsibility on behalf of his or her national laboratory. Members will attend all milestone meetings. Each member may have a designated alternate; however, the alternate must have the same authority as the primary SMT member.

The laboratories with design responsibility will provide assertions regarding readiness of nuclear explosive operations through issuance of an Engineering Release after each milestone. SMT members are obligated to provide these assertions within two weeks of the milestone meeting.

The laboratories may nominate new members or alternates by memorandum to the SMT Chair for approval by the AL Manager. The memorandum must state that the nominee will have the authority to make commitments on behalf of the institution, as required to perform the roles defined in the chapter.

#### 4.5 Pantex Plant

The Pantex Plant operating contractor is a member of the SMT. Membership is permanent and the member will take responsibility on behalf of his or her parent organization. The member will attend all milestone meetings and may have a designated alternate; however, the alternate must have the same authority as the primary SMT member.

The operating contractor will provide assertions regarding readiness of nuclear explosive operations through issuance of a memorandum from the General Manager. The SMT member is obligated to provide these assertions within two weeks of the milestone meeting.

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The operating contractor may nominate a new member or alternate by memorandum to the SMT Chair for approval by the AL Manager. The memorandum must state that the nominee will have the authority to make commitments on behalf of the institution, as required to perform the roles defined in the chapter.

## 4.6 Project Team (PT)

The Project Teams are responsible for development of project plans that accomplish the right objectives for the program and for resolution of comments from management and appropriate staff at all participating organizations, as well as from DoD and DOE/HQ. The Project Teams are responsible to prepare resolution of comments from the DNFSB, as directed by the SMT or the WPD Director. The Project Teams must develop what they believe to be the right course of action for their program, and provide a convincing case to the SMT members for approval of their proposed plan. Once the SMT Chair approves a plan, the PT is responsible to vigorously execute the plan as approved.

The Project Teams are responsible for ensuring completion of their projects as delineated in approved project plans. Prior to milestone meetings the PTs must review their progress and recommendations with their respective SMT member. The PTs must also ensure that any concerns from their respective parent organization are identified prior to the meetings.

At the milestone meetings, the PTs must convince the SMT that they are following their approved project plan and are doing the right thing. The milestone meetings will address the plans and anticipated team actions for both site-related Basis for Interim Operation upgrades and specific weapon processes. If issues cannot be resolved or appropriately addressed to the satisfaction of the Chair or Co-Chair, the PT will reschedule the milestone meeting.

## 4.7 Observers

Observers may be invited by SMT members to attend any meetings.

## 5.0 SMT ASSERTIONS

### 5.1 Milestone 0 - Project Plan Approval

At Milestone 0, the SMT members will assert the following:

- 0a. The definition of the task is clear and precise enough to allow the PT to proceed to concept development with a very high likelihood that the SMT will find the products acceptable and appropriate at Milestone 1.
- 0b. The nominal schedule and rough estimate resource requirements identified by the PT are consistent with parameters set forth in the IWAP.

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- Oc. The parent organizations have committed the resources for the task, with complete recognition of other work scope already identified.
- Od. The Conceptual HA plan is appropriate in breadth and depth.
- Oe. Appropriate facilities for the performance of proposed operations have been selected.
- Of. The initial project plan for the task can be approved by all affected organizations within two weeks of Milestone O.

## 5.2 Milestone 1- Acceptance of Conceptual Approach

At Milestone 1, the SMT members will assert the following:

- 1a. The Weapon Safety Specification, the Criticality Report, and the Intrinsic Radiation Report are adequate.
- 1b. The proposed set of safety criteria is complete, in the sense that meeting the criteria will provide a very high level of confidence that the operation will be safe. Also, the criteria represent appropriate decisions on tradeoffs with programmatic, security, environmental and other concerns.
- 1c. An appropriate Conceptual Hazard Assessment was conducted per the plan (Od). The conclusions are comprehensive and have identified improvements to control hazards.
- 1d. The proposed operation will be within the DOE approved authorization basis (SAR/BIO/TSR combined with HAR/ABCD), or there is an appropriate and achievable plan for obtaining needed changes to the facility authorization basis.
- 1e. The proposed trainer requirements will achieve a sufficient and appropriate level of fidelity with War Reserve units to support a comprehensive training program.
- 1f. The proposed operating procedure, operating facility, equipment and layout, electrical tester and tooling concepts achieve aggressive pursuit of excellence in operations without incurring additional costs for marginal improvement in safety, and achieve effective use of improvements gained through other programs.
- 1g. The proposed hazard assessment concepts are appropriate for the activity, and will achieve a very high level of confidence that any weaknesses in the proposed control regime will be identified and corrected before the authorization basis is approved.
- 1h. The project plan has been revised to incorporate lessons learned before Milestone 1, and can be approved within two weeks of the meeting schedule and resource estimates are reasonable. Parent organizations have committed resources and can meet the scheduled commitments.

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5.3 Milestone 2 – Acceptance of Process Flow

At Milestone 2, the SMT will assert the following:

- 2a. The preliminary Process Hazard Analysis provides an effective framework to insure thorough evaluation of potential threats to the nuclear explosive and clear linkage to the controls and barriers that will preclude insult.
- 2b. The detailed process flow and baseline operating procedures provide an adequate basis for the final Process Hazard Analysis.
- 2c. The preliminary Hazard Analysis Report effectively identifies all hazards that must be considered in establishment of the authorization basis safety envelope. The Report also identifies a proposed set of bounding accident sequences that effectively bound possible accidents.
- 2d. The initial set of controls proposed in the preliminary Activity Based Control Document (ABCD) establish a reasonable approach to controlling the operation.
- 2e. The proposed personnel selection, training and qualification plan, and the trainer will provide a high level of confidence in human capability and reliability.
- 2f. Sufficient weapon specific personnel requirements will be available to meet the throughput requirements as defined by DOE and DOD.
- 2g. The design and qualification requirements for equipment, tooling, layout and facility design are adequate to provide high level of confidence in each of these elements during the operation.
- 2h. The operation as proposed will meet the Safety Criteria established at Milestone 1.
- 2i. The project plan has been revised to incorporate lessons learned before Milestone 2, and can be approved within two weeks of the meeting.

5.4 Milestone 3 – Readiness to Proceed to Independent Review

At Milestone 3, the SMT will assert the following:

- 3a. Safety criteria have been satisfied.
- 3b. Laboratory management ensures weapon response analyses have been properly peer reviewed.
- 3c. The Process Hazard Analysis has been accepted by the PT as sufficient to ensure appropriate barriers and controls exist for specific accident sequences. Authorization basis documents (primarily BIO/TSR and HAR/ABCD) provide appropriate coverage for all aspects of the operation and are approved by DOE.

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- 3d. Operating procedures have been validated through Positive Verification Tryout using the trainer(s).
- 3e. The proposed scope for Independent Review Team activities will provide a thorough and effective evaluation of whether the ABCD controls are implemented effectively, and whether the operation as proposed provides adequate assurance of nuclear explosive safety.
- 3f. Operations personnel are trained and certified.
- 3g. Within two weeks of the meeting, SMT members can concur with the PT recommendation to the AL Assistant Manager for National Defense Programs that the project is ready to proceed to independent verification.

## 5.5 Milestone 4 – Recommendation to Authorize Operations

At Milestone 4, the SMT will assert the following:

- 4a. SMT members accept changes made to resolve nuclear explosive safety or readiness review concerns, or SMT members accept PT technical rationale for disagreements with the independent review teams.
- 4b. SMT members concur with AL Manager certifications, as required by DOE Order 452.1A.

## 6.0 PROTOCOL

Given the number and complexity of decisions the SMT is required to make, coordination before the meeting and productivity at the meeting is essential. The following process will be used for each SMT meeting.

### 6.1 Meeting Schedule

- Meetings to address general issues will be held on a predefined schedule approved by the Chair. Meetings will normally last for 1/2 day and will start and end on time.
- Agenda topics for the following meeting will be discussed at the end of each meeting.
- The Action Officer will work with the SMT Chair and Co-Chair to set agenda topics for each meeting.

### 6.2 Prior to Meeting

- The Action Officer will distribute the agenda and coordinate with the Project Team (PT) to ensure available documents are distributed to SMT members prior to the meeting.
- The PT will work issues with parent organizations prior to the meeting.

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- SMT members will review documentation prior to the meeting. When possible, SMT members will submit comments/concerns to the Project Team members with copies to all SMT members.
- PT or Program Leader will attempt to resolve concerns before the SMT meeting. If resolution cannot be made, the PT or Program Leader will bring possible solutions to the SMT meeting.

### 6.3 Participation

- The Action Officer is responsible for consolidating and distributing meeting minutes and tracking all action items.
- PT will present or clarify information necessary for the SMT to make appropriate decisions. Since the SMT members will be versed in the material prior to the meeting, the briefing should not be educational in nature.
- The briefing should:
  1. Provide PT preferred decision
  2. Provide pros and cons of alternatives considered
  3. Justify recommendation
  4. Define risks associated with recommendation and any compensatory measures required

### 6.4 Following the Meeting

- PT will document commitments and forward them to the Action Officer for consolidation into meeting minutes.
- Action Officer will document decisions and minority opinions.

### 6.5 Milestones

- Milestone reviews may be performed at normally scheduled meetings or at specially scheduled extended length meetings.
- Milestone reviews may be conducted without a meeting if agreed to by all affected members. Milestone 0 and Milestone 4 are smaller tasks and are candidates for a review without a meeting.

## 7.0 RESPONSIBLE ORGANIZATION

WPD is responsible for this chapter.

## 8.0 REFERENCES

Standing Management Team Charter



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### 1.0 PURPOSE

The purpose of this chapter is to describe the Integrated Weapons Activity Plan (IWAP). The IWAP is a plan that describes all nuclear weapon system operations and facility authorization basis upgrades at the Pantex Plant. The IWAP must be resource loaded by all participating organizations and workload leveled to aid in the management of operations. The IWAP, via individual weapon system and facility authorization basis upgrade Project Plans, details the specific scope expectations, including the safety basis requirements, costs to do the required work and a schedule delineating all activities.

### 2.0 POLICY

It is U.S. Department of Energy (DOE) policy that nuclear explosive operations be developed with safety as a primary consideration. Limited resources, including budget, personnel, and facilities, combined with increasing expectations for safety, reliability, and performance, necessitate the development and execution of an integrated and optimized plan for nuclear weapons operations. To the extent possible, expectations regarding the acceptability of the end product will be provided by DOE line management to those charged with executing the project.

### 3.0 DEFINITIONS

See Chapter 11.0 for definitions.

### 4.0 RESPONSIBILITIES

#### 4.1 Deputy Assistant Secretary for Military Application and Stockpile Management (DASMASM), DP-20

The DASMASM has overall responsibility for the conduct of nuclear weapons operations. The DASMASM issues periodic P&PDs, setting end-of-fiscal year requirements for weapon quantities in the stockpile and other guidance.

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#### 4.2 Manager, AL

The AL Manager is the Authorizing Official (AO) for nuclear explosive operations performed at the Pantex Plant. Prior to authorization, the AL Manager provides the certifications required by DOE Order 452.1A.

#### 4.3 Director, Weapon Programs Division (WPD)

As the Chair of the Standing Management Team (SMT), the WPD Director owns and maintains the IWAP. WPD is also responsible for the development and implementation of the weapon system Project Plans that make up the IWAP.

#### 4.4 Manager, Amarillo Area Office (AAO)

As the Co-Chair of the SMT, the AAO Manager is responsible for the development and implementation of the facility authorization basis (e.g. Basis for Interim Operation) upgrade Project Plans that are included in the IWAP.

#### 4.5 Director, Weapon Surety Division (WSD)

As a member of the SMT, the WSD Director is responsible for planning and execution of the Nuclear Explosive Safety activities that support the resulting Project Plans. The WSD Director is also responsible to obtain approval from the AL Manager and DP-20 for the results of nuclear explosive safety reviews.

#### 4.6 Deputy Assistant Manager, Office of Safety and Safeguards (OSS)

The Deputy Assistant Manager of OSS is responsible for technical support to line management from the Safety Basis Review Team, as well as for performance of independent readiness reviews conducted for the AL Manager.

#### 4.7 Standing Management Team

The SMT will oversee the development and execution of the IWAP and will serve as the Change Control Board for specified requirements and processes. The SMT will define expectations for projects and programs in the IWAP well in advance of execution and will establish measures of success. Specific responsibilities of the SMT are found in Chapter 11.1.

#### 4.8 Pantex Plant

The operating contractor is responsible for providing a Project Team member for each weapon system and leading facility authorization basis upgrade projects. They are further responsible for supporting the resulting Project Plans and resource loading all schedules and workload leveling the IWAP. Upon

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approval of the IWAP and individual Project Plans, the operating contractor must ensure proper resources are made available for implementation of the Project Plans.

#### 4.9 National Laboratories

The National Laboratories are responsible for providing a Project Team member for each weapon system and providing technical expertise as required for facility authorization basis upgrade projects. The National Laboratories are also responsible for supporting the resulting Project Plans, resource loading all schedules and ensuring proper support of the IWAP. Upon approval of the IWAP and individual Project Plans, the National Laboratories must ensure proper resources are made available for implementation of the Project Plans.

#### 4.10 Project Team

The Project Team (PT) will prepare the Weapon System Project Plan that accomplishes the right objectives for the program, and for resolution of comments from the SMT, management and appropriate staff at all participating organizations, as well as from DoD and DOE/HQ. The Project Teams are responsible to prepare resolution of comments from the DNFSB, as directed by the SMT or the WPD Director. The Project Teams must develop what they believe to be the right course of action for their program, and provide a convincing case to the SMT members for approval of their proposed plan. Both weapon and Basis for Interim Operation upgrade teams will present their plans and proposed actions to the SMT for approval. Once the SMT Chair approves a plan, the PT is responsible to vigorously execute the plan as approved. The PT will develop and manage the implementation of the approved Project Plan, develop recovery plans as necessary, and manage the efforts of all the functional task teams. It is the responsibility of the PT to ensure approved scope completion on time and within budget.

#### 5.0 CHANGE CONTROL

Any changes adversely affecting the scope, schedule or budget within the IWAP must be presented to the SMT for consideration. It is the responsibility of the party presenting the proposed change (typically the Project Teams, Pantex Plant, AAO, WSD, or WPD) to have investigated impacts to other programs (requires coordination with respective Program Managers), and to have an estimate of time and money involved with the proposed change prior to the proposal. The SMT will judge whether the proposed change should be further pursued. The WPD Director, as owner of the IWAP, will make all final decisions based on input from the SMT. If the proposed change will affect the DoD in any way (e.g., weapon returns), it must be coordinated through the Project Officers Group (POG) process. If the proposed change differs from direction from DOE HQ (as in the P&PD), it must be coordinated with DP-20. Figure 1 depicts the process flow for change control.

#### 6.0 RESPONSIBLE ORGANIZATION

WPD is responsible for this chapter.

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## 7.0 REFERENCES

1. DOE Policy 450.1, Integrated Safety Management
2. DOE Order 5480.22, Technical Safety Requirements
3. EP401110, Integrated Safety Process for Assembly and Disassembly of Nuclear Weapons
4. D&P Manual Chapter X, Integrated Safety Basis for Pantex Plant Nuclear Explosive Operations
5. Standing Management Team Charter

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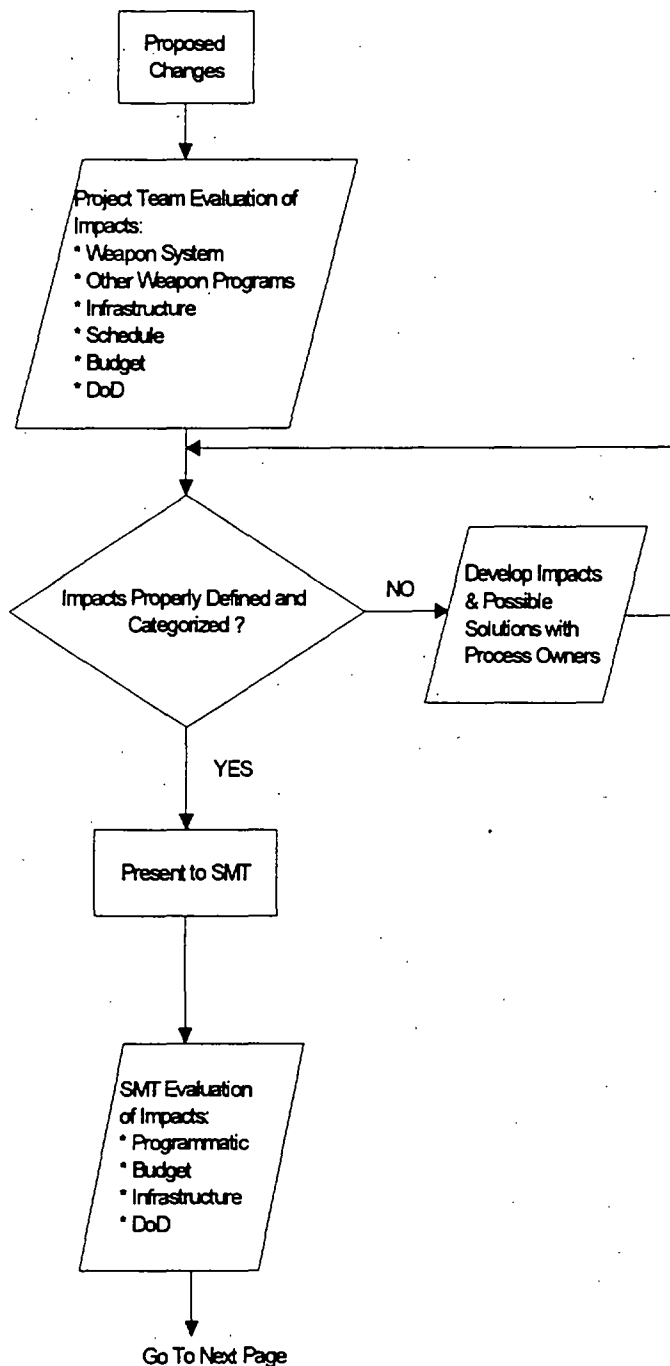
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## IWAP CHANGE CONTROL (Figure 1)



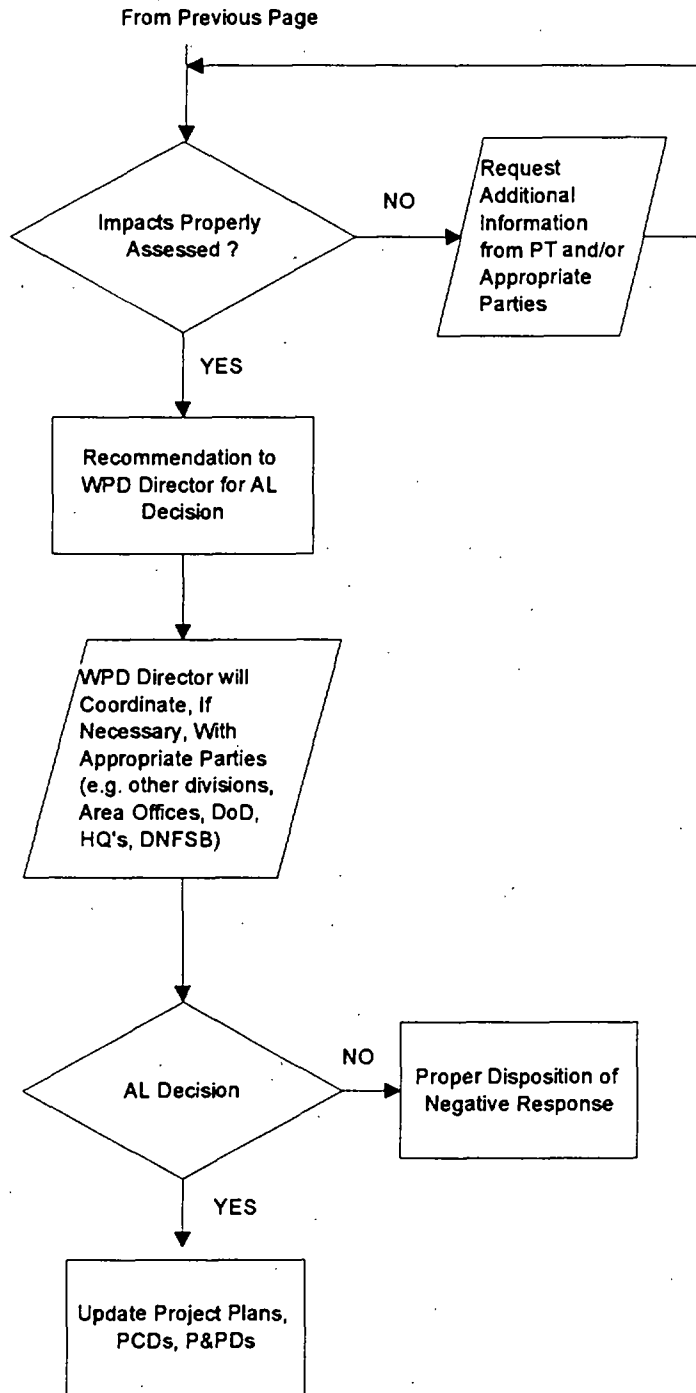
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### 1.0 PURPOSE

The purpose of this chapter is to describe Target Level of Controls (TLC) philosophy and appropriate application. TLC is an acceptable methodology and tool that provides a consistent basis that a nuclear explosive operation can be safely conducted. This methodology is based on the layered defense (or defense-in-depth) concept.

### 2.0 POLICY

It is Department of Energy (DOE) Albuquerque Operations Office (AL) policy that nuclear explosive operations be developed with appropriate layers of defense to prevent and mitigate accidents. To the extent possible, expectations regarding the acceptability of the end product will be provided by senior management to those charged with executing the project.

### 3.0 DEFINITIONS

See Chapter 11.0 for definitions.

### 4.0 RESPONSIBILITIES

#### 4.1 Manager, AL

The AL Manager uses TLC methodology as a guideline in determining whether proposed safety controls provide sufficient protection of workers, the environment, and the public.

#### 4.2 Director, Weapon Programs Division

The WPD Director uses TLC as a means to resolve disagreements among the PT, SBRT, NESSG, and any other entity, relating to the discussion: "Is the nuclear explosive process safe enough?"

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## 4.3 Project Team

The PT is responsible for establishing an appropriate set of safety controls for a nuclear explosive operation. Establishing a set of safety controls is accomplished through an iterative hazards analysis during process development that accomplishes the following:

- a) Identification of all hazards associated with an operation;
- b) Identification of a complete set of representative accident scenarios; and
- c) Based on items 1 and 2, development and implementation of an appropriate set of safety controls for the operation.

This process is consistent with the (1) Seamless Safety (SS-21)<sup>5</sup>; (2) Guidelines for Hazard Evaluation Procedures<sup>6</sup>; (3) Integrated Safety Management, DOE Policy 450.1<sup>7</sup>; and (4) Hazard Analysis Reports for Nuclear Explosive Operations, DOE-STD-3016-96<sup>8</sup>.

### 4.3.1 Safety Controls

The PT is responsible for establishing an "appropriate" set of safety controls for a proposed nuclear explosive operation. An "appropriate" set of safety controls for a nuclear explosive operation depends primarily on four factors: (1) The type of hazard and its potential consequences; (2) The likelihood of an accident scenario leading to the specified consequence; (3) The effectiveness and reliability of the controls; and (4) The number of layers of independent controls (defense-in-depth philosophy).

TLC for nuclear explosive operations at the Pantex Plant communicates general AL expectations regarding the previously listed factors. To effectively develop and implement an "appropriate" set of safety controls, the PT must understand these expectations.

The identified control sets in the TLC are not requirements. They only communicate general DOE expectations. The PT may propose more, less, or a different mix of controls than the TLC indicates. The previously mentioned four factors must be considered by the PT in its determination of an "appropriate" set of controls. It should be noted that although the TLC communicates general expectations, the preferred hierarchy for controlling hazards remains as follows:

1. "Engineer-out" (or "design-out") the hazard
2. Rely on passive engineered features
3. Rely on active engineered features
4. Rely on Administrative Controls



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## 4.3.2 Weapon Design Features

The PT is responsible for the appropriate treatment of nuclear explosives design features. Nuclear explosives are designed with some inherent safety features. These features are not to be considered "controls" when using the TLC tool. The design features are to be considered in determining the likelihood of a nuclear explosive response for a given accident scenario. The PT may only take "credit" for a design feature if there is sufficient confidence (usually based on positive verification) the feature is in tact and will perform its desired function. If sufficient confidence does not exist, the PT cannot take credit for the feature.

Taking credit for design features is an attempt to ensure a realistic and practical analysis by the PT. This approach does not mean the nuclear explosive should be relied upon to protect itself. Controls identified in the TLC represent the desired level of control to prevent unintended energy from reaching the nuclear explosive. The goal is to obtain the largest safety improvement by implementing controls where they are most needed given limited resources.

## 4.3.3 Analysis

The PT is responsible for ensuring that an appropriate analysis of the nuclear explosive safety operation is performed using a graded approach. This analysis may be based on either a qualitative or quantitative assessment of the nuclear explosive operation. Correct application of the TLC will help the PT understand the set of accident scenarios and develop an "appropriate" set of controls. The PT should avoid conducting an exhaustive analysis which attempts to "prove" the likelihood of accident scenarios or failure rates of given controls.

### 4.3.3.1 Qualitative Assessment

In most cases, the PT will use qualitative assessments when applying TLC methodology due to the amount of available data on hazards analysis of nuclear explosive operations. Qualitative assessments are often most effective due to imperfect or incomplete reliability data associated with nuclear explosive operations, accidents, and controls.

### 4.3.3.2 Quantitative Assessment

The PT may use quantitative assessment techniques to support judgments made regarding bin selection when using the TLC methodology. The amount of detail used should be commensurate with the available data and the associated confidence interval for any specific number. The PT is responsible for ensuring the appropriate amount of effort is placed on development of controls. The PT should avoid a complex analysis that attempts to "prove" the likelihood of accident scenarios, consequences, or adequacy of controls.

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#### 4.3.4 Safety Basis Documentation

The PT is responsible for identifying the most important safety controls for an operation. For many accidents, a myriad of controls or positive measures may have some small impact to safety. The PT should only include those controls necessary to move the controlled accident scenario likelihood "off the chart" in the safety basis documentation.

The PT must rigorously document identified safety controls in a manner similar, but not necessarily identical to that required for TSRs as described in DOE Order 5480.22<sup>3</sup>.

The PT should not use the TLC to automatically elevate a control set to the safety basis documentation level. It is imperative that critical independent thinking regarding identification and documentation of only the most important safety controls be continually promoted by the PT. Long lists of "controls" that do not have a measurable impact to safety may divert resources from the safety controls the PT is relying upon.

#### 4.4 Safety Basis Review Team

The SBRT interacts with the PT throughout the development of the nuclear explosive process by participating in milestone meetings and reviewing draft safety basis documents. These documents include, but are not limited to, the Activity Based Controls Document and the Hazard Analysis Report.

The SBRT ensures the PT correctly applies the TLC methodology in identifying the appropriate set of safety controls for a nuclear explosive operation.

#### 4.5 Nuclear Explosive Safety Study Group

The NESSG evaluates the process and associated controls to ensure that hazards are adequately prevented and/or mitigated.

The NESSG ensures compliance with nuclear explosive Safety Standards.

Where it is identified by the NESSG that controls in addition to the set proposed by the PT are desired, the basis must be documented and provided to management for consideration and possible inclusion in the safety basis.

#### 4.6 Pantex Plant

The Pantex Plant is responsible for ownership and maintenance of the safety basis documentation proposed by the PT.

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## 5.0 RESPONSIBLE ORGANIZATION

WPD is responsible for this chapter.

## 6.0 REFERENCES

1. DOE-STD-3009-94, "(ADD TITLE)", (current version).
2. DOE Order 5480.23, Safety Analysis Reports, (current version).
3. DOE Order 5480.22, Technical Safety Requirements, (current version).
4. DOE Order 452.1A, Nuclear Explosive and Weapon Surety Program, (current version).
5. EP401110, Integrated Safety Process for Assembly and Disassembly of Nuclear Weapons, (current version).
6. "Guidelines for Hazard Evaluation Procedures," Center for Chemical Process Safety of the American Institute Chemical Engineers, (current version).
7. DOE Policy 450.1, Integrated Safety Management, (current version).
8. DOE-STD-3016-96, Hazard Analysis Reports for Nuclear Explosive Operations, (current version).

## 7.0 APPENDICES

Appendix 1: Target Level of Controls for Nuclear Explosive Operations at the Pantex Plant, Revision 3, July 9, 1998

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## Appendix 1 Target Levels of Controls for Nuclear Explosive Operations at the Pantex Plant (Revision 3, July 9, 1998)

**Caution:** Training on the use of the target level of controls is available and is strongly recommended for all personnel involved in the development, review, and authorization of nuclear explosive operations at the Pantex Plant.

### Introduction

The attached Target Level of Controls Table is to be used as a tool for all personnel involved in the development (Project Team [PT]), review (all review teams including the Nuclear Explosive Safety Study Group [NESSG]), and authorization of nuclear explosive operations at the Pantex Plant. The table establishes the target level of controls to be implemented for a given nuclear explosive operation based on the likelihood of an accident scenario and the resulting consequences. It should be noted that the table only addresses nuclear detonation and fissile material dispersal. Additional worker safety consequences will continue to be managed by other means.

### Basis for Selected Target Levels of Controls

Each independent engineered control designed according to safety class philosophy can reduce the likelihood of an accident by approximately  $10^{-3}$  or  $10^{-4}$  on a per year basis. A Technical Safety Requirement (TSR)-like administrative control can reduce the likelihood by approximately  $10^{-1}$  or  $10^{-2}$  on a per year basis. Based on the above presumptions, the implementation of two engineered controls supported by two administrative controls would conservatively reduce the likelihood of an anticipated nuclear detonation to less than  $1 \times 10^{-8}$  per year. The target level of controls is reduced as the consequences and likelihoods are reduced by progressing through the table down and to the left.

### Use of the Table of Target Levels of Controls

Selection of a bin in the table is based on an uncontrolled accident scenario. An uncontrolled accident scenario is one that, with no controls in place, may result in the associated consequence at the given likelihood. Qualitative assessment of scenario likelihoods is often most effective and efficient. However, when sufficient data is available, quantitative analytical techniques may be employed to support judgments made regarding bin selection.

Only those scenarios deemed credible should be further evaluated. For these credible accident scenarios, the emphasis and resources should be placed on controls to prevent the accident, rather than on complex analysis to "prove" their likelihood or "prove" the failure rates of controls.

The applicable likelihood/consequence bin in the table is selected by first assessing the vulnerabilities of the nuclear explosive given its configuration during a specific operation. Although the nuclear explosive is not relied upon to protect itself, the likelihood of an adverse response often depends on its configuration at that time (i.e., cased vs. uncased high explosive). The likelihood column in the table is selected based on a qualitative

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assessment of the likelihood of a specified accident scenario that could result in a nuclear detonation or fissile material dispersal. The accident scenario will not account for the proposed controls. The result will be the selection of the appropriate likelihood column of an "uncontrolled" accident scenario versus an initiating event.

The likelihood bins will be selected based on a conservative assumption that 1,000 operations will be performed per year. This will normalize all operations (e.g., surveillance, dismantlement, etc.) resulting in the selection of a conservative bin with respect to number of actual operations per year. Additionally, this will ensure consistency in how different nuclear weapons operations are analyzed and proposed to the authorizing official.

Once the bin is selected, the PT will use the target level of controls as a goal. The PT is responsible for ensuring that the operation is safe by establishing the appropriate set of controls. ***This may require implementing more, less, or a different mix of controls than the target level.*** The review teams (including the NESSG) will evaluate the process and associated controls to ensure that the hazards are adequately controlled and mitigated as appropriate. Where it is identified that controls in addition to the target level are needed, the basis for this need must be documented and provided to management. The target level of controls is intended to be a guide and a tool, not a legalistic set of requirements that must be accepted without question.

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**Target Level of Controls for Nuclear Explosive Operations at the Pantex Plant  
(Revision 2, April 13, 1998)**

| Consequence  | Likelihood of Uncontrolled Accident Scenario/Year<br>(Based on 1,000 operations per year) |   |  |   |
|--|---|---|--|---|
|  | Beyond Extremely Unlikely   | Extremely Unlikely                                | Unlikely   | Anticipated   |
| Nuclear Detonation                                     | 2 Administrative Controls   | 1 Engineered Control and 1 Administrative Control | 2 Engineered Controls and 1 Administrative Control | 2 Engineered Controls and 2 Administrative Controls |
| Fissile Material Dispersal<br>(Off-site $\geq$ 25 rem) | 1 Administrative Control  | 2 Administrative Controls                         | 1 Engineered Control and 2 Administrative Controls | 2 Engineered Controls and 1 Administrative Control  |
| Fissile Material Dispersal<br>(Off-site $\leq$ 25 rem) | 2 Administrative Controls   | 1 Administrative Control                          | 1 Engineered Control and 1 Administrative Control  | 2 Engineered Controls and 1 Administrative Control  |
| No Nuclear Explosive Consequence                       | 2 Administrative Controls   |   |  |   |

**Cautions:**

1. These targets are guidelines and not specific requirements.
2. Project teams should be aware that meeting the controls in a bin does not necessarily mean the process is safe enough; and, conversely, not meeting the controls in a bin does not necessarily mean the process is not safe enough.
3. The project team is responsible for proposing what they believe are the appropriate mix of controls for the operation.