SUPPLEMENTAL DIRECTIVE

NNSA SD 452.2

Approved: 11-17-14

Nuclear Explosive Safety Evaluation Processes

NATIONAL NUCLEAR SECURITY ADMINISTRATION
Office of Safety and Health

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Nuclear Explosive Safety Evaluation Processes

1. PURPOSE. This Supplemental Directive (SD) provides supplemental details to support the nuclear explosive safety (NES) evaluation requirement of Department of Energy (DOE) Order (O) 452.2D Admin Chg 1, *Nuclear Explosive Safety*, dated 07-10-13. This SD is now the governing directive for NES evaluations and NES change control. It incorporates and modifies the provisions and guidance formerly promulgated in DOE M 452.2-2.

2. CANCELLATION. DOE M 452.2-2 Admin Chg 1, *Nuclear Explosive Safety Evaluation Processes*, dated 07-10-13, once the Department cancels DOE M 452.2-2.

3. APPLICABILITY.

   a. NNSA Applicability. This Supplemental Directive applies to all Federal NNSA entities, and to non-NNSA Federal elements that are involved on behalf of NNSA in performing, managing, overseeing, or directly supporting nuclear explosive operations or associated activities, including those created after the Supplemental Directive is issued.

   b. Contractors. The contractor requirements document (CRD) in Attachment 1 will apply to the extent set forth in the contract. The CRD is intended to be applicable to contractors with responsibilities for operation and/or management of sites or facilities and whose responsibilities include performing, managing, overseeing, or directly supporting nuclear explosive operations (NEOs) or associated activities.

4. SUMMARY. To ensure adequate nuclear explosive safety for nuclear explosive operations (NEOs) conducted by the NNSA and its contractors, this Supplemental Directive presents eight chapters detailing administrative and procedural requirements supplementary to DOE O 452.2D, as follows:

   a. Chapter I provides an introduction and establishes management responsibilities including administration of this Supplemental Directive.

   b. Chapter II provides an overview of the different forms of formal NES evaluations.

   c. Chapter III sets forth requirements for the personnel performing NES evaluations.

   d. Chapters IV-VI presents detailed guidance and requirements for each type of nuclear explosive safety evaluation.

   e. Chapter VII addresses how NES evaluation findings are characterized, responded to, and formally closed.

   f. Chapter VIII establishes the process for requesting and granting exemptions to the requirements of this Supplemental Directive.

   g. Attachment 1 is the Contractor Requirements Document (CRD).

(1) Attachment 1, Appendix A specifies requirements for education, experience, technical competencies, and certification of NNSA Contractor NES-certified personnel (NESSG members and NES representatives).

(2) Attachment 1, Appendix B identifies topical areas that must be included in NES Study input documentation.

h. Attachment 2 provides guidance and criteria to characterize issues identified in NES evaluations and to help document the rationale for NES evaluation conclusions.

i. Attachment 3 defines the acronyms used in this Supplemental Directive.

5. CONTACT. The Associate Administrator for Safety and Health is responsible for updating and maintaining this Supplemental Directive. Questions concerning this Supplemental Directive or its implementation should be addressed to 202-586-3885.

BY ORDER OF THE ADMINISTRATOR:

Frank G. Klotz
Administrator

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CHAPTER I

INTRODUCTION AND RESPONSIBILITIES

1. INTRODUCTION. The evaluations described in this Supplemental Directive comprise a formalized approach to ensuring the nuclear explosive safety (NES) of all nuclear explosive operations (NEOs) performed by the National Nuclear Security Administration (NNSA) and its contractors. This approach requires that all new, approved, current, and proposed changes to NEOs and associated supporting infrastructure receive a commensurate level of review and analysis.

2. RESPONSIBILITIES.

   a. Assistant Deputy Administrator for Stockpile Management.

      (1) Ensures the process for addressing NES findings defined in Chapter VII of this Supplemental Directive is followed.

      (2) Approves/disapproves extensions to the requirement for ten-year NESS reevaluations of ongoing operations in coordination with the Associate Administrator for Safety and Health. This authority may not be delegated below the Assistant Deputy Administrator or Acting Assistant Deputy Administrator level.

      (3) Approves exemptions to this Supplemental Directive, with concurrence from the Central Technical Authority (CTA).

      (4) As appropriate, tasks action agencies to take corrective action for NESSG findings.

      Note: Action agencies are the organization (NNSA or contractor) designated by NNSA management as the proper organization to appropriately take action on an issue raised by the NESSG or Senior Technical Advisors.

      (5) Provides NNSA management of Project Teams assembled to plan, prepare, and present input documentation, briefings, and demonstrations for production agency NES evaluations.

      (6) Considers the criteria in Attachment 2 when developing the Office's position on findings and minority opinions from NES evaluation reports.

      (7) Provides funding for the Senior Technical Advisors (STAs).

   b. Associate Administrator for Safety and Health.

      (1) Coordinates with the Assistant Deputy Administrator for Stockpile Management on extensions to the requirement for ten-year NESS reevaluations of ongoing NEOs.

(2) Selects, ensures the hiring/contracting of, releases funds, and certifies an appropriate number of Nuclear Explosive Safety Study Group (NESSG) STAs.

(3) Provides for a periodic (approximately annual) review of the STA comments and any follow-up actions.

(4) Updates and maintains this Supplemental Directive.

c. Director, Office of Nuclear Weapon Surety and Quality. Approves/disapproves deviations from NES evaluation process requirements as assigned in this Supplemental Directive.

d. Director, Nuclear Explosive Safety Division.

(1) Ensures any applicable NES Division internal operating procedures are consistent with this supplemental directive.

(2) Recruits NESSG STAs and recommends selections to the Associate Administrator for Safety and Health.

(3) Receives, reviews, and accepts or rejects the certifications for NESSG members.

(4) Ensures that NES training courses are identified and developed as needed.

(5) Ensures the training and certification currency of an appropriate number of NESSG chairs to meet workload and schedule demands.

(6) Ensures that NESSG STAs receive the NES training required for certification.

(7) Provides periodic NES evaluation schedule updates to organizations providing NESSG personnel.

(8) Selects a NESSG chair for each NES evaluation.

(9) Provides NES oversight of the closure process for NES evaluation findings through periodic audit (sampling) of closure packages approved by the closure authority.

(10) Tracks the scheduling of NES evaluations for ongoing NEOs to ensure NESSs and OSRs are performed in the timeframes specified in Chapter II.

(11) Maintains an accounting of the topics covered by each NESS and OSR, and works with NNSA and contractor line management to schedule OSRs.

(12) Monitors NEO restart activities to determine the form of NES evaluation needed to support the restart authorization.

(13) Maintains a file copy of the Single Integrated Input Document until the NESS is superseded or otherwise no longer relevant.

e. Nuclear Explosive Safety Study Group Chairs.

(1) Satisfy responsibilities of NESSG members in paragraph 2f below.

(2) Review nominations and approve NESSG personnel for NES evaluations.

(3) Verify that NESSG personnel certifications will be current at the start of a NES evaluation and ensure that NESSG personnel certifications remain current during the course of an evaluation.

(4) Conduct OSR planning meetings and coordinate OSR schedule with the Project Team as applicable.

(5) Determine the need for and ensure the conduct of NES Change Evaluation (NCE) planning meetings, as appropriate.

(6) Recruit technical advisors (TAs) to participate in NES evaluations, as needed.

(7) Coordinate with the Project Team and/or NNSA line management as appropriate to plan and schedule NES evaluations.

(8) Organize, convene, and lead NES evaluations.

(9) Suspend a NES evaluation if unable to fulfill the requirements of this Supplemental Directive.

(10) Ensure NESSGs use the guidance and criteria in Attachment 2 to characterize NES evaluation findings and to document rationale.

(11) Coordinate substantive changes to NESS and OSR reports and NCE memoranda with participating NESSG personnel and retain associated documentation.

(12) Forward final copies of NESS and OSR reports, NCE memoranda, and associated correspondence to participating NESSG personnel and appropriate organizations as described in this Supplemental Directive.

f. NESSG Member.

(1) Prepares for the NES evaluation by reading the input documentation, attending training and orientation meetings, developing lines of inquiry, and researching issues as needed.

(2) Attends briefings and demonstrations (or NEO observations), and critically evaluates the information presented or observed to ensure that evaluated NEOs (including proposed changes or responses to emerging information affecting an approved NEO) meet the NES Standards and other NES criteria.

(3) Participates in NESSG deliberations, including, examining all sides of NES issues, resolving lines of inquiry, and developing findings and deliberation topics, as appropriate.

(4) Uses the criteria in Attachment 2 when deliberating, categorizing, and documenting issues in NES evaluations.

(5) Contributes to the report writing and signs the report indicating approval of report content (except as noted in any minority opinions).

g. NNSA Field Element Managers Responsible for NEOs.

(1) Ensure that all NEOs under their purview are covered by a current NES evaluation.

(2) Participate in NES evaluation planning meetings as applicable.

(3) Provide a formal request to the Director, Nuclear Explosive Safety Division to proceed with NES evaluations.

(4) Ensure that NESSGs have adequate administrative and logistical resources.

(5) Follow the process defined in Chapter VII of the Supplemental Directive for responding to NES findings.

(6) Consider the criteria in Attachment 2 when developing a position on findings and minority opinions from NES evaluations.

(7) Task action agencies under their cognizance to take corrective action for NESSG findings.

(8) Ensure a process is established for tracking and closing NES evaluation findings.

(9) Approve/disapprove closure of NES evaluation findings.

(10) Ensure the training of and certify NNSA Field Element NESSG members.

h. Assistant Deputy Administrator for Secure Transportation.

(1) Ensures that all NEOs under Office of Secure Transportation (OST) purview are covered by a current NES evaluation and requests NES evaluations as needed.

(2) Provides NNSA management of Project Teams assembled to plan, prepare, and present input documentation, briefings, and demonstrations for NES evaluations of OST operations.

(3) Provides input, briefings, and demonstrations as required and certifies the completeness and accuracy of the information.

(4) Ensures that NESSGs have adequate administrative and logistical resources.

(5) Provides a formal request to the Director, Nuclear Explosive Safety Division to proceed with NES evaluations.

(6) Considers the criteria in Attachment 2 when developing a position on findings and minority opinions from NES evaluation reports.

(7) Establishes a process for tracking and closure of NES evaluation findings.

(8) Approves/disapproves closure of NES evaluation findings.

(9) Establishes a process for approving and implementing Assistant Deputy Administrator for Secure Transportation allowable changes.

(10) Establishes and maintains auditable records of OST NES screens, NCE determinations, and approval of Assistant Deputy Administrator for Secure Transportation allowable changes.

(11) Provides NNSA management of Project Teams assembled to plan, prepare, and present input documentation, briefings, and demonstrations for operation-specific NES evaluations.

i. NNSA Production Agencies. (This information is provided here for reference only – actual contractor responsibilities are found in Attachment 1)

(1) Ensure the training of and certify contractor NESSG members.

(2) Nominate and provide TAs to support NES evaluations, as needed.

(3) Provide input, briefings, and demonstrations as required and certify the completeness and accuracy of the information.

(4) Lead the development of safety supporting documentation for NES evaluations and ensure the completeness of the information.

(5) Identify, train, and certify independent NES representatives to perform Contractor NES Change Evaluations (CNCE).

(6) Prepare change packages and initiate the NEO change control process for proposed changes to authorized NEOs.

(7) Conduct CNCEs.

(8) Establish and maintain auditable records of CNCE determinations and approval of contractor-allowable changes.

(9) Establish a process for approving and implementing contractor-allowable changes.

(10) Take appropriate action on NES evaluation findings.

j. NNSA Design Agencies. (This information is provided here for reference only – actual contractor responsibilities are found in Attachment 1)

(1) Ensure the training of and certify design agency NESSG members.

(2) Nominate and provide TAs as requested by NESSG chair to support NES evaluations.

(3) Provide input, briefings, and demonstrations as required and certify the completeness and accuracy of the information.

(4) Take appropriate action on NES evaluation findings.

(5) Inform NNSA and NNSA Production Agency contractor via the Information Engineering Release (IER) process of actionable information that has the potential to adversely impact NES for approved NEOs.

k. NNSA Project Team Leads.

(1) Implement the necessary tooling, processes, and procedures to ensure that the proposed NEO (including proposed changes or responses to emerging information affecting an approved NEO) meets the NES Standards and other NES criteria.

(2) Conduct NESS planning meetings and document and distribute planning meeting results.

(3) Ensure explicit certification of the technical accuracy and completeness of NES evaluation input documentation.

(4) Submit to the NNSA Field Element or OST, as applicable, a formal declaration of readiness to proceed with a NES evaluation based in part on their judgment that the operation presented for NES evaluation meets the NES Standards and other NES criteria.

(5) Manage study preparation, including input documentation, briefings, and demonstrations for topics brought to a formal NES evaluation.

(6) Ensure the presentation of all relevant information from all available sources relating to the proposed change or response to emerging information. In cases where there is a conflict in the technical opinion, present all sides of the issue for the NESSG to deliberate.

(7) Maintain involvement in all programmatic NES evaluations (NESSs, OSRs, and NCEs) to ensure the NESSG is provided timely accurate and complete information to ensure effective NESSG deliberations.

l. Senior Technical Advisors.

(1) Support the independent oversight function of the Associate Administrator for Safety and Health.

(2) Stimulate a more basic and complete consideration of NES for proposed operations by the Project Teams.

(3) Suggest to senior NNSA management opportunities for improvement in the NES evaluation process.

(4) Prepares for the NES evaluation by reading the input documentation, attending training and orientation meetings, developing lines of inquiry, and researching issues as needed.

(5) Attends briefings and demonstrations (or NEO observations), and critically evaluates the information presented or observed.

(6) Participates in NESSG deliberations, including, examining all sides of NES issues, resolving lines of inquiry, and developing findings and deliberation topics, as appropriate.

(7) Uses the criteria in Attachment 2 when deliberating, categorizing, and documenting issues in NES evaluations.

(8) Contributes to the report writing.

(9) Documents any STA comments to be included in the report.

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CHAPTER II

NUCLEAR EXPLOSIVE SAFETY EVALUATION OVERVIEW

1. NES EVALUATION TYPES AND TIMING. NES evaluations qualitatively assess the adequacy of positive measures in meeting the DOE NES Standards and other NES criteria specified in the DOE 452-series orders. The focus of a NES evaluation is the NEO and supporting procedures, facilities, equipment, people, and management systems.

   NES evaluations must be conducted a) before an NEO is authorized; b) periodically for ongoing NEOs; and c) when proposed changes or emerging information—for example, discovery of anomalous conditions—could potentially affect an approved NEO. NES evaluations are initiated on request from the responsible NNSA line management and rely on descriptive documentation and analyses performed by others, as well as direct observations of simulated or actual NEOs and associated facilities, equipment, tooling, and management programs.

   The five kinds of formal NES evaluation are NESSs, OSRs, and NCEs, which are performed by a NESSG; CNCEs conducted by qualified NNSA management and operating (M&O) contractor NES representatives; and OST NES screens performed by OST staff.

   Proposed new or significantly modified operations, support facilities, and processes must be evaluated by a NESS. Approved NEOs are subject to periodic reevaluation in the form of either a NESS or OSRs. Ongoing operations must be reevaluated using the NESS process at intervals as described below. OSRs are required evaluations that must occur at approximately the midpoint between NES evaluations. OSRs are targeted for the period between three and seven years after the associated NESS and may be divided into segments (e.g. assembly and disassembly) to facilitate the evaluation. The OSR(s) may start as early as the second anniversary of the NESS report and must be completed by the seventh anniversary of the NESS report. See Figures 1 and 2 below. The Director of the Nuclear Explosive Safety Division and the NESSG chair determine OSR scope, duration, and schedule based upon information provided by the Project Team. The Director of the Nuclear Explosive Safety Division is responsible to ensure OSRs are scheduled appropriately. However, if the OSR process has not been completed by the seven-year anniversary of the NESS report, an OSR must be performed for that portion of the operation at the next occurrence of the affected operations unless the operation is deemed to be lapsed. If the operation has been deemed as lapsed, the NESS for the portion of the operation deemed as lapsed is no longer valid and a NESS must be completed before the operation can be re-started. The OSR process is outlined in Chapter V.

   The NES Master Study (as described below) must be conducted every five years with the same time constraints as for a NESS (i.e. Master Study must start no later than 120 days before the five-year anniversary date and must be completed no later than one year after the anniversary date).

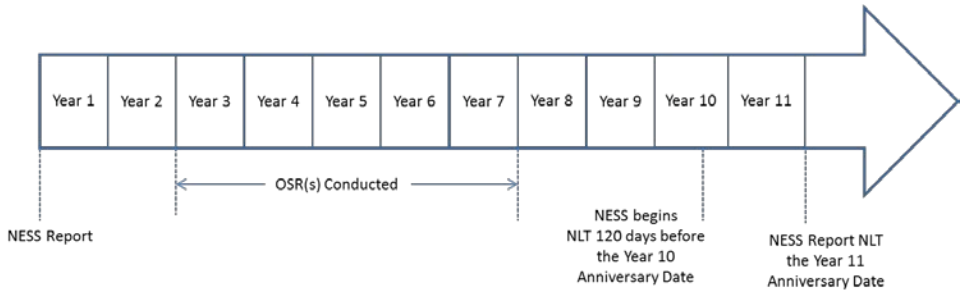

Figure 1 Timeline for NESS/OSR Process

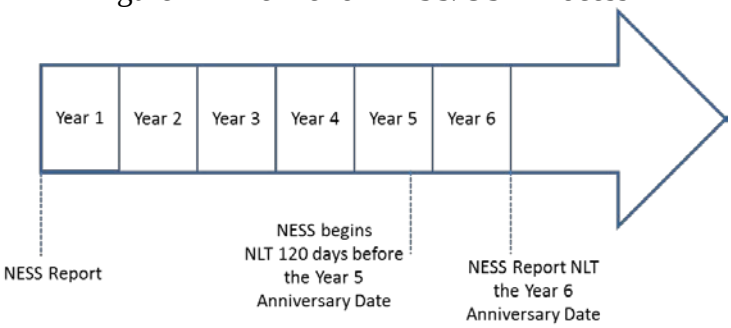

Figure 2 Timeline for NES Master Study Process

The next NESS for an ongoing operation must begin within ten calendar years of the date the report for the previous NESS was signed by the NESSG Chair, unless an extension to the ten-year requirement is approved by the Assistant Deputy Administrator for Stockpile Management. The study must be completed no later than eleven years following the NESS report date. For purposes of establishing the timeline for periodic reevaluation of ongoing operations, a NESS is considered to begin at the first meeting of the entire NESSG (study-specific NESSG training or orientation meeting as described in Chapter IV paragraph 5). A NESS is considered complete when the NESSG Chair signs (approves) the final report. The ten-year period means ten calendar years.

If a NEO is not operating at the end of the ten years, the NESS may be, but does not have to be, performed at that time. However, a NESS must be completed and findings where a NES Standard is not met must be closed before the NEO may restart.

For ongoing operations, if a NESS has not begun by 120 days before the ten year anniversary of the date the NESSG Chair signed the previous NESS report, the responsible NNSA Field Element Manager or Assistant Deputy Administrator for Secure Transportation, as applicable, must notify the Assistant Deputy Administrator for Stockpile Management and the Associate Administrator for Safety and Health in writing, with a copy to the Director, Office of Nuclear Weapon Stockpile; Director, Office of Nuclear Weapon Surety and Quality; and Director, Nuclear Explosive Safety Division, no later than 90 days before the ten year anniversary and either request an extension or indicate the date by which the NESS will begin. If an extension is not requested, the date for beginning the NESS must be before the ten-year anniversary of the date the NESSG Chair signed the previous NESS report.

Extension requests must include:

- Reference to the NESS for which the extension is requested.
- Summary of associated OSR/NCE history and results.
- A compelling reason for the extension.
- The rescheduled date for conducting the NESS.
- Other pertinent data or information used as a basis for the extension request.
- Identification of any additional risks that will be incurred if the extension is granted.
- Relevant information from the open findings status reports, as detailed in Chapter VII, paragraph 4.

To grant a NESS extension, the Assistant Deputy Administrator for Stockpile Management must establish that it is warranted under the circumstances specified and would not present an undue risk. The Assistant Deputy Administrator for Stockpile Management must document the reason for approving, including as appropriate conditions of approval, or denying the extension in correspondence that includes

- The requester.
- Associate Administrator for Safety and Health.
- Director, Office of Nuclear Weapon Stockpile.
- Director, Office of Nuclear Weapon Surety and Quality.
- Director, Nuclear Explosive Safety Division.

For ongoing operations, if a NESS is not begun by the ten year anniversary of the date when the NESSG Chair signed the previous NESS, or within the period granted by extension(s), or completed by the eleventh year (plus extensions), affected NEOs must be suspended until an extension is approved or the NESS is completed.

Proposed changes to approved NEOs and emerging information with the potential to impact NES are the impetus for CNCEs, OST NES screens and, in turn, sometimes to an NCE or NESS as detailed in Chapter VI of this Supplemental Directive.

The following is an overview of each kind of NES evaluation. Detailed guidance is provided in Chapters IV-VI of this Supplemental Directive.

a. Nuclear Explosive Safety Studies. All NEOs must be supported by a preoperational NESS, or set of relevant NESSs, approved before operations can

begin. A NESS may also be used to evaluate proposed changes, emerging information or for periodic reevaluation in lieu of OSRs in accordance with the provisions of Chapter V, paragraph 2.

(1) There are two kinds of NESSs.

(a) Operation-specific studies evaluate proposed NEOs and interfaces with applicable Master Studies and other programs, procedures, and processes relevant to NES not addressed in a Master Study, to determine if there are gaps or weaknesses in the positive measures needed to meet the NES Standards and other NES criteria.

(b) Master Studies (MS) evaluate facilities, equipment, processes, and management programs that may be common to multiple NEOs to determine if they are adequately characterized and controlled to support future evaluation of their use in operation-specific NEOs.

Because a Master Study is not NEO-specific, definitive statements regarding satisfaction of the NES Standards may not be possible.

(2) An operation-specific study or Master Study, as appropriate, must be performed—

(a) for the startup of a NEO facility;

(b) for all proposed NEOs;

(c) when jointly determined to be necessary by the NNSA Field Element Manager or Assistant Deputy Administrator for Secure Transportation, as applicable, and the Director, Nuclear Explosive Safety Division;

(d) when the NNSA Field Element Manager or Assistant Deputy Administrator for Secure Transportation, as applicable, and the Director, Nuclear Explosive Safety Division do not agree whether an NCE or a NESS is appropriate for a proposed process change; and

(e) in accordance with the NESS-OSR evaluation cycle detailed above.

Detailed requirements for planning and performing a NESS are presented in Chapter IV.

b. Operational Safety Reviews. OSRs are a form of periodic NES evaluation for ongoing NEOs with a current NESS. The NESSG applies current criteria, documentation, and other information to previously NESSG evaluated and approved NEOs, facilities, and programs. OSRs differ from NESSs in that they

rely on observations of actual NEOs rather than simulations, and on approved current documentation that describes the NEO and its safety case.

OSRs evaluate authorized, ongoing NEOs to determine if there are gaps or weaknesses in the positive measures needed to meet the NES Standards and other NES criteria. NES Master Studies are not eligible for an OSR evaluation.

Detailed requirements for planning and performing an OSR are presented in Chapter V.

c. Contractor NES Change Evaluations. CNCEs are performed by the production agency to assess proposed changes to approved NEOs. The scope is generally limited to aspects of the operations, activities, or programs affected by the proposed change or emerging information that has the potential to impact NES.

Qualified NNSA M&O contractor NES representatives evaluate proposed changes and emerging information with the potential to impact NES against the criteria detailed in Chapter VI, paragraph 2c(1). Contractor NES representatives determine if the NES implications of the circumstances allow for contractor approval or if the issue must be elevated to an NCE or appropriately-scoped NESS.

The CNCE process is detailed in Chapter VI.

d. Office of Secure Transportation NES Screens. OST NES Screens are conducted by OST personnel to evaluate proposed changes or emerging information for the potential to impact NES. In the absence of NES personnel certified in accordance with the requirements detailed in Chapter III, designated OST staff utilize screening criteria set forth in OST 46XA, *Offsite Transportation Safety Manual*, Chapter 2.2, Appendix G to determine if the circumstances allow for Assistant Deputy Administrator for Secure Transportation approval or if the issue must be elevated to an NCE or appropriately-scoped NESS.

The OST NES screen process is detailed in Chapter VI.

e. NES Change Evaluations. NCEs are performed to determine if approved NEOs will continue to meet the DOE NES Standards and other NES criteria after implementation of a proposed change or response to emerging information. Emerging information may include, but is not limited to, new information that may affect the basis for prior NES evaluation conclusions, as-found conditions that have impact beyond the scope of an ongoing evaluation, and discovery conditions that are not bound by a currently approved NES evaluation (e.g., anomalous condition).

The scope of an NCE is generally limited to aspects of operations, activities, or programs affected by the proposed change or emerging information that has the potential to impact NES. A NESSG is convened to perform an NCE when:

(1) The change control process determines that the circumstances do not satisfy the criteria detailed in Chapter VI, paragraph 2c for a contractor-allowable change, or OST 46XA, *Offsite Transportation Safety Manual*, Chapter 2.2, Appendix G for an OST-allowable change, or

(2) Requested by the Director, Nuclear Explosive Safety Division in conjunction with the responsible NNSA Field Element Manager or Assistant Deputy Administrator for Secure Transportation, as applicable.

and

(3) The proposed change or emerging information does not require a NESS.

The decision to perform a NESS or NCE is made by the Director, Nuclear Explosive Safety Division in conjunction with the responsible NNSA Field Element Manager or Assistant Deputy Administrator for Secure Transportation, as applicable. If an agreement cannot be reached, then a NESS must be performed.

For significant changes to a large portion of the process, such as the introduction of a significant number of new specialized tooling throughout the process or the introduction of new Category 1 electrical equipment, which has never before been authorized for any nuclear explosive operation, a NESS, rather than a NCE, should be performed.

Detailed requirements for planning and performing an NCE are presented in Chapter VI.

2. SECURITY OPERATIONS. NES evaluations must, as appropriate, include consideration of security operations and the potential adverse impact on NES. The NESSG does not evaluate the overall adequacy of security measures for preventing unauthorized access to nuclear explosives.

3. URGENT NES CONCERNS. If a NESSG considers any NES concern to require urgent attention, the NESSG chair must promptly inform NNSA line management.

4. NES EVALUATION SCHEDULES. The Director, Nuclear Explosive Safety Division must provide periodic schedule updates to NESSG member organizations.

5. PROCESS DEVIATIONS. Unless otherwise specified in this Supplemental Directive, the Director, Office of Nuclear Weapon Surety and Quality is the approval authority for administrative and procedural deviations to Chapters III – VI, the NES evaluation process. Deviation requests must be submitted to Director, Office of Nuclear Weapon Surety and Quality for approval as far as possible in advance of the need for the deviation with a copy to the Associate Administrator for Safety and Health and any organization affected by the decision. Deviations to Chapter III must be concurred with by the Associate Administrator for Safety and Health.

Deviation requests must include:

a. Reference to the requirement for which the deviation is requested.

b. A compelling reason for the deviation.

c. Benefits to be realized through the deviation.

d. A statement indicating whether the deviation sought is permanent or, if temporary, when compliance will be achieved.

e. Other pertinent data or information used as a basis for requesting a deviation.

f. A description of alternative or mitigating action that has been or will be taken.

To grant a deviation, the Director, Office of Nuclear Weapon Surety and Quality must establish that it does not present an undue risk and is warranted under the circumstances specified. The Director, Office of Nuclear Weapon Surety and Quality must document the reason for approving, including as appropriate conditions of approval, or denying the process deviation in correspondence that includes the requester; the Director, Nuclear Explosive Safety Division; the Associate Administrator for Safety and Health; and any organization affected by the decision.

6. RECORDS. Maintain records according to National Archives and Records Administration (NARA)-approved DOE Records Schedules.

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CHAPTER III

NUCLEAR EXPLOSIVE SAFETY EVALUATION PERSONNEL

1. INTRODUCTION. NESSGs include the NESSG chair, other voting NESSG members, technical advisors, and Senior Technical Advisors (STAs), as appropriate.

   NESSG chairs must be NNSA federal employees who meet the requirements of this Chapter and DOE-STD-1185, *Nuclear Explosive Safety Study Functional Area Qualification Standard*. Other NESSG members must be (a) NNSA federal employees who meet the requirements of this Chapter and DOE-STD-1185; or (b) NNSA management and operating (M&O) contractor employees who meet the requirements of this Chapter and Attachment 1, Appendix A, and who are advising on matters related to their contracts with NNSA.

   Senior Technical Advisors (STAs) are persons who are acting as individual consultants. STAs are preferred to be recruited from outside the NES community (i.e. former NESSG members) to reinforce the independence and diversity of NESSGs. Recognized, senior-level, science, engineering, and management experts are preferred. Experience in, for example, safety evaluations, panels assessing high-consequence operations, and peer reviews is considered valuable. STAs support the independent oversight function of the Associate Administrator for Safety and Health, and are expected to stimulate a more basic and complete consideration of NES for proposed operations by the Project Teams, and to suggest to senior NNSA management opportunities for improvement in the NES evaluation process.

2. NESSG QUALIFICATIONS.

   a. Personal Characteristics. NESSG personnel must—

      (1) bring reasoned judgment to NES evaluations;

      (2) have the ability and willingness to question and challenge NNSA line management safety statements and rationale for issues with the potential to impact NES;

      (3) be able and willing to actively participate as part of a team and to take unpopular stands when warranted;

      (4) have the ability to—

         (a) develop appropriate NES evaluation approaches; contribute to effective planning meeting decisions;

         (b) critically assess input documentation, briefings, and demonstrations;

(c) develop and pursue relevant lines of inquiry; articulate NES concerns;

(d) develop appropriate feedback; and

(5) have oral communication skills to participate effectively in deliberations and written communication skills to clearly document conclusions.

b. Training. The Director, Nuclear Explosive Safety Division must ensure that NES training courses are identified and developed to enable NESSG personnel and personnel-in-training to meet and maintain the requirements for NESSG personnel certification.

(1) NESSG Chairs. The Director, Nuclear Explosive Safety Division must establish a training program ensuring that NESSG chairs achieve and maintain the proficiencies needed to meet the requirements of DOE-STD-1185. The Director, Nuclear Explosive Safety Division must also ensure that a process exists for experienced NESSG chairs to convey useful knowledge to less experienced NESSG chairs.

(2) Other Members.

(a) NNSA Federal Employees. NNSA Federal organizations providing NESSG members must ensure their members receive the training required to achieve and maintain the proficiencies needed to meet the requirements of this Supplemental Directive and DOE-STD-1185.

(b) NNSA M&O Contractors. NNSA M&O Contractors providing employees to serve as NESSG members ensure their members receive the training required to achieve and maintain the proficiencies needed to meet the requirements in Attachment 1, Appendix A.

(3) STAs. The Director, Nuclear Explosive Safety Division, using the national laboratories and other providers, as appropriate, must ensure STAs receive general orientation training on nuclear explosive operations, NES, the NES evaluation process, U.S. nuclear explosives, and other topics as needed for certification before assignment to a NESSG.

c. Independence. The NESSG must make objective, independent judgments regarding the NES adequacy of systems, operations, and processes. NESSG personnel must not be subject to management influence in performing their NES obligations, and must not—

(1) have current responsibility for the design, development, production, or testing of the specific nuclear explosive, NEO, facility, or management system under evaluation;

(2) have responsibility for advocacy of special interests of any organization, or for defending a specific nuclear explosive, NEO, facility, or management system under evaluation; or

(3) participate in the preparation of NESS input technical documentation, OSR supporting documentation, NCE input, or the preparation or presentation of briefings or demonstrations.

d. Certification. Certification authorities differ for each type of NESSG participant.

(1) NESSG chairs. The Director, Nuclear Explosive Safety Division certifies NESSG chairs based on satisfaction of the requirements for personal characteristics, training, and independence (paragraphs 2a -2c, above) and the requirements for education, experience, technical competencies, and proficiency activities established in DOE-STD-1185. Certification is documented by a certification letter retained by the Director, Nuclear Explosive Safety Division and is valid for two years.

(2) Other Members. The Assistant Deputy Administrator for Stockpile Management, NNSA Field Element Manager, Laboratory Directors, and NNSA M&O contractor managers, as appropriate, designate certification authorities who can objectively judge whether their NESSG members meet the requirements established in this Supplemental Directive. Certification is documented by a certification letter to the Director, Nuclear Explosive Safety Division and is valid for two years.

(a) NNSA Federal Employees. NNSA Federal organization certification authorities must certify each of their NESSG members based on satisfaction of the requirements for personal characteristics, training, and independence (paragraphs 2a - 2c, above) and the requirements for education, experience, technical competencies, and proficiency activities established in DOE-STD-1185.

(b) NNSA M&O Contractors. NNSA M&O Contractors providing employees to serve as NESSG members certify each of their NESSG members based on satisfaction of the requirements for personal characteristics, training, and independence (paragraphs 2a -2c, above) and the requirements for education, experience, technical competencies, and proficiency activities in Attachment 1, Appendix A.

(3) STAs. The Associate Administrator for Safety and Health certifies STAs based on satisfactory completion of the required NES training and requirements set forth in this Chapter. Certification is documented in a certification letter to the Director, Nuclear Explosive Safety Division. STA certifications have no expiration date. Prior certifications made by other than the Associate Administrator for Safety and Health remain valid.

3. NESSG FORMATION. The NESSG chair for each NES evaluation is assigned by the Director, Nuclear Explosive Safety Division. Organizations providing NESSG members nominate personnel for each NES evaluation as requested by the NESSG chair. The NESSG chair selects NESSG personnel for each NES evaluation and verifies that NESSG personnel certifications will be current at the start of the evaluation. NESSG personnel should not be changed for the duration of a specific NES evaluation.

4. NESSG COMPOSITION. NESSG composition must meet the minimum staffing requirements specified in Table 1. The NESSG chair may recruit additional members or participants, including TAs or Field Element personnel, as deemed appropriate.

TABLE 1. NESSG COMPOSITION FOR NNSA NES EVALUATIONS

Providing Organization	NESS	OSR	NCE
Nuclear Explosive Safety Division	1 NESSG chair	1 NESSG chair	1 NESSG chair
Office of Safety and Health	2 STAs	1 STA	-
Los Alamos National Laboratory	1	1	1
Lawrence Livermore National Laboratory	1	1	
Sandia National Laboratories	1	1	
Pantex Plant M&O	1 (Pantex evaluations)	1 (Pantex evaluations)	1 (Pantex evaluations)
Nevada National Security Site (NNSS) M&O	1 (NNSS evaluations)	1 (NNSS evaluations)	1 (NNSS evaluations)

5. TECHNICAL ADVISORS (TAs). NESSG chairs must consider the use of TAs to contribute specific expertise to NES evaluations. Based on the scope and complexity of the NES evaluation being performed, the NESSG chair may recruit one or more TAs with relevant training, experience, and recognized expertise. TA independence requirements are the same as for the NESSG detailed in paragraph 2c above.

6. NNSA CONTRACTOR NES REPRESENTATIVES. NNSA Contractor NES representatives are specifically trained and certified to perform CNCEs. Qualifications for Contractor NES representatives include the following. (This information is provided here for reference only –contractor requirements are found in Attachment 1)

a. Personal characteristics are as stated for NESSG members in paragraphs 2a (1) to 2a (3) above.

b. Independence as stated for NESSG members in paragraph 2c above.

c. Training as specified in Attachment 1, Appendix A.

d. Certification as stated for NESSG members in paragraph 2d above based on :

(1) Satisfaction of the requirements for personal characteristics and independence.

(2) Satisfaction of the training, education, experience, technical competencies, and proficiency activities in Attachment 1, Appendix A.

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CHAPTER IV

NUCLEAR EXPLOSIVE SAFETY STUDY PROCESS

1. INTRODUCTION. Except as detailed below, the process for the two kinds of NESSs—operation-specific studies and Master Studies—is the same. Operation-specific studies have an OSR performed between NESSs, which occur approximately every ten years as described in Chapter II.

2. NESS PLANNING MEETINGS. The Project Team is responsible for conducting planning meetings with the Nuclear Explosive Safety Division, other NESSG personnel, and representatives from responsible NNSA line management organizations, design agencies, and the production agency, as appropriate. To ensure a successful NESS and promote a common understanding of the approach being taken, planning meeting participants:

   a. Define the study scope and objectives. The scope should describe boundaries with any associated NESSs (such as NES Master Studies) to ensure no gaps exist.

   b. Identify topics to be addressed in input documentation, briefings, and demonstrations.

   c. Identify organizational points of contact and assign responsibilities for compiling input documentation.

   d. Develop schedules and, as appropriate, agendas for preparatory activities detailed in this Chapter.

   e. Plan briefings, demonstrations, and resources required to support the NESS.

   The Project Team is responsible for documenting and distributing planning meeting agreements, assumptions, issues, and decisions to participants and appropriate organizations.

3. NESS INPUT DOCUMENTATION. A NESS relies on detailed written information and analyses to describe and substantiate the subject activities. Compromises to the completeness or currency of the required information should be avoided to promote the timely and effective conduct of the study.

   Input documentation is compiled in the form of a comprehensively-indexed single integrated input document (SIID). The Project Team is responsible for compiling the SIID and obtaining explicit certification of the technical content completeness and accuracy from the organization providing the inputs.

   Explicit certification must be provided formally in a letter, memorandum, or engineering authorization. Completeness is determined by the inclusion of the appropriate documents listed in Attachment 1 Appendix B. Accuracy means that information will be verified to be correct and current. The requirement for current information does not preclude

historical documents, which may be pertinent to NES from being included in the SIID. The Project Team will identify any historical documents included in the SIID to the NESSG.

In addition to informing the NESSG, the SIID also provides a means to document rationale for a Project Team assertion that the operation presented for NES evaluation meets the NES Standards and other NES criteria.

The SIID must be delivered or presented to the NESSG for their use at the orientation meeting, and available to members for comprehensive review and evaluation during the NESSG preparation period prior to the NESS.

Attachment 1 Appendix B specifies topics that, if applicable, should be included in a SIID and tailored as appropriate for each NESS.

4. USE OF SAFETY BASIS DOCUMENTATION. NES evaluations assess operations, facilities, and management programs to determine if they are adequately controlled to meet the NES Standards and other NES criteria. While it is not a NESSG function to evaluate the accuracy and completeness of safety basis documentation, those documents are valuable resources for the NESSG. A comprehensive safety basis is useful to answer questions related to hazards considered by the process designers, the basis for the controls established, and whether controls important to NES are adequately protected. The NESSG may consider the broad range of applicable positive measures, including but not limited to those controls identified in safety basis documentation. However, NES evaluations generally converge on factors that more directly control or influence NEOs, such as the written procedures used by personnel performing hands on work and attributes of equipment, facilities, or management systems. If the NESSG finds that adequate positive measures are effectively incorporated at the working level, the safety basis documentation might help determine if those positive measures are likely to endure as safety basis controls. If the NESSG finds that adequate positive measures are not incorporated at the working level, the safety basis documentation might help determine if a credible postulated scenario has been missed, ineffectively dealt with, or effectively dealt with in some other manner.

5. NESSG PREPARATION. To efficiently and effectively prepare the NESSG to conduct the NESS, the following NESS preparatory activities should be conducted in sequence (paragraphs 5a-5d, following):

   a. Study-specific NESSG Training.

      (1) For operation-specific studies, study-specific NESSG training is typically held at the design agency one month or less before the orientation meeting. Although specific content is defined at the planning meeting,

      study-specific training must address the input topics related to nuclear explosive design as well as the features and attributes important to NES at relevant levels of assembly. Particular focus must be directed to

characteristics important to the design of the proposed NEOs, and susceptibilities to possible environments in which the NEOs will be performed.

(2) For MSs, the need for study-specific training will be determined at NESS planning meetings. If study-specific training is deemed useful, the NESSG chair and Project Team will define the approach, content, provider, and venue as appropriate to each study.

b. Input Documentation Delivery. SIID completion and availability must coincide with or shortly precede the start of the orientation meeting.

c. Orientation Meeting. The primary objectives of the orientation meeting are to introduce the NESS subject and SIID content and organization, and to attain NESSG agreement on the planned NESS approach, agenda, and schedule. Commitments to support the agreed-upon schedule must be secured from all participants.

NESSG familiarization must focus on proposed NEOs for operation-specific studies, and on proposed facilities, equipment, processes, and management programs for MSs. SIID content, organization, and hardware/software requirements must be addressed. The level of detail in briefings and demonstrations should reflect the NESSG-familiarization objective of the orientation meeting.

The detailed NESS agenda developed at the orientation meeting must define the required content and initial schedule for NESS briefings, demonstrations, and other activities, as well as the final NESS preparation elements detailed in the following paragraph. NESS start dates and schedules are tentative until the NESSG determines that the SIID is adequate and the NESSG and Project Team define a suitable preparation period.

d. NESSG Final Preparation. Consistent with prior NESSG agreements, the NESSG must:

(1) Evaluate the SIID to determine if it is adequate to proceed with the NESS.

(2) Perform individual study and research as needed.

(3) Begin developing lines of inquiry (LOIs) as needed.

(4) Participate in periodic teleconferences with members, advisors, and the Project Team to assess progress, discuss LOIs, and modify the NESS plan as required.

Lines of inquiry are a communication tool that the NESSG uses to pursue potential NES issues. A line of inquiry is an informal document that the NESSG may use to track issues, focus the oral debate during deliberations, and use as an

interim tool to produce a written finding, deliberation topic, or narrative for the final NESSG report. The LOI is used to state the known facts relevant to an issue, submit written questions to the Project Team, document the answers to those questions, and summarize any conclusions based upon the information provided. The use of LOIs is not required for the NESSG to pursue any particular issue, but its use is encouraged as the LOI is particularly useful during the deliberation and report writing phases of the NES evaluation.

Sufficient resources and time to accomplish these tasks—nominally three to five weeks after the input documentation is available to the NESSG members—must be allocated.

6. NESS PREREQUISITES. A NESS must not begin until preparatory work on the facilities and operations are completed and the safety basis is in formal change control and submitted to the approval authority. To ensure the most timely and effective conduct of the NESS, the Project Team must provide a declaration of readiness and the appropriate federal line management (Field Element Manager or Assistant Deputy Administrator for Secure Transportation) must make a formal request to initiate the NESS.

If a NESS concludes before the safety basis is approved, the NESSG Chair must review the conditions of the safety basis approval and determine if these conditions will result in changes that may affect the NESS conclusions before issuing the final NESS report. If necessary, the NESSG may be reconvened to consider the effect on their earlier conclusions. If the NESS concludes before the safety basis is approved, and the NESSG is not reconvened once it is approved, then the NESSG Chair will include a statement in the NESSG report stating that the safety basis approval was reviewed.

7. NESS CONDUCT. For the timeframe of the operation-specific study or MS, the primary responsibility of the NESSG is preparing for and conducting the NESS. Conflicting assignments must be resolved in favor of NESS duties from the date the input documentation is made available until conclusion of the NESS. Assigning NESSG members to overlapping NESSG evaluations should be avoided. The timely availability of Project Team, laboratory, and contractor personnel supporting the NESS should be ensured. TA support should be scheduled to ensure the most efficient and effective utilization of their technical expertise in support of the NESS.

The NESSG chair has authority to suspend the NESS if unable to fulfill the requirements of this Supplemental Directive. If an evaluation is suspended, the NESSG chair will notify the Authorizing Official of the reason for suspension. If the suspension is for a period of time greater than one month or if the suspension is for a reason other than administrative, the NESSG chair must document the reason for suspension and forward it to the Director of the Nuclear Explosive Safety Division with copies to the Director, Nuclear Weapon Surety and Quality, the Assistant Deputy Administrator for Stockpile Management, the Associate Administrator for Safety and Health, and the appropriate Authorizing Official. Administrative delays include delays due to NESSG member availability, project team factual accuracy reviews of draft reports, etc.

The NESS content and activity sequence are defined or modified based on NESS scope, planning meeting agreements, and in-progress decisions. The central NESS elements are:

a. Briefings. Briefings by subject matter experts cover key elements of the input documentation and present the NES foundation for the proposed NEO, facility, or program under evaluation to ensure a common understanding and allow NESSG interaction with subject matter experts. The NESSG must critically consider the briefings, identify potential issues, and, as appropriate, question or challenge points made or omitted in the briefings.

b. Demonstrations. NESS demonstrations simulate proposed NEOs using trainer units or other mock-ups. NESS demonstrations for NES MSs involve facility or site walkdowns and tours of systems/items of NESSG interest.

(1) Demonstration details, including simulation fidelity, are defined during planning meetings, but may be modified as needed during a NESS. Demonstrations allow an examination of interfaces between and among the nuclear explosive and tooling, testers, other equipment, support systems, procedures, personnel, and the facility. The NESSG critically evaluates the process to identify potential NES deficiencies and opportunities to strengthen positive measures to meet the NES Standards or other NES criteria.

(2) Demonstrations must:

(a) Provide the most realistic simulation practicable.

(b) Be conducted by trained and qualified technicians or operators.

(c) Use actual or representative tooling, testers, other equipment, and systems.

(d) Use written procedures that are under change control and sufficiently developed to be used in the NEO upon approval.

(e) Be conducted in actual bays or cells, or in facilities representative of key conditions in which the NEO is to be performed. For example, a training area replicating the actual facility in size, layout, and workflow may be deemed by the NESSG an acceptable representative facility.

The NESSG is the final arbiter of the suitability of demonstration conditions.

c. Deliberations. NESS deliberations are collaborative efforts among the NESSG, TAs, STAs, Project Team, and subject matter experts to consider all sides of issues identified during NESS preparation, training, briefings, and demonstrations. The focus of deliberations is potential NES deficiencies and

other NES-related issues that might warrant documentation in the NESS report. The NESSG must sort, characterize, and document these issues using the guidance in Attachment 2.

As draft findings and deliberation topics mature, the NESSG should share those drafts with the Project Team and allow Project Team feedback regarding the factual basis of the issues or other input the Project Team considers relevant.

When deliberating an issue that appears to be similar to an existing open finding, the NESSG should attempt to determine the extent of the linkage. If the current issue is fully covered by an existing open finding, the NESSG should say so in a deliberation topic. If the current issue adds new or not previously considered information, the NESSG should focus on that new information. In that case, they might write a new finding that references the existing finding, but focused only on the new information. Alternatively, they might write a new all-encompassing finding that subsumes the existing finding, along with a statement recommending that the previous finding be closed. They might also conclude that significant portions of the previous finding have been effectively corrected and write a narrower proposed replacement finding that focuses on the deficiencies remaining. The Authorizing Official remains the closure authority for all findings including those that the NESSG recommends be closed or replaced.

If the NESSG identifies an issue that was the subject of a previously closed finding, the NESSG should critically and thoroughly review the closure package. If the NESSG believes that the deficiency still exists, they should document why the previous corrective actions are considered insufficient.

Although the NESSG strives for unanimity, individual NESSG members may submit or endorse a minority opinion when their judgment differs from that of the majority. A minority opinion is a position taken by the minority of the NESSG and represents the minority's disagreement with some aspect of the NESSG report. Examples include the disagreement with the categorization of a NES issue and the lack of inclusion of a NES issue in the report. A minority opinion must be included in the NESS report in its entirety, and NESSG majority personnel must prepare a written response to the minority opinion. If applicable, the minority opinion should include a statement that describes the negative impact on NES if NNSA management accepts majority's position. The NESSG should only use the minority opinion process after all reasonable means to come to consensus have been attempted.

While the NESSG normally conducts deliberations in open meetings and is receptive to relevant input from knowledgeable, informed sources, all NESS report content, including characterization and categorization of issues, must be determined exclusively by the report signatories. At the discretion of the NESSG chair, the NESSG may also hold closed executive sessions in which only the NESSG participates.

If the number of voting members on a NESSG is even, the potential for a tie vote exists. If a tie vote occurs, it is expected that the NESSG will attempt to come to consensus on the issue. The NESSG may choose to present the issue to the Project Team for additional input. If the tie has occurred due to differences in interpretation of NES requirements, the NESSG may contact the Nuclear Explosive Safety Division, the Office of Nuclear Weapon Surety and Quality, or the Office of Safety and Health for guidance. The NESSG chair may choose to temporarily adjourn the NESS until the additional information or guidance is provided.

Should a tie vote remain after reasonable attempts for the NESSG to come to consensus, the majority position will be the position taken arguing for a higher categorization of the issue (i.e. If the vote is split between categorizing an issue as a finding or a deliberation topic, the issue will be documented as a finding.). The fact that the vote was tied will be documented in the report. A minority opinion which documents the position of the remainder of the NESSG will be included in the report.

d. Report Generation and Concurrence. NESS report development begins while the NESS is in progress and continues throughout the study. The NESS report must include the following:

(1) Abstract.

(2) Table of contents.

(3) NESSG signature page.

(4) Study purpose and background, including identification of other relevant NESS reports.

(5) Scope of the study.

(6) Evaluation criteria such as the NES Standards.

(7) Applicable specific Nuclear Explosive Safety Rules (NESRs).

(8) NESSG statement on the adequacy and implementation of the specific-NESRs.

(9) NESSG evaluation activities, dates, and locations.

(10) Summary descriptions of the management programs, facilities, tooling and other equipment, processes, nuclear explosive and/or NEOs under evaluation.

(11) Evaluation results and supporting rationale, including:

(a) Overall conclusion, including a statement on whether the conclusion is contingent on completion of corrective action for any NESSG finding.

1 For an operation-specific study: NESSG judgment on the adequacy of positive measures to meet the NES Standards and other NES criteria.

2 For a MS: NESSG judgment on whether the studied facilities, equipment, processes, and management systems are adequately characterized and controlled to support future evaluation of their application in operation-specific NEOs.

(b) Findings identifying NES deficiencies, if any. For each finding, provide NESSG judgment on whether affected NEOs meet the NES Standards, and identify any associated NES requirement that is not met. (See elaboration in Chapter VII paragraph 1 and Attachment 2.)

(c) Deliberation Topics summarizing substantive discussions that did not result in findings. (See additional elaboration in Chapter VII, paragraph 1 and Attachment 2.)

(d) NESSG minority opinions, if any, and associated NESSG majority response.

(e) A statement on the adequacy of resources and activities such as documentation, briefings, demonstrations, observations, time, and administrative support for the evaluation.

(f) Lessons learned, as appropriate, from the NESS activities.

(g) Issues that may be outside the scope of the current evaluation but should be considered by the appropriate NESSG for other evaluations.

(12) References, including specific written procedures for the subject studied (by date, issue number, revision number) and other input documentation.

(13) Appendices:

(a) NESS agenda.

(b) Participants.

(14) The NESSG chair and voting members sign the NESS report and are responsible for its content. Signatures represent concurrence with the

report findings and conclusions, except as noted in minority opinions. No agreement by a signatory's organization is implied.

With signatory consent, signatures may be obtained based on final working copies of the individual findings, deliberation topics, and other major sections of the report. Subsequently, the Chair compiles, formats, and assembles a report suitable for publication. The NESSG report is dated when the chair signs indicating that all member final concurrences have been obtained.

8. STA COMMENTS. These comments developed from NESSG activities convey the impressions of a NESSG STA and are intended as constructive input to NNSA managers. They may not be strictly limited to the specified NESS scope or NESSG charter, and do not require follow-up actions unless a responsible NNSA manager specifies otherwise. When a responsible manager specifies follow-up action, it must be entered into the action agency's issue tracking system. Additionally, the manager providing such direction must inform the Associate Administrator for Safety and Health and Assistant Deputy Administrator for Stockpile Management of that decision.

STAs do not vote in NESSG determinations; otherwise, the STAs are full participants in NESSG activities, including observing operations, questioning input data, deliberating issues, and writing the report. Any NES issues raised by an STA must be deliberated by the group in the same manner as issues raised by a voting member, and may thereby be documented in the NESSG report as a NESSG position. If voting members are not persuaded by an STA's argument on a NES issue, the STA may submit a written comment for inclusion in the NESSG report. Such STA comments on a NES issue will be treated in the same manner as a minority opinion from a voting member. Any STA comment documented in a NESSG report must state the factual basis derived from NES evaluation activities, the reason the author considers it a NES deficiency or other NES-related issue, and whether any action by NNSA or its contractors is recommended.

STAs may also write comments on issues that are outside the purview of the NESSG. These non-NES comments need not be deliberated by the NESSG voting members. The STAs also may write differing professional opinions under DOE O 442.2 *Differing Professional Opinions for Technical Issues involving Environment, Safety, and Health.*

The Associate Administrator for Safety and Health may assign a lead member of the STA group to summarize the STA comments on an annual basis and a tracking system must be maintained for STA comments for which a responsible NNSA manager has directed action. The Associate Administrator for Safety and Health must provide for a periodic (approximately annual) review of the STA comments and any follow-up actions. STAs are encouraged to keep abreast of on-going NES evaluations and comment as they feel appropriate at the periodic review.

9. FEEDBACK. Feedback is important for promoting improvement in the NESS process. NESSG personnel are encouraged to document lessons learned throughout all NESS activities, including preparation and planning.

10. NESS VALIDATION. In NESS validations, the NESSG personnel observe actual NEOs to confirm they are consistent with key aspects of operations demonstrated during a NESS. Validations are expected to be the norm for operation-specific studies of startup activities, but can also apply to other NES evaluations. The NESSG must consist of an NNSA chair and one or more certified NESSG members (preferably NESSG members who participated in the associated study).

The NESSG recommends in the NESS report whether a NESS validation should be performed after operations have begun and which operations should be observed based on consideration of such factors as the:

a. Fidelity and completeness of the demonstrations.

b. Extent to which NESS briefings and input documentation included operations-ready information.

c. Anticipated interval between the NESS and start of operations.

d. Projected changes associated with corrective actions originating from the NESS or readiness review.

e. Relative risk of operations (e.g. bare CHE operations).

f. Past NES or operational issues.

g. Operations where the expected number of units to be processed is high, such as a Life Extension Program.

The NESSG documents (in the NESS report) the factors that should be considered in developing the schedule and scope of the validation. The NESSG Chair and responsible operations personnel must jointly plan and schedule validations based on the NESSG recommendations and the operations schedule.

The NESSG Chair must document NESS Validation activities and results in correspondence that includes the responsible NNSA Field Element Manager or Assistant Deputy Administrator for Secure Transportation, as applicable; Assistant Deputy Administrator for Stockpile Management; and Associate Administrator for Safety and Health.

11. NESS POST-EVALUATION PROCESS.

a. Post-Evaluation Briefings and Conferences. At the conclusion of the study, the NESSG chair summarizes the NESS activities, minority opinion(s), STA comment(s), and results in briefing(s) to the—

(1) Responsible NNSA Field Element Manager or Assistant Deputy Administrator for Secure Transportation, as applicable.

(2) Assistant Deputy Administrator for Stockpile Management.

(3) Associate Administrator for Safety and Health.

b. Report Distribution. The NESSG chair distributes the final report to:

(1) Assistant Deputy Administrator for Stockpile Management.

(2) Responsible NNSA Field Element Manager or Assistant Deputy Administrator for Secure Transportation, as applicable.

(3) Associate Administrator for Safety and Health.

(4) Director, Office of Nuclear Weapon Stockpile.

(5) Director, Office of Nuclear Weapon Surety and Quality.

(6) Director, Nuclear Explosive Safety Division.

(7) Participating NESSG members and other NESSG member organizations.

c. Responsible Manager Actions. The responsible Authorizing Official (NPO, FO, or ADAST) must resolve any minority opinions and direct response to NESSG findings, in accordance with Chapter VII, section 2 of this supplemental directive.

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CHAPTER V

OPERATIONAL SAFETY REVIEW PROCESS

1. INTRODUCTION. OSRs focus on ongoing operations and approved current documentation to determine if there are gaps or weaknesses in the positive measures needed to meet the NES Standards and other NES criteria. OSRs are not appropriate for operations that have lapsed or which utilize documentation not maintained through NES change control. An operation is considered lapsed if declared so by a responsible NNSA line manager or judged so in a NESSG report. Factors to consider in making this judgment include length of time between last performance and next performance (i.e. > 3 years), significant changes since the NESS, results of other relevant NES evaluations, degree of similarity or difference from active operations, and relevant changes in knowledge or expectations since the NESS. Before a lapsed operation can restart, a NESS must be completed for the affected activities.

2. OSR PLANNING. OSR Planning is a continuing process. The OSR schedule and scope are dependent on the timing of relevant operations. OSRs are targeted for the period between three and seven years after the associated NESS. At the discretion of the NESSG chair and/or the Director of the Nuclear Explosive Safety Division, the OSR may be divided into two or more separate portions to limit the length of time the NESSG must be continuously convened, and to be compatible with scheduled operations. For example, a program-specific OSR may be performed in two separate evaluations: one evaluation focused on assembly operations, the other focused on disassembly operations. The objective is to cover all elements of the NESS scope during the period from three to seven years after the NESSG Chair signed the previous NESS report. The process for addressing OSR observation gaps is addressed in Paragraph 5 below.

   The Director, Nuclear Explosive Safety Division must maintain an accounting of the topics covered by each NESS and work with NNSA and contractor line management to schedule OSRs to meet the above objective. The NESSG convened for each OSR must review the relevant OSR history, preview operational plans out to the next NESS, and recommend a plan to achieve the desired OSR coverage. The Director, Nuclear Explosive Safety Division must meet with the M&O Contractor periodically (approximately annually) to review OSR scheduling to ensure planned review periods coincide with planned operational activities and to identify potentially lapsed NEOs well in advance. The Director, Nuclear Explosive Safety Division, must provide the updated OSR schedule to:

   a. Assistant Deputy Administrator for Stockpile Management.

   b. Responsible NNSA Field Element Manager or Assistant Deputy Administrator for Secure Transportation, as applicable.

   c. Associate Administrator for Safety and Health.

   d. NESSG-member organizations.

The reason for using both NESSs and OSRs for periodic reevaluation of operation-specific studies is to capitalize on the different strengths of each and reduce the effects of their different disadvantages.

The NESSG Chair is responsible for conducting planning meetings with appropriate NNSA and contractor line management organizations, and for documenting and distributing planning meeting decisions, agreements, assumptions, and issues to OSR participants and appropriate organizations. The Project Team should be involved throughout the OSR process to ensure that the NESSG is provided the proper assistance to completing observations and to ensure that LOIs are being answered in a timely manner to facilitate completion of the review.

To ensure a common understanding of the approach being taken for an OSR, planning meeting participants:

a. Define the OSR scope and objectives.

b. Review operational schedules and identify opportunities for OSR observations. Make preliminary judgments on the effect of any anticipated observation gaps (activities covered by the NESS but not available for OSR observation).

c. Review past operational activities to determine if an operation proposed for any upcoming OSR increment may have lapsed since the last NESS.

d. Identify required OSR supporting documentation.

e. Identify organizational points of contact and assign responsibilities for providing supporting documentation and briefings, and for responding to NESSG lines of inquiry.

f. Develop a schedule and, as appropriate, agendas for the OSR preparatory activities detailed in this Chapter.

3. OSR SUPPORTING DOCUMENTATION. To ensure an adequate evaluation of NES, an OSR relies on up-to-date existing information and analyses. Compromises to the completeness or currency of the required information should be avoided to promote the timely and effective conduct of an OSR. NNSA line management is responsible for making available complete and current OSR supporting documentation to OSR participants (as requested by the NESSG).

As applicable to the scope of each OSR, supporting documentation must include:

a. Current safety basis documents, including identification of changes that required DOE/NNSA approval since the NESS.

b. Descriptions of changes to the configuration of the nuclear explosive or the WSS since the NESS.

c. Approved written procedures.

d. Summary of associated OSR/NCE history and results.

e. Relevant information from quarterly status reports of implemented and pending corrective actions for approved findings, occurrence reports, and SFIs.

f. Identification of any activities covered by the NESS that are not expected to be available for OSR observation. State when last performed and when expected to be performed in the future. For those that management desires continued authorization until the next NESS, compare and contrast with activities that will be observed.

g. Relevant NES evaluation reports.

4. OSR PREPARATION. NESSG personnel and TAs must review the baseline NESS and supporting documentation, perform individual study and research as needed, and begin developing LOIs prior to the start of an OSR increment. Sufficient resources and time to accomplish these tasks—nominally three to five weeks before NEO observations are expected to begin—must be allocated.

During the preparation period, the NESSG chair conducts a final planning meeting with all OSR participants and responsible NNSA line management organizations to:

a. Finalize the OSR scope and objectives.

b. Review operational schedules and identify NEO observation opportunities. Refine earlier judgments regarding the impact of any known observation gaps.

c. Review the status of current safety basis documents and changes since the baseline NESS.

d. Identify required briefing topics.

e. Plan briefings, observations, and resources as required supporting the OSR.

f. Develop an OSR schedule and agenda that are sufficiently detailed to enable effective ongoing management of the OSR.

The NESSG chair documents and distributes meeting results, including statements regarding the OSR scope, objectives, and schedule, to the meeting participants and affected organizations.

5. OSR CONDUCT. For the timeframe of the evaluation, the primary responsibility of the NESSG is preparing for, conducting, and documenting the OSR. Conflicting assignments must be resolved in favor of OSR duties from the date the supporting documentation is made available until conclusion of the OSR. Assigning NESSG members to overlapping NESSG evaluations should be avoided. The timely availability

of Project Team, laboratory, and contractor personnel supporting the OSR should be ensured.

The NESSG chair has authority to suspend the OSR if unable to fulfill the requirements of this Supplemental Directive. If an evaluation is suspended, the NESSG chair will notify the Authorizing Official of the reason for suspension.

The OSR content and activity sequence are defined or modified based on the relevant NESS scope, and planning meeting and in-progress decisions. The central OSR elements are:

a. Briefings. OSR briefings are intended to ensure a common understanding and facilitate productive observations. OSR briefings should be descriptive and focused on the NEOs to be observed. The NESSG may request briefings at planning meetings or during the OSR.

Briefings should also identify any activities covered by the NESS that are not expected to be available for OSR observation. State when last performed and when expected to be performed in the future. For those that management desires continued authorization until the next NESS, compare and contrast with activities that will be observed.

b. Observations. By observing actual NEOs, the NESSG critically evaluates ongoing processes for NES deficiencies and opportunities to strengthen positives measures to meet the NES Standards and other NES criteria.

While actual operational schedules and events might limit available activities, the NESSG should strive to cover as much of the associated NESS scope as possible (relevant to the OSR increment). Any OSR observation gaps must be addressed in the OSR report.

c. Issue Resolution. While a NESS typically pursues every NES issue to a conclusion, OSRs may take a different approach. If questions or concerns are not quickly resolvable from existing documentation available to the production agency (i.e., with enough information to support a valid conclusion), the OSR NESSG may document it as a question that could not be answered in the limited time allotted. Managers must then task an appropriate action agency to develop a response for NESSG review with an appropriate deadline.

d. Deliberations. OSR deliberations follow the same collaboration and issue categorization efforts as specified for a NESS in Chapter IV paragraph 7c.

e. Report Generation and Concurrence. The NESSG may document OSRs either in a living document (updated and given a new Issue Number with each incremental OSR) or as a series of OSR reports. OSR report development begins while the OSR is in progress and continues throughout the evaluation. The OSR report

contents include the information specified for NESS reports in Chapter IV, paragraph 7d.

In addition, the NESSG must account for any OSR observation gaps relative to the NESS scope. Each incremental OSR report must include a matrix listing all increments needed to cover the baseline NESS and their status. This matrix must be updated with each OSR increment to show which increments remain to be covered before the next NESS.

The NESSG should assess the significance of any observation gaps in reaching its overall conclusions about the currently authorized operations. All activities covered by the NESS should be addressed in the OSR Report. Options include:

(1) Observed in OSR; no concerns.

(2) Observed in OSR resulting in finding or deliberation topic.

(3) Not observed in OSR, but no concerns based on inference from what was observed.

(4) Not observed in an OSR increment to date, but expected to be observed in a future OSR increment.

(5) Not observed in OSR and OSR observations did not provide an adequate basis to judge if positive measures remain adequate to meet the NES Standards and other NES criteria. In this case, the NESSG must judge if the affected activity is considered lapsed and therefore requires another form of NES evaluation (i.e., using a demonstration with a trainer unit) or if it is appropriate for evaluation in an OSR increment when next performed. Document the rationale for this judgment in the OSR report.

(6) Not observed in OSR and evaluation not attempted because there are no plans to perform that activity (at least before the next NESS). The NESSG should consider documenting that activity as lapsed.

NESSG personnel sign the OSR report and are responsible for its content. Signatures represent concurrence with the report findings and conclusions, except as noted in minority opinions. No agreement by a signatory's organization is implied.

With signatory consent, signatures may be obtained based on final working copies of the individual findings, deliberation topics, and other major sections of the report. Subsequently, the Chair compiles, formats, and assembles a report suitable for publication. The NESSG report is dated when the chair signs indicating that all member final concurrences have been obtained.

6. STA COMMENTS. Guidance for STA comment derived from OSR activities is the same as specified for a NESS in Chapter IV paragraph 8.

7. FEEDBACK. Feedback is important for promoting improvement in the OSR process.

NESSG personnel are encouraged to document lessons learned throughout all OSR activities, including preparation and planning, and included in the report

8. OSR POST-EVALUATION PROCESS.

a. Post-Evaluation Briefings and Conferences. At the conclusion of the evaluation, the NESSG chair summarizes the OSR activities, minority opinion(s), and results in briefing(s) to the responsible NNSA Field Element manager or Assistant Deputy Administrator for Secure Transportation, as applicable. If the OSR results include a finding where a NES Standard is not met or a minority opinion associated with a potential finding where a NES Standard is not met, then the NESSG chair must also brief the Assistant Deputy Administrator for Stockpile Management and the Associate Administrator for Safety and Health.

b. Report Distribution. The NESSG chair distributes the OSR report to:

(1) Responsible NNSA Field Element Manager or Assistant Deputy Administrator for Secure Transportation, as applicable.

(2) Assistant Deputy Administrator for Stockpile Management.

(3) Associate Administrator for Safety and Health.

(4) Director, Office of Nuclear Weapon Stockpile.

(5) Director, Office of Nuclear Weapon Surety and Quality.

(6) Director, Nuclear Explosive Safety Division.

(7) Participating NESSG personnel and other NESSG member organizations.

c. Responsible Manager Actions. The responsible Authorizing Official (NPO, FO, or ADAST) must resolve any minority opinions and direct response to NESSG findings, in accordance with Chapter VII, section 2 of this supplemental directive.

CHAPTER VI

NUCLEAR EXPLOSIVE SAFETY CHANGE CONTROL PROCESSES

1. INTRODUCTION. NES evaluation of proposed changes or emerging information begins with a CNCE for production agency NEOs, or an OST NES Screen for offsite transportation operations. One of three subsequent approval pathways—contractor or Assistant Deputy Administrator for Secure Transportation (as applicable), NCE, or NESS—must be chosen to ensure an appropriate level of rigor for each evaluation and the most efficient use of resources. An NCE or NESS for emerging information may also be initiated at the request of the Director, Nuclear Explosive Safety Division in conjunction with the responsible NNSA Field Element Manager or Assistant Deputy Administrator for Secure Transportation, as applicable. NCEs are conducted by the production agency (or OST for OST activities). The level of involvement of the NNSA and design agency Project Team members during the NCE is determined by the scope of the evaluation. The Project Team is responsible for ensuring that the NESSG obtains timely responses to lines of inquiry and requests for information.

   The NES change control process is separate and independent from the unreviewed safety question (USQ) process required by Title 10 CFR 830.203, *Unreviewed Safety Question Process*, and supported by DOE G 424.1-1A, *Implementation Guide for Use in Addressing Unreviewed Safety Question Requirements*.

   The NNSA M&O contractor evaluates the safety implications of a proposed change to a NEO in two ways: (1) a USQ screen by personnel trained to provide the authorization basis (AB) perspective, and (2) a NES review by a NES-certified representative. The USQ screen and the NES review are separate and independent processes performed by different individuals possessing specific qualifications and must be independent of NNSA line management influence. The result of the USQ screen [or USQ Determination (USQD), if applicable] and the NES review must be known prior to approval and implementation of the proposed change. If the NES review indicates that a NESSG review is required, the NNSA must approve the proposed change prior to implementation, regardless of the outcomes of the USQ screen or USQD.

   Whatever level of review is chosen for a proposed change, implementation of a requirement to prevent or mitigate one hazard must be assessed to ensure that there would be no unacceptable effect on the likelihood of a significant safety incident involving another hazard.

2. ORGANIZATIONAL CHANGE CONTROL ASSESSMENTS. CNCEs and OST NES

   Screens are used to determine whether the NNSA contractor or Assistant Deputy Administrator for Secure Transportation, as applicable, is the responsible approval authority, or whether the change proposal or emerging information must be presented to a NESSG for NES evaluation.

In the absence of NES personnel certified in accordance with the requirements of Chapter III, OST staff has less discretion than contractor NES representatives in determining the approval authority for proposed changes or emerging information. As a result, CNCEs and OST NES Screens have unique elements, as follows:

a. Focus. CNCEs and OST NES screens consider the NES implications of:

(1) proposed changes to procedures, materials, tooling, testers, other equipment, facilities, facility interfaces, or management programs associated with approved NEOs and

(2) emerging information that has the potential to impact NES of an approved NEO.

b. Documentation. The NNSA contractor or OST, as appropriate, takes the lead in developing the safety support documentation and compiling inputs that may be needed from the design agencies and NNSA. The NNSA contractor or OST, as appropriate, ensures the technical accuracy, currency, and completeness of the documentation.

Sufficient information must be provided to establish that proposed changes are not a threat to NES including, as applicable:

(1) A complete description of the proposal or issue with process flow representations and detailed written procedures, as appropriate.

(2) Rationale for the proposed change, with concurrence from responsible management personnel and design agency representatives, as appropriate.

(3) Relevant safety basis information as needed to support a determination.

c. Determination Processes. The determination process and decision basis differ for CNCEs and OST NES Screens.

(1) CNCE. With a particular emphasis on potentially adverse impacts on NES, a NNSA contractor NES representative reviews the submitted documentation and presented information, and answers the following questions to determine if the proposal must be elevated to NNSA for NES evaluation in an NCE or NESS.

(a) Does the proposed change add, delete, or modify a nuclear explosive safety rule (NESR), immediate-action procedure (IAP), or other positive measure identified as important to NES in a previous NES evaluation report?

(b) Does the proposed change involve new Category 1 electrical equipment or the addition of an electrical test of a nuclear explosive?

(c) Does a proposed change to Category 1 electrical equipment involve more than minor modifications that clearly do not affect the functionality, quality, safety analysis, or security controls for the equipment?

(d) Does the proposed change to a NEO involve a procedure, tooling, tester, other equipment, transportation activity, facility interface or other process or feature that is not bound by activities examined in a previous NES evaluation?

(e) Does the proposed change involve the potential application of additional electrical, mechanical, thermal, chemical, or electromagnetic energy to a nuclear explosive (NE), or the application of the above energy types to other circuitry or components of a NE in a manner or in an amount that is not bound by activities examined in a previous NES evaluation?

(f) Could the proposed change affect one-point safety?

(g) Does the proposed change affect lifting, rotating, or other NE movement operations not bound by activities examined in a previous NES evaluation?

(h) Does the proposed change require an implementation of the Two-Person Concept that does not meet the requirements set forth in DOE M 452.2-1A (or its successor directive)?

(i) Does the proposed change involve a NEO relocation that would adversely impact NES?

(j) Does the proposed change involve an implementation of permanent markings or NELA verifications that does not meet the requirements set forth in DOE M 452.2-1A (or its successor directive)?

(k) Does the proposed change involve a management program or process, including any form of work instructions or operating standards that could adversely affect NES?

(l) Has information been presented that could alter previous NES evaluation conclusions in a manner that could adversely affect NES?

An NNSA NES evaluation must be performed if the answer to one or more of the preceding questions is "yes" or "unknown." If the answer to each of the preceding questions is "no," an NNSA NES evaluation is not required.

Responsible line management must ensure that the NNSA contractor documents the basis for, and maintains an auditable record of, all CNCE determinations. These auditable records are subject to NNSA oversight.

(2) OST NES Screen. Designated OST staff review the submitted documentation and presented information. The screening criteria detailed in OST 46XA, *Offsite Transportation Safety Manual*, Chapter 2.2, Appendix G, provide the basis for determining if qualified NES personnel must be engaged in deciding if the proposed change or emerging information must be elevated to a NESSG for NES evaluation.

If qualified NES personnel are required, OST must refer the issue to the Nuclear Explosive Safety Division to determine if the proposed change or emerging information allows for Assistant Deputy Administrator for Secure Transportation approval, or if the issue must be elevated to an NCE or appropriately-scoped NESS. Proposed changes to the screening criteria must also be referred to Nuclear Explosive Safety Division for concurrence.

OST must document the basis for, and maintain an auditable record of, all determinations. These auditable records are subject to NNSA NES oversight.

d. Determination Outcomes.

(1) NESSG Evaluation Required. Once an NNSA contractor NES representative or OST, as appropriate, has determined that evaluation by a NESSG is required, NNSA line management can decide whether or not to pursue the proposed changes or response to emerging information. For proposed changes or response to emerging information that NNSA line management decides to pursue, the NNSA Field Element Manager or Assistant Deputy Administrator for Secure Transportation, as applicable:

(a) Works with the Director, Nuclear Explosive Safety Division to jointly determine whether a NESS or NCE is the appropriate NES evaluation.

(b) Submits a request to the Director, Nuclear Explosive Safety Division to schedule the appropriate NES evaluation.

(2) NESSG Evaluation Not Required. When it is determined that evaluation by a NESSG is not required, the NNSA contractor or Assistant Deputy Administrator for Secure Transportation, as applicable, is the approval authority. Responsible line management must establish a process for approving and implementing changes and responses to emerging information that do not require NESSG evaluation. Responsible line management must maintain auditable records subject to NNSA NES

oversight clearly establishing that NES is not adversely impacted by changes for which they have cognizance.

3. EMERGING INFORMATION EVALUATION REQUESTS. A request to evaluate emerging information that has not entered into the contractor change control system may be made to the Director, Nuclear Explosive Safety Division. For emerging information evaluation requests brought to the Director, Nuclear Explosive Safety Division, the Director—

   a. Works with the responsible NNSA Field Element Manager or Assistant Deputy Administrator for Secure Transportation, as applicable, to determine

      (1) The credibility of the emerging information.

      (2) Whether the emerging information has the potential to impact NES of an approved NEO.

      (3) The appropriate NES evaluation mechanism (NCE, appropriately-scoped NESS, inclusion into an upcoming evaluation, etc.), as necessary.

   b. The Director, Nuclear Explosive Safety Division submits a request to the NNSA Field Element Manager to schedule the NES evaluation, if warranted.

4. NESSG CHANGE EVALUATIONS.

   a. NCE. A NCE is performed to determine if approved NEOs will continue to meet the DOE NES Standards and other NES criteria after implementation of a proposed change or response to emerging information.

      (1) Planning. The NESSG Chair conducts planning meetings as needed to ensure a common understanding of the approach being taken for an NCE. The need for a formal NCE planning meeting is determined through discussions between the Director, Nuclear Explosive Safety Division and the organizations proposing a change or providing emerging information affecting an approved NEO. Planning meeting participants:

         (a) Define the NCE scope and objectives.

         (b) Identify required briefing topics and demonstrations.

         (c) Plan briefings, demonstrations, and resources required to support the NCE.

         (d) Develop an NCE schedule and agenda that are sufficiently detailed to enable effective ongoing management of the NCE.

         The NESSG chair is responsible for documenting and distributing planning meeting outcomes, including NCE scope, objectives, and

schedule, to NCE participants and appropriate organizations. The Project Team is responsible for ensuring the planned briefings, demonstrations, and resources required to support the NCE are available.

(2) Input Documentation. Change proposal or emerging information originators are responsible for preparing and distributing the NCE input. Input requirements for NCEs must be tailored to the subject, and include:

(a) A complete description of the proposal or issue with, as appropriate, process flow representations and/or detailed written procedures, including dates and issue designations.

(b) The rationale for the proposed change or response to emerging information, with concurrence from responsible management personnel and design agency representatives, as appropriate.

(c) The inputs to and outputs from the CNCE or OST NES Screen, as appropriate.

(d) Relevant information from NES evaluation reports, occurrence reports, and SFIs.

(e) An assessment of the hazards associated with the proposed change or emerging information, and identification of any required new controls or changes to existing controls.

The required level of input documentation detail varies with the scope and complexity of the proposed changes or emerging information with the potential to impact NES. Information and analyses must be sufficient to show that affected NEOs continue to meet the DOE NES Standards and other NES criteria after the proposed change or response to emerging information is implemented.

(3) Preparation. The NESSG and other participants must be given sufficient time and resources to evaluate the documentation of proposed changes to authorized NEOs or emerging information. The needed preparation period varies with the scope and complexity of issues to be addressed, and could range from a few hours to multiple weeks after the documentation is available. Requests for TA support should be tailored to ensure efficient and effective utilization of their technical expertise in support of the NCE.

(4) Conduct. For the timeframe of the evaluation, the primary responsibility of the NESSG participants is preparing for and conducting the NCE. Conflicting assignments must be resolved in favor of NCE duties from the date the input documentation is available until conclusion of the NCE. The timely availability of Project Team, laboratory, and contractor personnel supporting the NCE should be ensured.

The NESSG chair may notify the change proposal or emerging information originator during an NCE that additional information is needed and, as appropriate, may suspend the NCE until the information is provided. The NESSG chair also has authority to suspend the NCE if unable to fulfill other requirements of this Supplemental Directive. If an evaluation is suspended, the NESSG chair will notify the Authorizing Official of the reason for suspension.

The sequence and content of NCE elements are defined or modified based on the NCE scope and planning meeting decisions. The central NCE elements are:

(a) Briefings. The need for NCE briefings is determined during planning but may also be requested by the NESSG during the NCE. These briefings cover key elements of the input documentation and present the NES foundation for the change or emerging information under evaluation to ensure a common understanding and allow NESSG interaction with subject matter experts. The NESSG must critically consider the briefings, identify potential issues and, as appropriate, question or challenge points made or omitted in the briefings.

(b) Demonstrations. The need for NCE demonstrations is determined during planning, but may also be requested by the NESSG during the NCE. NCE demonstrations are simulations that may use trainer units or other mock-ups. Demonstration details, including simulation fidelity, are established during the planning, but may be modified as needed during an NCE.

Demonstrations allow an examination of interfaces between and among the nuclear explosive and tooling, testers, other equipment, support systems, procedures, personnel, and the facility. The NESSG critically evaluates the process to identify potential NES deficiencies and opportunities to strengthen positive measures to meet the NES Standards and other NES criteria.

Demonstrations must:

1 Provide the most realistic simulation practicable.

2 Be conducted by trained and qualified technicians or operators.

3 Use actual or representative tooling, testers, other equipment, and systems.

4 Use written procedures that are under change control and sufficiently developed to be used in the NEO upon approval.

5 Be conducted in an actual bay, cell, or other representative facility. A training facility set-up to replicate the actual facility in size and layout may be deemed by the NESSG an acceptable representative facility. For some NCE subjects the NESSG may decide that an actual or representative facility is not needed to achieve an effective demonstration.

The NESSG is the final arbiter of the suitability of demonstration conditions.

(c) Deliberations. NCE deliberations follow the same collaboration and issue categorization efforts as specified for a NESS in Chapter IV paragraph 7c.

(d) NCE Memoranda. NCE memoranda must include:

1 The signature of the NESSG chair and identification of other NESSG personnel.

2 A summary description of the NEO, facility, management system, or emerging information evaluated, as appropriate.

3 Evaluation results, including:

a Conclusions with supporting rationale.

b Findings, if any.

c NESSG minority opinions, if any, and associated majority response.

d A statement on the adequacy of resources and activities such as documentation, briefings, demonstrations, observations, time, NESSG composition, and administrative support for the evaluation.

4 NCE input (attached or referenced).

5 NCE participants.

The NESSG is responsible for the content of the NCE memorandum.

(e) Feedback. Feedback is important for promoting improvement in the NCE process. NESSG personnel are encouraged to document lessons learned throughout all NCE activities, including preparation and planning.

(5) NCE Post-evaluation Process.

(a) Post-Evaluation Briefings and Conferences. At the conclusion of the evaluation, the NESSG chair summarizes the NCE activities, minority opinion(s), and results in briefing(s) to the responsible NNSA Field Element Manager or Assistant Deputy Administrator for Secure Transportation, as applicable. If the NCE results include a finding where a NES Standard is not met or a minority opinion associated with a potential finding where a NES Standard is not met, then the NESSG chair must also brief the Assistant Deputy Administrator for Stockpile Management and the Associate Administrator for Safety and Health.

(b) Report Distribution. The NESSG chair distributes the NCE memo to:

1 Responsible NNSA Field Element Manager or Assistant Deputy Administrator for Secure Transportation, as applicable.

2 Assistant Deputy Administrator for Stockpile Management.

3 Associate Administrator for Safety and Health.

4 Director, Office of Nuclear Weapon Stockpile.

5 Director, Office of Nuclear Weapon Surety and Quality.

6 Director, Nuclear Explosive Safety Division.

7 Participating NESSG personnel and other NESSG member organizations.

(c) Responsible Manager Actions. The responsible Authorizing Official (NPO, FO, or ADAST) must resolve any minority opinions and direct response to NESSG findings, in accordance with Chapter VII, section 2 of this supplemental directive.

(6) NESS. Change proposals or emerging information determined to not be a candidate for one of the alternate forms of NES evaluation must be evaluated using the NESS process detailed in Chapter IV, tailored as appropriate to suit the subject.

The scope of a NESS performed for change control should be limited to aspects of the NEO or relevant MS topics affected by the proposed change or emerging information. Such a NESS relies on at least one other previously-approved NESS (operation-specific or MS) to provide the context for the subject evaluated.

CHAPTER VII

NUCLEAR EXPLOSIVE SAFETY EVALUATION FINDINGS

1. FINDINGS AND DELIBERATION TOPICS. Findings derive from process deficiencies that jeopardize NES. NES deficiencies applicable to an approved NEO, a proposed NEO, or a proposed change to a NEO are characterized as findings. NES evaluation reports may also include Deliberation Topics summarizing substantive NESSG discussions that did not result in a finding. Coverage of an issue as a Deliberation Topic does not necessarily mean that action is not warranted. It only reflects a NESSG judgment that no corrective action is needed for the studied operations. Non-NES deficiencies and problems in NEOs that are outside the scope of the NES evaluation are documented in deliberation topics for use by the responsible managers, as appropriate.

   a. NES deficiencies identified by the NESSG will be documented as findings. The guidance in Attachment 2 will be used by the NESSG in making these judgments. Any deficiency that indicates a DOE NES requirement is not met must be categorized as a finding, and must identify the requirement not met, if applicable.

   b. For all identified findings, the NESSG will determine if the NES Standards specified in DOE O 452.1D, *Nuclear Explosive and Weapon Surety Program*, are met. If one or both NES Standards are not met, the NESSG will document how the NES Standard is not met in the finding discussion.

   c. If the NESSG determines that a NES Standard is not met for an ongoing operation, the NESSG Chair must promptly notify appropriate NNSA management.

   d. The NESSG chair will allow the Project Team time to perform a factual accuracy review of the finding discussion and deficiency statement in order to provide the NESSG with information to explain what, if any, positive measures are, or could be put, in place to address the deficiency identified in the finding. Additionally, the NESSG chair may choose to temporarily adjourn the NES evaluation to allow sufficient time for the Project Team to respond.

   e. If the NESSG adjourns to allow the Project Team appropriate time to perform a factual accuracy review of a finding, the NESSG chair may notify the Authorizing Official and the ADASM that the NESSG has temporarily adjourned while waiting for the Project Team to review the information.

   f. Once a NES report is signed by the NESSG, the report is transmitted to the Authorizing Official with a copy to the ADASM. The AO must respond to findings in accordance with Section 2 below.

   NESSGs must refer to the guidance and criteria in Attachment 2 to characterize issues identified in NES evaluations and to help document their rationale. If a NES evaluation

finding is challenged, the challenger must consider the same guidance and criteria in developing and documenting their positions on NES evaluation results.

2. RESPONSE TO FINDINGS.

The process for NNSA management response to NES Findings is shown in Figure 3 and further explained in Paragraphs 2a through 2n below:

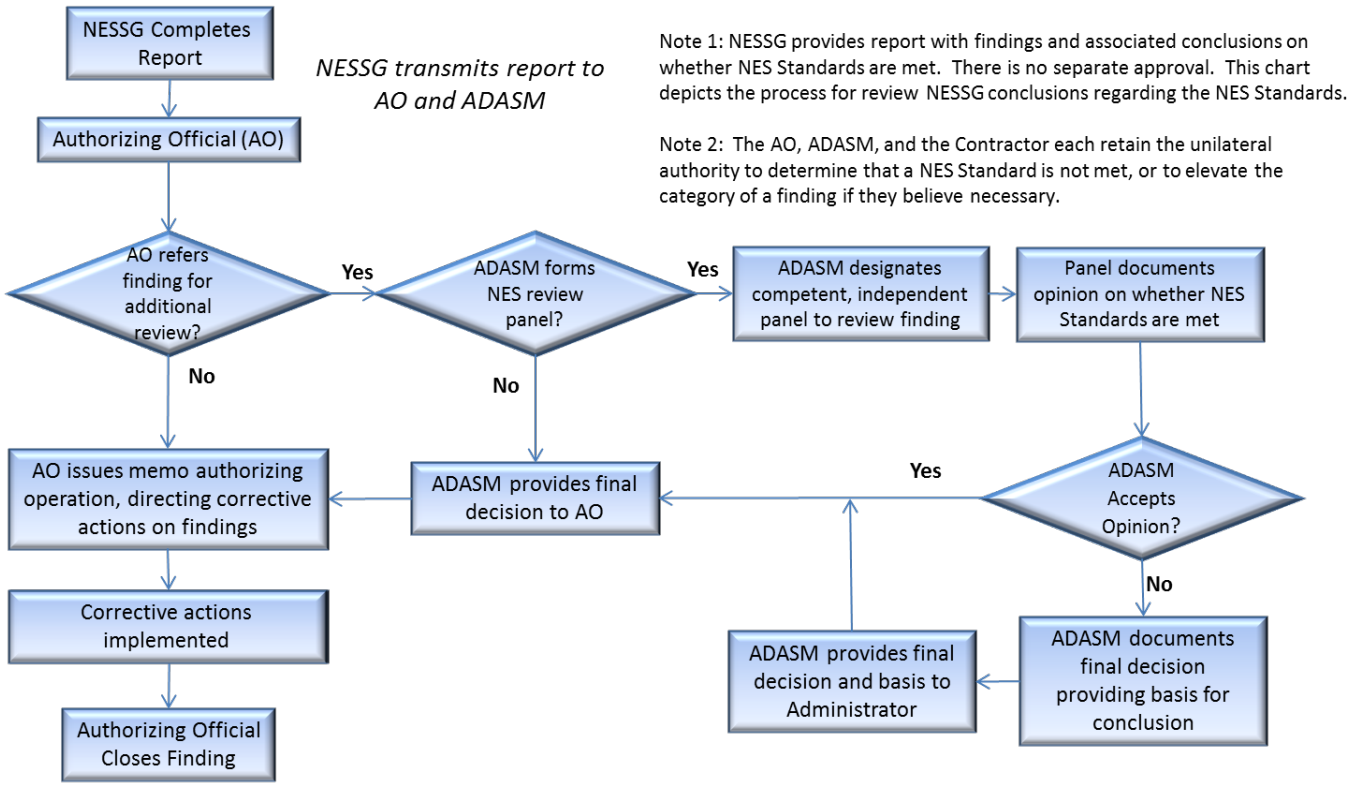

Figure 3: NNSA Management Response to Findings

a. The NESSG Chair transmits the signed NESSG report to the Authorizing Official (NPO, ADAST, or FO), the ADASM, and the Associate Administrator for Safety and Health.

b. The Authorizing Official, the ADASM, and the M&O Contractor each retain the unilateral authority to determine that a NES Standard is not met, or to take action on any issue raised by the NESSG. This includes effectively elevating the categorization of any finding or deliberation topic identified in the NESSG report.

c. Following the receipt of the signed NESSG report (or memo for NCEs), the Authorizing Official will review the report, including all minority opinions.

d. The Authorizing Official has the authority to refer any report finding(s) to the ADASM for additional review. The request for an additional review must occur

no later than 30 calendar days following transmission of the report to the Authorizing Official. The request for an addition review must include any technical basis or rationale for the request.

e. In particular, Authorizing Official may consider any findings with minority opinions for this review process. This process is intended to bring additional scrutiny and investigation to any issue that warrants further review prior to a management decision. The responsible NNSA Manager may choose to involve the NESSG or subset of the NESSG in reviewing any additional information.

f. When a NESSG generates a finding that impacts ongoing operations and states that a NES standard is not met, the Authorizing Official must evaluate the potential implications and provide direction to appropriate operations personnel regarding the required response. Options include:

(1) Suspending the involved operations.

(2) Implementing corrective or compensatory measures that ensure the NES Standards are met.

(3) Allowing operations to continue unchanged pending completion of the additional review.

One of these options must be exercised no later than 30 calendar days following transmission of the signed NESSG report to the Authorizing Official.

g. Within two weeks of a request for additional review, the ADASM must determine whether the ADASM will convene a NES panel to review the issues involved. The ADASM must notify the Associate Administrator of Safety and Health of the approach to be taken to review a NES finding. If the ADASM does not convene a NES panel, the ADASM must perform an independent review to determine whether the NES Standards are met for the issues raised, and provide his decision and the supporting technical basis to the Authorizing Official within 45 days of the request for additional review. The Associate Administrator for Safety and Health must concur with the decision to not convene a NES panel when a request for additional review is made.

h. If a NES panel is convened:

(1) The NES panel, if formed, is appointed by the ADASM and must consist of a minimum of three NES-knowledgeable, and competent NNSA or M&O contractor personnel. Of these personnel, a minimum of one must be NESSG-qualified. Additional technical personnel may be appointed to support the panel as needed to ensure adequate review. It is desirable that panel members are as independent as feasible, but true independence is difficult to achieve in the NES community. An attempt should be made to ensure the panel members do not have organizational or programmatic

interests that may unintentionally affect their judgment. The Associate Administrator for Safety and Health must concur with panel membership.

(2) The NES panel's primary task is to provide an opinion on whether the NES Standards are met for the situation addressed by the finding(s). The panel may agree or disagree with the NESSG on the subject finding(s), some aspect of the finding(s), or the finding(s) categorization(s). The panel documents their conclusions and basis in a report. The panel should use the criteria in Attachment 2 as guidance for their decision.

(3) The NES panel report must be delivered no later than 30 calendar days after the ADASM decision to form the NES panel.

(4) Upon receipt of the NES panel's report, the ADASM must accept or reject their opinion (in whole or in part), and provide a final decision on whether the NES Standards are met.

(5) The ADASM will provide the Associate Administrator for Safety and Health a copy of the NES panel report and the ADASM decision to accept or reject the NES panel's decision. The NES panel report must include the basis for their conclusion.

(6) If the ADASM rejects a panel opinion on whether the NES Standards are met, the ADASM must notify the CTA and the Administrator of that decision.

(7) The ADASM must inform the Authorizing Official of the final decision within 2 weeks of receiving the panel's report.

i. If the ADASM concludes that a NES Standard is not met, for ongoing operations, the Authorizing Official must implement measures that ensure the NES Standards are met (or pause affected operations) within two weeks of the ADASM conclusion.

j. If the ADASM concludes that a NES Standard is not met for operations (or changes to operations) that are not ongoing, the Authorizing Official must not start or restart the operation (or approve the change) until measures are taken to ensure that the relevant NES Standard is met.

k. For findings where the NES Standards are met but where other DOE or NNSA requirements are not met, the authorizing official must ensure corrective actions are implemented to meet the requirement no later than one year following transmission of the signed NESSG report, or ensure that an exemption to the requirement is requested.

Note: Deficiencies in which a DOE NES requirement is deemed not met must be rectified as soon as reasonably practicable. The provision of one year is not a

temporary waiver or exemption to a NES requirement. It is added to ensure that the appropriate risk acceptance official (the exemption approval official) is involved in a decision to not meet a DOE NES requirement over a protracted period. An exemption should be requested as soon as it is known that a year may pass before it is possible to meet the associated requirement. As described in Attachment 2, when documenting a NES deficiency, the NESSG must identify any NES requirements that are not being met. Not all NES deficiencies can be linked to a specific NES requirement.

l. For findings where the NESSG indicates that the finding is or may be applicable to other nuclear explosive processes, the NNSA Field Element or OST, as applicable, in concert with the associated NNSA M&O contractor, must review those processes for finding applicability. Because the NESSG may not be aware of all instances where a finding may be applicable to other programs or processes, the NNSA Field Element or OST, as applicable, must review the NESSG report and direct action or further review if it is determined that any finding applies to other processes not identified by the NESSG.

m. The NNSA Field Element Manager or Assistant Deputy Administrator for Secure Transportation identifies an appropriate NNSA line manager for each NES evaluation finding. That manager is responsible for tasking action agencies and ensuring corrective actions are both timely and effective. In some cases, such as when the action agency is not under the purview of the NNSA Field Element Manager or Assistant Deputy Administrator for Secure Transportation, the NNSA Field Element Manager or ADAST must engage the Assistant Deputy Administrator for Stockpile Management who then assigns appropriate NNSA oversight for the action.

n. The NESSG Chairs, NESSG members, or other qualified NES personnel may be consulted as needed in support of effective corrective action development. Action agencies should coordinate proposed corrective action plans (CAPs) with their own NES personnel and must coordinate CAPs with the NNSA Nuclear Explosive Safety Division before submittal to the responsible NNSA Field Element Office Manager or Assistant Deputy Administrator for Secure Transportation, as applicable. The primary purpose of CAP coordination with NES personnel is to provide early assurance that the plan (if properly implemented) would resolve the identified NES deficiency. It does not assure either a well-balanced corrective action or one free of unintended consequences.

If the finding is determined to apply to other NEOs as described in Section l above, the corrective action plan must also address corrective actions for those NEOs. The Associate Administrator for Safety and Health and the Assistant Deputy Administrator for Stockpile Management must be on distribution for CAPs involving NESSG findings where a NES Standard is not met or findings where a minority opinion argues that a NES Standard is not met.

3. DISTRIBUTION OF FINDING DISPOSITION CORRESPONDENCE.

All correspondence related to the disposition of findings including the Authorizing Officials direction on findings, ADASM's decision on a finding, and any NES panel reports must be distributed to the following:

- Associate Administrator for Safety and Health.
- Assistant Deputy Administrator for Stockpile Management.
- Director, Office of Nuclear Weapon Stockpile.
- Director, Office of Nuclear Weapon Surety and Quality.
- Director, Nuclear Explosive Safety Division.
- Responsible NNSA Field Element.
- OST (if applicable).
- Design agency NES organizations.
- Production agency NES organizations.

4. FINDING CLOSURE PROCESS. Responsible NNSA Field Element and OST must ensure a process for closure of NES evaluation findings is defined and implemented. Each NNSA Field Element and OST must:

a. Ensure closure of findings where a NES Standard is not met prior to initiation or continuation of affected NEOs.

b. Require detailed CAPs that include assignment of responsibility, allocation of resources, and timing for closure of findings.

c. Ensure that proposed CAPs requiring a change to NEOs or MS topic are evaluated using the change control process detailed in Chapter VI.

d. Provide for tracking of findings to closure.

e. Ensure compilation of a closure package with all information needed to support closure decisions, including the action agency's request for closure, supporting rationale, and evidence that the corrective actions are complete and effective in addressing the NES deficiency.

5. STATUS REPORTS. For all open findings, the action agency must generate and distribute quarterly status reports documenting the planned resolution, schedule for closure, and actions taken since the previous quarterly report. Distribution includes:

- Associate Administrator for Safety and Health.
- Assistant Deputy Administrator for Stockpile Management.
- Director, Office of Nuclear Weapon Stockpile.
- Director, Office of Nuclear Weapon Surety and Quality.
- Director, Nuclear Explosive Safety Division.
- Responsible NNSA Field Element.
- OST (if applicable).
- Design agency NES organizations.
- Production agency NES organizations.

6. CLOSURE APPROVAL. The approval authority for closure of findings is the responsible NNSA Field Element Manager or Assistant Deputy Administrator for Secure Transportation, as applicable.

The preferred basis for closure of findings is acceptance by the closure authority that effective corrective actions have been implemented.

Based on appropriate substantiation, the closure authority may also close a finding based on evidence that the factual basis for the finding as documented in the NESSG report is incorrect.

When a NES evaluation finding is closed based on rationale other than documented completion of effective corrective action, such as the argument suggested above, the NNSA Field Element Manager or Assistant Deputy Administrator for Secure Transportation must document the rationale in a notification to the Assistant Deputy Administrator for Stockpile Management with copies to:

- NNSA Central Technical Authority.
- Associate Administrator for Safety and Health.
- Director, Office of Nuclear Weapon Stockpile.
- Director, Office of Nuclear Weapon Surety and Quality.
- Director, Nuclear Explosive Safety Division.
- Design Agency NES organizations

NES finding closure authorities must maintain an auditable record of closure decisions and rationale. The Director, Nuclear Explosive Safety Division must perform an annual review of finding closures.

CHAPTER VIII

EXEMPTIONS

EXEMPTIONS.

Requests for exemptions must be forwarded to the Assistant Deputy Administrator for Stockpile Management, who is the final approval authority.

The final approval authority may decide to deny the exemption request, in which case no other concurrences are necessary.

Should the final approval authority decide to approve the request, the concurrence of the NNSA Central Technical Authority (CTA) must be obtained prior to approval.

For time critical decisions, requests for approval and CTA concurrence may be made concurrently, but approval may not be granted prior to receiving CTA concurrence.

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CONTRACTOR REQUIREMENTS DOCUMENT

NNSA SD 452.2, *NUCLEAR EXPLOSIVE SAFETY EVALUATION PROCESSES*

Regardless of the performer of the work, the contractor is responsible for complying with the requirements of this contractor requirements document (CRD) and flowing down CRD requirements to subcontractors at any tier to the extent necessary to ensure contractor compliance. This Contractor Requirements Document (CRD) establishes the requirements for National Nuclear Security Administration (NNSA) contractors with responsibilities for operation and/or management of sites or facilities and whose responsibilities include performing, managing, overseeing, or directly supporting nuclear explosive operations (NEOs) or associative activities.

All contractors with this CRD incorporated in their contracts must comply with the following requirements:

1. Ensure the training of and certify contractor nuclear explosive safety study group (NESSG) members and contractor nuclear explosive safety (NES) representatives per the requirements in CRD Appendix A.

2. Participate in NES evaluation planning meetings.

3. Ensure timely availability of Project Team, laboratory, and contractor personnel to support NES evaluations.

4. Provide Technical Advisors (TAs) as requested by NESSG chair to support NES evaluations.

5. Provide study-specific NESSG training in accordance with NESS planning meeting decisions.

6. Lead the development of safety supporting documentation for NES evaluations and ensure the completeness and accuracy of the information.

7. Provide NES evaluation input, briefings, and demonstrations as required, and certify the completeness and accuracy of the information.

8. Ensure the Single Integrated Input Document (SIID) is delivered or presented to the NESSG for their use at the orientation meeting, and available to members for comprehensive review and evaluation during the NESSG preparation period prior to the NESS.

9. Collaborate with NESSGs to refine plans and schedules for NES evaluations as needed.

10. For those organizations responsible for conducting NEOs, conduct CNCEs to assess proposed changes or emerging information affecting an approved Nuclear Explosive Operation (NEO) or associated Master Study topic.

11. For those organizations responsible for conducting NEOs, establish a process for approving and implementing contractor-allowable changes.

12. For those organizations responsible for conducting NEOs, evaluate the safety implications of a proposed change in two ways: (1) an Unreviewed Safety Question (USQ) screen by personnel trained to provide the safety basis perspective, and (2) a NES review by a NES-certified representative. If the NES review indicates that a NESSG review is required, the NNSA must approve the proposed change prior to implementation, regardless of the outcomes of the USQ screen or USQ determination.

13. Develop the Corrective Action Plan (CAP) and take appropriate action on NES evaluation findings as directed by NNSA.

14. For NES findings which cite a NES requirement is not met and cannot be corrected within one year, develop an exemption request as directed by NNSA.

15. For all open findings for which they are an action agency, generate, and distribute quarterly status reports documenting the planned resolution, schedule for closure, and actions taken since the previous quarterly report. Distribution will include:

    - Assistant Deputy Administrator for Stockpile Management.
    - Associate Administrator for Safety and Health.
    - Director, Office of Nuclear Weapon Surety and Quality.
    - Director, Nuclear Weapons Stockpile.
    - Director, Nuclear Explosive Safety Division.
    - Responsible NNSA field offices.
    - OST (if applicable).
    - Design agencies (if applicable).
    - M&O contractors (if applicable).

16. Ensure that NES evaluation personnel selected for a given NES evaluation will be able to devote their time for the duration of the NES evaluation. Conflicting assignments must be resolved in favor of NES evaluation duties from the date the input documentation is made available until conclusion of the NES evaluation.

17. For those organizations responsible for conducting NEOs, if a NESS will not be conducted within the timeframe specified, ensure that requests for extensions are submitted to the Assistant Deputy Administrator for Stockpile Management in writing, with a copy to the Director, Office of Nuclear Weapon Stockpile, Director, Office of

Nuclear Weapon Surety and Quality, and Director, Nuclear Explosive Safety Division, at least 30 days prior to the deadline.

18. For those organizations responsible for conducting NEOs, ensure CNCEs are used to determine whether the contractor is the responsible approval authority, or whether the proposal or issue must be elevated to a NESSG for NES evaluation.

19. For those organizations responsible for conducting NEOs, CNCEs elements are as follows:

a. Focus. CNCEs consider the NES implications of:

- proposed changes to procedures, materials, tooling, testers, other equipment, facilities, facility interfaces, or management programs associated with approved NEOs and
- emerging information affecting approved NEOs.

b. Documentation. The contractor takes the lead in developing the safety support documentation and compiling inputs that may be needed from the design agencies and NNSA. The contractor ensures the completeness of the documentation, if any, as well as the explicit certification of its technical accuracy by the providing organizations.

Sufficient information must be provided to establish that proposed changes are not a threat to NES including, as applicable:

(1) A complete description of the proposal or issue with process flow representations and detailed written procedures, as appropriate.

(2) Rationale for the proposed change, with concurrence from responsible management personnel and design agency representatives, as appropriate.

(3) Relevant safety basis information as needed to support a determination

c. Determination Process. With a particular emphasis on potentially adverse impacts on NES, a contractor NES representative must review the submitted documentation and presented information, and answer the following questions to determine if the proposal must be elevated to NNSA for NES evaluation in an NCE or NESS.

(1) Does the proposed change add, delete, or modify a nuclear explosive safety rule (NESR), immediate-action procedure (IAP), or other positive measure identified as important to NES in a previous NES evaluation report?

(2) Does the proposed change involve new Category 1 electrical equipment or the addition of an electrical test of a nuclear explosive?

(3) Does a proposed change to Category 1 electrical equipment involve more than minor modifications that clearly do not affect the functionality, quality, safety analysis, or security controls for the equipment?

(4) Does the proposed change to a NEO involve a procedure, tooling, tester, other equipment, transportation activity, facility interface or other process or feature that is not bound by activities examined in a previous NES evaluation?

(5) Does the proposed change involve the potential application of additional electrical, mechanical, thermal, chemical, or electromagnetic energy to a nuclear explosive (NE), or the application of the above energy types to other circuitry or components of a NE in a manner or in an amount that is not bound by activities examined in a previous NES evaluation?

(6) Could the proposed change affect one-point safety?

(7) Does the proposed change affect lifting, rotating, or other NE movement operations not bound by activities examined in a previous NES evaluation?

(8) Does the proposed change require an implementation of the Two-Person Concept that does not meet the requirements set forth in DOE M 452.2-1A (or its successor directive)?

(9) Does the proposed change involve a NEO relocation that would adversely impact NES?

(10) Does the proposed change involve an implementation of permanent markings or NELA verifications that does not meet the requirements set forth in DOE M 452.2-1A (or its successor directive)?

(11) Does the proposed change involve a management program or process, including any form of work instructions or operating standards that could adversely affect NES?

(12) Has information been presented that could alter previous NES evaluation conclusions in a manner that could adversely affect NES?

An NNSA NES evaluation is required if the answer to one or more of the preceding questions is "yes" or "unknown." If the answer to each of the preceding questions is "no," an NNSA NES evaluation is not required.

The contractor must document the basis for, and maintain an auditable record of all CNCE determinations according to National Archives and Records Administration (NARA)-approved DOE Records Schedules. These auditable records are subject to NNSA oversight.

d. Determination Outcomes.

1. NESSG Evaluation Required. Once a contractor NES representative has determined that evaluation by a NESSG is required, the NNSA contractor can decide whether or not to pursue the proposed changes or response to emerging information. For proposed changes or response to emerging information that line management decides to pursue, the NNSA Production/Field Office Manager works with the Director, Nuclear Explosive Safety Division to jointly determine whether a NESS or NCE is the appropriate NES evaluation. Once the appropriate evaluation is determined, the contractor submits a request to the Director, Nuclear Explosive Safety Division to schedule the appropriate NES evaluation.

2. NESSG Evaluation Not Required. When it is determined that evaluation by a NESSG is not required, the contractor is the approval authority. The NNSA contractor must establish a process for approving and implementing changes and responses to emerging information that do not require NESSG evaluation. The contractor must maintain auditable records subject to NNSA oversight clearly establishing that NES is not adversely impacted by changes for which they have cognizance.

20. Responsible NNSA contractors must ensure a process for closure of NES evaluation findings is defined and implemented. Each contractor must:

a. Assess whether findings are relevant to NEOs in addition to that which produced the finding. If so, include associated corrective actions in the CAP.

b. For those organizations responsible for conducting NEOs, ensure closure of findings where a NES standard is not met prior to initiation or continuation of affected NEOs.

c. Develop detailed CAPs that include assignment of responsibility, allocation of resources, and timing for closure of findings.

d. For those organizations responsible for conducting NEOs, ensure that proposed CAPs requiring a change to NEOs or MS topic are evaluated using the change control process detailed in paragraphs 17 and 18 above.

e. Track and report status of findings to closure.

f. Compile a closure package with all information needed to support closure decisions, including the action agency's request for closure, supporting rationale, and evidence that the corrective actions are complete and effective in addressing the NES deficiency.

g. For all open findings for which the contractor is an action agency, generate, and distribute quarterly status reports documenting the planned resolution, schedule

for closure, and actions taken since the previous quarterly report. Distribute these reports to:

- Associate Administrator for Safety and Health.
- Assistant Deputy Administrator for Stockpile Management.
- Director, Office of Nuclear Weapon Stockpile.
- Director, Office of Nuclear Weapon Surety and Quality.
- Director, Nuclear Explosive Safety Division.
- Responsible NNSA Field Element.
- OST (if applicable).
- Design agency NES organizations.
- Production agency NES organizations.

NNSA CONTRACTOR NESSG MEMBER AND NES REPRESENTATIVE QUALIFICATION REQUIREMENTS

1. PURPOSE. This Appendix establishes requirements for NNSA Contractor NES-certified personnel (NESSG members and NES representatives) to attain the competencies needed to fulfill their NES duties and responsibilities. The NESSG member requirements are intended to ensure that NNSA Contractor NESSG members have at least the same level of competency as established for federal employee NESSG members in DOE-STD-1185, *Nuclear Explosive Safety Study Functional Area Qualification Standard.*

2. IMPLEMENTATION REQUIREMENTS. Organizations providing NES-certified personnel must establish a process, subject to NNSA oversight, to ensure each of its NESSG members and NES representatives meets the education, experience, personal characteristics, independence, and technical competence requirements specified in this Appendix.

   a. Personal characteristics. All NNSA contractor NES-certified personnel must –

      (1) bring reasoned judgment to NEO evaluations;

      (2) have the ability and willingness to question and challenge NNSA line management safety statements and rationale for issues with the potential to impact NES;

      (3) be able and willing to actively participate as part of a team and to take unpopular stands when warranted;

      In addition, NNSA contractor NESSG members must –

      (4) have the ability to—

         (a) develop appropriate NES evaluation approaches; contribute to effective planning meeting decisions;

         (b) critically assess input documentation, briefings, and demonstrations;

         (c) develop and pursue relevant lines of inquiry; articulate NES concerns;

         (d) develop appropriate feedback; and

      (5) have oral communication skills to participate effectively in deliberations and written communication skills to clearly document conclusions.

   b. Training. NNSA contractors providing NES-certified personnel must ensure their NESSG members and NES representatives receive the training required to achieve and maintain the proficiencies needed to meet the requirements

established in this Appendix. Contractors must also ensure that a process exists for experienced NES personnel to convey useful knowledge to less experienced NES personnel.

c. Independence. All NNSA contractor NES-certified personnel must make objective, independent judgments regarding the NES adequacy of systems, operations, and processes. NES-certified personnel must not be subject to management influence in performing their NES obligations, and must not—

a. have current responsibility for the design, development, production, or testing of the specific nuclear explosive, NEO, facility, or management system under evaluation;

b. have responsibility for advocacy of special interests of any organization, or for defending the specific nuclear explosive, NEO, facility, or management system under evaluation; or

c. participate in the preparation of NESS input technical documentation, OSR supporting documentation, NCE input, or the preparation or presentation of briefings or demonstrations.

d. Certification.

NES personnel certifications must be based on satisfaction of the requirements for personal characteristics, training and independence (paragraphs 2a to 2c, above) and the requirements for education, experience, technical competencies, and proficiency activities (paragraphs 3 to 7 below). NNSA contractors must designate certification authorities who can objectively judge whether their NES-certified personnel meet these requirements. Certification is documented by a certification letter to the Director, Nuclear Explosive Safety Division and is valid for two years.

Certification authorities must document attainment of required competencies using the following methods:

(1) Documented evaluation of equivalencies

(2) Written examination

(3) Documented oral evaluation

(4) Documented observation of performance

(5) Documented interview by Senior Management in the applicable organization

3. EDUCATION AND EXPERIENCE. The levels of education and experience for NNSA Contractor NES-certified personnel are:

a. Education:

(1) NESSG Members: Bachelor of Science degree in engineering, physics, materials science, or chemistry with a strong preference for individuals with advanced engineering degrees. Other technical degrees, in conjunction with the appropriate experience, may be considered by the Director, Nuclear Explosive Safety Division. NESSG members that were certified prior to the initial release of this supplemental directive are exempt from meeting these education requirements.

(2) NES Representatives: Bachelor of Science in a technical field with a preference for degrees in engineering, physics, materials science, or chemistry. Other technical degrees, in conjunction with the appropriate experience, may be considered by Director, Nuclear Explosive Safety Division. NES Representatives that were certified prior to the initial release of this supplemental directive are exempt from meeting these education requirements.

b. Experience:

(1) NESSG Members: Five (5) years of industrial, military, Federal, state, or other directly related experience that has provided specialized experience in nuclear explosive safety, design, assembly/disassembly, maintenance, testing, transportation, handling, or storage; or other similar experience in high consequence explosive or nuclear safety operations. Specialized experience can be demonstrated through possession of the competencies outlined below.

(2) NES Representatives: Three (3) years of industrial, military, Federal, state, or other directly related experience that has provided specialized experience in nuclear explosive safety, design, assembly/disassembly, maintenance, testing, transportation, handling, or storage; or other similar experience in high consequence explosive or nuclear safety operations. Specialized experience can be demonstrated through possession of the competencies outlined below. Prior experience with nuclear explosive assembly/disassembly operations, nuclear explosive operating procedure development, or nuclear explosive facilities is preferred.

4. TECHNICAL COMPETENCIES. NES-certified personnel technical competency requirements are as follows:

a. Expert-level Knowledge. NESSG-certified personnel must have an extensive depth and breadth of knowledge in the following areas so they can provide sound advice in the absence of procedural guidance:

(1) DOE O 452.1D Admin Chg 1, *Nuclear Explosive, and Weapon Surety Program*¸ dated 07-10-13, or most recent successor document.

(2) DOE O 452.2D Admin Chg 1, *Nuclear Explosive Safety*, dated 07-10-13, or most recent successor document.

(3) DOE M 452.2-1A Admin Chg 1, *Nuclear Explosive Safety Manual*, dated 7-10-13, or most recent successor document.

(4) NNSA SD 452.2, *Nuclear Explosive Safety Evaluation Processes*, most recent revision.

b. Working-level Knowledge. NES-certified personnel must have sufficient knowledge in the following areas to ensure they are able to effectively monitor and assess operations and activities; apply performance and safety standards; and recognize the need to consult appropriate reference materials and/or seek expert-level advice:

(1) Physics of nuclear weapons and explosives.

(2) Materials used in nuclear weapons and nuclear explosives, and their respective hazardous properties.

(3) Internal design of nuclear explosives.

(4) Nuclear detonation safety design concepts.

(5) Effects of abnormal environments on nuclear explosives.

(6) One-point safety and related issues.

(7) Fusing, arming, control, and ancillary systems in nuclear weapons.

(8) Explosives and pyrotechnics and their applicability in nuclear explosives.

(9) Detonators.

(10) Hazards of squibs, propellants, and other pyrotechnics used in nuclear explosives.

(11) Facilities used to assemble, disassemble, stage, test, and handle nuclear explosives.

(12) Facility safety equipment that interfaces with nuclear explosives.

(13) Electrical isolation systems and their importance to NES.

(14) Fire protection systems and their importance to NES.

(15) Threats such as seismic disturbances, extreme weather, external fires, other natural phenomena, and aircraft crashes.

(16) Tooling, rigging, and hoisting equipment used for handling nuclear explosives.

(17) Control of electrical equipment used in nuclear explosive areas.

(18) Requirements for the safe offsite and onsite transportation of nuclear explosives.

(19) Nuclear safety requirements for the safety of nuclear explosive operations at NNSS.

(20) NESRs for NEOs conducted at the Device Assembly Facility at NNSS.

(21) Technical communications, including demonstrated proficiency in written communication, oral communication, interpersonal communications, and proficiency in writing a defensible NESS finding.

(22) Explosive safety requirements in DOE-STD-1212-2012, *Explosives Safety*, dated June 2012; associated with general operations safety guidelines, work environment, area controls, electrical storms, lightning protection, static electricity, electrostatic discharge (ESD), electrical equipment and wiring, material handling, transportation, stand-off distance.

(23) Requirements in DOE O 452.4B, *Security and Control of Nuclear Explosives and Nuclear Weapons*, dated 1-22-10, for protection, security, and control of nuclear explosives and nuclear weapons.

(24) Requirements in 10 CFR Part 712, *Human Reliability Program*.

c. Familiarity-level Knowledge. NES-certified personnel must have adequate knowledge of, or exposure to, the following subjects and processes to permit effective discussions with individuals having greater knowledge:

(1) U.S. nuclear stockpile.

(2) DOE STD 3009-94, Change Notice 3, *Preparation Guide for U.S. Department of Energy Nonreactor Nuclear Facility Safety Analysis* dated March 2006.

(3) DOE-NA-STD-3016-2006, *Hazard Analysis Reports for Nuclear Explosive Operations*, dated May 2006.

(4) DOE O 420.1C, *Facility Safety*.

(5) 10 CFR Part 851, *Worker Safety and Health*.

(6) 10 CFR Part 830, Subpart A, *Quality Assurance Requirements*.

(7) Documented Safety Analysis requirements of 10 CFR Part 830, *Nuclear Safety Management*, Subpart B, *Safety Basis Requirements*.

(8) The USQ process with respect to its impact on NEOs and associated activities and facilities.

(9) TSRs as described in 10 CFR 830.205, *Technical Safety Requirements*.

(10) The impact of software quality assurance on NES.

(11) Safety analysis techniques and their application to NEOs, facilities, and associated activities.

5. PERFORMANCE REQUIREMENTS.

a. NESSG Members. NESSG members-in-training must be under the guidance and direction of a certified NESSG member from the candidate's organization. The certified NESSG member and NESSG chair must provide feedback to the candidate and the appropriate certification authority regarding the candidate's performance. Members-in-training may not sign NES evaluation reports. NESSG candidates must participate in a minimum of two NES evaluations (NESS or OSR) as a member-in-training in the three years preceding documented completion of the competency requirements of this Appendix. Two NCEs may be substituted for one NESS/OSR with the concurrence of the certifying official.

b. NES Representatives: NES representative candidates must observe one NESS or OSR and one NCE prior to certification. NES representative candidates must demonstrate the ability to perform CNCEs under the guidance and direction of NES-certified personnel prior to certification.

6. EVALUATION REQUIREMENTS. Certification authorities must maintain records of attainment of the required competencies including documented evaluation of equivalencies as appropriate, written examination, documented oral evaluation, and observation of performance.

7. CONTINUING EDUCATION, TRAINING, AND PROFICIENCY.

a. NESSG Members: NESSG members must participate in two major NESSG activities (NESSs or OSRs), every three years to remain certified. Two NCEs, Nuclear Weapon System Safety Group (NWSSG) studies, or ARG exercises may be substituted for one NESS/OSR with concurrence of the certifying official.

NESSG members must participate in a minimum of 30 hours of office/facility/position specific continuing training per year.

b. NES Representatives: NES representatives must maintain proficiencies through continuing training.

c. Continuing Training. Continuing training for NES-certified personnel may be satisfied by office/facility/position specific training that includes technical education and/or training covering topics directly related to the duties and responsibilities of the candidate as determined by NNSA line management. This may include courses and/or training provided by:

(1) DOE

(2) National Laboratories

(3) Management and Operating Contractors

(4) Annual Nuclear Explosive Safety Workshops

(5) Other government agencies

(6) Outside vendors, or

(7) Educational institutions

d. Training covering topics that address identified deficiencies in the knowledge and/or skill of the candidate.

e. Training in areas added to the technical competencies after initial qualification.

f. Training in new technical developments in nuclear explosive safety.

g. Specific continuing training requirements must be documented, retained, and available for external audit.

8. EQUIVALENCIES AND EXEMPTIONS. Equivalences to, and exemptions from, specific competencies for individual candidates for NES certification (NESSG member or NES representative) must be justified, documented, and submitted to the appropriate certification authority. In accordance with the spirit and intent of this Appendix, equivalencies and exemptions should be granted sparingly following rigorous assessment of a candidate's:

a. Knowledge, including advanced education such as graduate level courses directly related to these competency requirements.

b. Experience and skills.

c. Training, especially that which included examinations.

d. Certifications, such as a Professional Engineering license.

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NESS INPUT DOCUMENTATION

1. Existing documents containing required information may be acceptable as NESS inputs. Examples include the following documents as well as their contained references: safety analysis reports (SARs), hazard analysis reports (HARs), technical safety requirements (TSRs), basis for interim operations, and weapon safety specifications (WSSs). Existing documents used as NESS inputs should be appropriately indexed to facilitate topical searches. The organization compiling the input documentation includes explicit certification of the technical accuracy and completeness of the input documentation from each organization providing input.

   Explicit certification must be provided formally in a letter, memorandum, or engineering authorization. Completeness is determined by the inclusion of the appropriate documents listed in this Appendix. Accuracy means that information will be verified to be correct and current. The requirement for current information does not preclude historical documents which may be pertinent to NES from being included in the SIID. The Project Team will identify any historical documents included in the SIID to the NESSG.

2. Input documentation, compiled in a single integrated input document (SIID) and tailored as appropriate for each NESS, must include the following, if applicable.

   a. A description of the specific nuclear explosive for an operation-specific study. As appropriate to each NESS, the description must include paragraphs 2a(1)-(10) and consideration of significant differences in these items at different levels of assembly.

      (1) A general overview and a detailing of associated modifications and alterations and their NES implications.

      (2) One-point safety analyses, including a summary of test results and analysis of interfaces between the nuclear explosive and process tooling.

      (3) NES theme and description of the nuclear explosive design safety features.

      (4) Unique or unusual conditions related to the specific nuclear explosive or its components.

      (5) Electrical circuits and their functions within the nuclear explosive.

      (6) Characteristics of energetic devices and materials, including explosives, detonators, actuators, propellants, reactive materials, batteries, high-pressure vessels, and flammable and combustible materials.

      (7) Weapon response data for inadvertent nuclear detonation (IND) and high explosive violent reaction (HEVR) scenarios.

(8) Susceptibilities of the nuclear explosive to energy sources, including, but not limited to electrostatic discharge (ESD), electromagnetic radiation, and other electrical, thermal, mechanical, and chemical energy sources.

(9) Potential hazards associated with, but not limited to spin rockets, parachute deployment systems, telemetry features and connectors, use control features, and instrumentation for nuclear explosive test devices.

(10) Non-NNSA-supplied components that are a part of the nuclear explosive while it is in NNSA custody.

b. A description of the operation-specific NEO, including:

(1) Process Flow.

(2) Written procedures that are under change control and sufficiently developed to be used in the NEO upon approval.

(3) Unique or unusual features relating to a process, tooling, or other utilized equipment.

(4) Drawings, descriptions, and safety analyses of process tooling, other equipment, and interfaces with the nuclear explosive.

(5) Drawings, descriptions, and safety analyses of Category 1 and 2 electrical equipment (including use control equipment), including an independent safety assessment of the Category 1 electrical equipment and their interface with the nuclear explosive.

(6) Drawings, descriptions, and safety analyses of transportation equipment and operations including, but not limited to, shipping containers and restraint schemes.

(7) Proposed tests and inspections, including supporting rationale.

(8) Process and equipment engineering evaluation findings that may impact NES.

c. Safety basis information including, but not limited to:

(1) The safety basis for evaluated NEO facilities, including seismic analyses, lightning analyses, description of fire protection and detection systems, and definition of design basis accidents.

(2) A hazards assessment for specific NEOs.

(3) Identification of all postulated accident scenarios that result in inadvertent nuclear detonation (IND) or high explosive (HE) violent reaction in a nuclear explosive area.

(4) Analysis and vulnerability assessment of pathways leading to inadvertent nuclear detonation.

(5) Isolation of nuclear explosives from unwanted energy sources internal or external to the facility, including electrical, thermal, mechanical, electromagnetic, and chemical energy sources.

(6) Potential threats to NES from security operations, surveillance and other inspection requirements, software-controlled equipment, human error, and such weapon-associated systems as spin rockets, parachute deployment systems, use control features, and instrumentation for nuclear explosive test devices.

(7) Identification of controls for inadvertent nuclear detonation and HEVR hazards, including supporting rationale, test data and analyses, their respective source documents, and implementing procedures.

d. Relevant information from existing NES evaluation reports including both open and closed findings and status of implemented and pending corrective actions for NES evaluation findings.

e. Relevant occurrence reports, significant finding investigations (SFIs), and DoD unsatisfactory reports (URs).

f. Relevant Weapon Safety Specifications, Final Weapon Development Reports, weapon response documents, and documentation containing similar weapon safety-related information.

g. For facility MSs, for each item in paragraph (1) below (Facility Master Study Items), provide the information in paragraph (2) below (Information Required), as applicable.

(1) Facility Master Study Items.

(a) Facility safety basis documents, including applicable site-wide safety basis documentation and TSRs.

(b) Facility structure and support areas such as electrical and mechanical rooms, loading/unloading docks, and ramps.

(c) Facility/zone/site utilities, such as heating, ventilation and air conditioning, uninterruptible power supply, compressed air, vacuum, lighting, and water.

(d) Facility/zone/site safety systems such as fire protection, lightning protection, radiation alarms and monitors, blast door interlock, emergency lighting, criticality, public address, telephone, conductive flooring, and waste management.

(e) Facility special processing equipment such as the paint booth and fume hood, gas manifolds, dynamic balancer, and linear accelerator and associated general NEOs.

(f) Facility general purpose support equipment such as flammable storage cabinets, tooling cabinets, materials requirements planning terminal, and emergency wash.

(g) General use handling and transportation equipment such as hoists, cranes, modified transportation vehicles and trailers, forklifts, tow motors, pallet jacks, loading/unloading equipment, restraints and associated general NEOs.

(h) Facility/zone/site weapon process approved equipment including special and commercial tooling, electrical testers, supplemental electrical equipment, and qualified containers.

(i) Support materials such as controlled consumables and other commercially-derived materials that may come in contact with a nuclear explosive.

(j) Facility/zone/site support operations including security forces, radiation safety responders, fire protection and emergency medical service personnel, emergency management responders, facility engineers, maintenance and crafts personnel which impact NES.

(k) Nearby facilities, vehicles, railways, and airfields which impact NES.

(2) Information Required.

(a) Description and overview.

(b) Associated management programs (e.g., training programs, emergency responses programs, preventive maintenance programs, procedure development and change control, etc.).

(c) Design requirements, codes, and standards.

(d) Design process and criteria, including natural phenomena, blast, radiation shielding, electrical grounding, and any credible abnormal events.

(e) Construction, procurement, and fabrication processes.

(f) Deviations from design.

(g) Readiness assessment and/or safety and quality qualifications.

(h) NES change control process.

(i) Modifications, upgrades, and re-qualification.

(j) Maintenance, repair, and surveillance processes and re-qualification.

(k) Use, storage, access, and emergency egress controls.

(l) Retirement process.

(m) Engineer, technician, and first-line supervisor qualifications and training.

(n) Emergency communications.

(o) Hazards and controls, including those applicable to unauthorized acts.

(p) Proposed enhancements and recommendations.

(q) Associated technical procedures and manuals.

h. For other MSs, the input document requirements must be jointly determined by the Project Team and NESSG chair during planning meetings.

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CRITERIA FOR CATEGORIZING ISSUES FROM NUCLEAR EXPLOSIVE SAFETY EVALUATIONS

1. This Attachment provides guidance for characterizing issues identified by Nuclear Explosive Safety Study Groups (NESSGs) performing NES evaluations. The criteria in this Attachment is also used to guide and inform other personnel who prepare for NES evaluations or respond to the NES evaluation results.

2. The following criteria are tools intended to aid the thought process when categorizing issues arising in NES evaluations. They are not absolute gauges. This is a guide to good judgment not a substitute for it. When categorization of an issue seems difficult, uncertain, or controversial, the criteria can be used to help focus the debate and arrive at a logical conclusion. Even when categorization of an issue seems obvious, the criteria can be used as a crosscheck of the rationale and to help document the NES evaluation conclusions effectively.

    a. An issue might have different aspects that warrant different categorizations. In that case, the NESSG should consider if it would be helpful to split the write-up to segregate deficiencies and deliberation topics for which the NES Standards remain met, from deficiencies that indicate that NES Standards are not met.

    b. When the NESSG concludes that positive measures for a credible hazard are deficient or missing and review of existing analyses does not reveal adequate nuclear explosive safety, positive measures should be treated as inadequate for the purpose of issue categorization.

    c. A suggested approach is to begin with the criteria in Table 1 which poses questions associated with fundamental SS-21 process design goals. The answers to those questions are then assessed using measures of merit related to the two DOE O 452.1D NES Standards.

    d. Table 2 provides criteria for Deliberation Topics.

Table 1
SS-21 Based Criteria

Is the scenario credible? See Section 4 of this Attachment.	Yes – Continue. No – Consider for a Deliberation Topic.
1. Does the deficiency reflect inadequate positive measures to prevent application of unauthorized or unanalyzed external energy to a nuclear explosive (NE)? If so, could that external energy cause release of internal energy from the NE?	Apply the following guidance to each question: Yes, with gaps or weaknesses in positive measures to prevent nuclear detonation (ND) or high explosive violent reaction (HEVR) of the NE — Categorize as finding. Identify which NES Standard is not met. Yes, but gaps or weaknesses in positive measures to prevent ND and HEVR were not identified. Deficiency reflects (1) a condition that if allowed to persist could weaken positive measures relied upon for NES or (2) failure to meet the intent of NES requirements — Categorize as finding. NES Standards are met. Identify specific requirements, if any, that are not met. Yes, possibly leading to non-NES adverse consequences — Categorize as Deliberation Topic No to all seven questions — Consider for a Deliberation Topic.
2. Does the deficiency reflect a single-point failure that could cause an energy source in the NE to be activated or released?	
3. Does the deficiency reflect a poorly written procedure that could contribute to an incorrect or unauthorized act, or to missing a detectable significant abnormal condition?	
4. Does the deficiency reflect a possible bypass or compromise of safety attributes relied upon (NE, tooling, tester, other equipment, facility, procedure, management system, or personnel)?	
5. Does the deficiency reflect inadequate characterization or control of the facility, equipment, material, energy sources, or personnel that support nuclear explosive operations?	
6. Does the deficiency reflect inadequate personnel selection, training, qualification, or reliability?	
7. Does the deficiency reflect a potential threat to NES other than those above?	

Table 2
Criteria for Deliberation Topics

Deliberation Topics document NESSG discussions on selected lines of inquiry that did not result in a finding. That is, the issue was determined not to be a NES deficiency—at least within the scope of the evaluation; the issue requires no further corrective action for the studied operations. These issues are considered significant because of the importance of the topic (or its resolution rationale) for this evaluation or future NES evaluations. This includes:

1. Issues that were resolved by additional input or deliberations.
2. Issues for which adequate corrective actions were proposed by line management, accepted by the NESSG, and implemented before the end of the NES evaluation. The NESSG report should highlight these topics and include sufficient information to support assessment of the extent of condition as is done for findings.
3. Issues that do not reflect current NES deficiencies for the studied operations, but which might be considered deficiencies by other disciplines or other operations.

The key attribute of a Deliberation Topic is that the NESSG determined the issue is not a NES deficiency for the studied operations. The Resolution section of the write-up must explain why, typically with rationale centered on items 1, 2, or 3 above.

Note that coverage of an issue as a Deliberation Topic in a NESSG report does not necessarily mean that action is not warranted. It only reflects a NESSG judgment that no corrective action is needed for the studied operations. Cognizant managers must determine if action is needed to address non-NES deficiencies or to correct problems in NEOs outside the scope of the NES evaluation.

3. CONTENT OF NES EVALUATION FINDINGS.

a. It is critical that all findings be written in a manner that clearly communicates to managers and to those charged with developing and implementing corrective action the nature of the issue and the relative urgency of corrective action. It should be clear what hazard environment, positive measures, consequence, or NES requirement is at issue. Suggested content for NES findings follows.

(1) Factual Basis. Identify what was observed (event, condition, activity, documentation, equipment, etc.), and when and where it was observed (bay, cell, input document, NEOP, briefing, etc.).

(2) Adverse Environment. Identify the factors contributing to the adverse environment, source and form of energy, relevant nuclear explosive configurations, and why the environment is considered adverse with respect to NES. The write-up should also discuss the credibility of the hazardous environment/energy source.

(3) Limitations of Positive Measures. Explain how the positive measures incorporated in the governing procedures are considered inadequate to prevent or mitigate the adverse environment (i.e., where the gaps or weaknesses are). The write-up should identify whether the inadequacy is a result of the absence of relevant positive measures, lack of effective flow down to operating procedures, lack of protection against future adverse changes, or other factors that bring into question the enduring effectiveness of the positive measures.

(4) Consequence. Clearly state the NES consequences from the hazard identified.

(5) NES Requirements. If applicable, the write-up should identify the NES Standard or other NES criterion in question and discuss the NES impact of the specific situation. Some issues might clearly relate to one or both of the NES Standards and sometimes the distinction between the two Standards is not particularly informative. However, when nuclear detonation or main charge high explosive violent reaction is a credible consequence, the write-up should make that clear. If the issue is conformance to NES criteria other than the two NES Standards, the write-up should convey the NESSG's judgment on the NES impact of the nonconformance.

(6) Issue Categorization. Based on the information in (1) through (5) and application of the finding categorization criteria, the NESSG makes its judgment on whether a NES Standard is not met. The NESSG rationale for this judgment should be made clear to readers, typically in terms of the NES finding criteria and other guidance in this Attachment.

(7) Extent of Condition. If the issue is known by the NESSG to extend to other programs or operations, the NESSG should state that fact in the deficiency.

b. Effective use of the guidance above does not necessarily require a lengthy write-up with discrete sections for each topic. The outline above might be a logical presentation for many instances, but not for all. Authors should consider the information above and then tailor content, format, and length as needed to convey most effectively the NESSG conclusions and rationale for each finding. The objective is to write so that an informed reader who was not present at the NES evaluation can understand the NESSG conclusions and rationale.

c. Once a finding is drafted, Table 3 can be used to assess the quality and completeness of the write-up.

Table 3 Finding Checklist	
1. Is the scenario credible? See Section 4 of this Attachment.	Yes – Continue. No – Consider for Deliberation Topic.
2. Considering everything the NESSG has seen, heard, read, and deliberated—is the issue a NES deficiency?	Yes – Continue. No – Consider for Deliberation Topic.
3. Is the issue within the scope of the NES evaluation? (See note* below.)	Yes – Continue. No – Consider for Deliberation Topic.
For Questions 4 through 5, try to set aside all the background and impressions gained in the course of the NES evaluation; focus on the written words. Critically assess whether the words effectively convey the NESSG conclusions and rationale.	
4. Does the NES Deficiency statement provide a concise summary of the NES issue and make the objective clear without prescribing a solution?	Yes – Continue. No – Rewrite NES Deficiency statement.
5. Does the written discussion support the NES Deficiency statement? Does it: • Identify the factual basis? (*i.e., observations, input documents, briefings, written procedures, etc.*) • Clearly describe the issue and communicate logical rationale? • Identify the expected benefit for NES of taking corrective action? • Cite DOE or NNSA requirements that are not met (if any)? • Explicitly state how the NES Standard is not met (if applicable)? • Reflect relevant criteria from Table 1 or other reasonable rationale?	Yes –Done. No – Clarify the write-up (so that an informed reader can understand the NESSG conclusion).

*Note: The NESSG should stay focused on the scope of the review. However, obvious NES deficiencies must not be ignored and should be appropriately documented and reported to NNSA. If a NES concern is beyond the scope of the NES evaluation and requires significant time to research or deliberate, then the NES concern should be documented in the report with a recommendation to NNSA management that the NES concern be evaluated in a separate NES evaluation in order to determine if a deficiency exists.

4. CREDIBILITY OF SCENARIOS.

A credible scenario is a scenario that has a credible initiating event, and is itself credible in the absence of controls. That is, qualitatively, it is reasonable to believe that the scenario could happen considering the nature of the process involved, available energy

sources, materials, material quantities, form and location, but without taking safety measures into account that would prevent or mitigate the scenario.

A credible NES scenario is a scenario that could be reasonably believed to produce an environment capable of initiating the main charge high explosive in a nuclear explosive (i.e. IND or HEVR), also in the absence of controls, considering only the nature of the process involved, available energy sources, materials, material quantities, form and location, but without taking safety measures into account that would prevent or mitigate the scenario.

Using those definitions, the NES orders and manuals only require demonstration that the NES Standards are met for credible NES scenarios.

Thus, very low probability initiating events such as meteor strikes must not be considered as credible events when evaluating against the NES Standards. Similarly, scenarios triggered by natural phenomena hazards (NPH) must not be considered credible NES scenarios if they are caused by structural failures with likelihoods less than the associated NPH performance goals in relevant DOE facility design standards.

ACRONYMS AND ORGANIZATIONAL DESIGNATIONS

AB	authorization basis
ADASM	Assistant Deputy Administrator for Stockpile Management
ADAST	Assistant Deputy Administrator for Secure Transportation
AO	Authorizing Official
CAP	corrective action plan
CNCE	contractor NES change evaluation
CFR	Code of Federal Regulations
CTA	Central Technical Authority
DOE	US Department of Energy
ESD	electrostatic discharge
FO	Field Office
HE	high explosive
HED/D	high explosive detonation/deflagration
HEVR	high explosive violent reaction
HQ	Headquarters
IAP	immediate-action procedures
M	Manual
M&O	management and operating
MS	Master Study
NARA	National Archives and Records Administration
NCE	NES change evaluation
ND	nuclear detonation
NE	nuclear explosive
NEO	nuclear explosive operation

NES	nuclear explosive safety
NESS	nuclear explosive safety study
NESSG	Nuclear Explosive Safety Study Group
NESR	nuclear explosive safety rule
NNSA	National Nuclear Security Administration
NNSS	Nevada National Security Site
NPO	NNSA Production Office
O	Order
OSR	operational safety review
OST	Office of Secure Transportation
P.L.	Public Law
SAR	safety analysis report
SFI	significant finding investigation
SIID	single integrated input document
SS-21	seamless safety for the 21st century
STA	senior technical advisor
STD	Standard
TA	technical advisor
TSR	technical safety requirement
USQ	unreviewed safety question
USQD	unreviewed safety question determination
WSS	weapon safety specification