U.S. DEPARTMENT OF ENERGY
NATIONAL NUCLEAR SECURITY ADMINISTRATION
NEVADA SITE OFFICE

MANUAL

NSO M 421.X-1B

Approved: 03-19-07
Review Date: 03-19-11

NUCLEAR FACILITY SAFETY MANAGEMENT

INITIATED BY:
Office of the Assistant Manager for Safety Programs

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1. PURPOSE.

   a. This Manual implements the regulatory requirements of Title 10 Code of Federal Regulations (CFR), Part 830, Subpart B, and supplements DOE O 425.1C at all nuclear facilities under the cognizance of the National Nuclear Security Administration (NNSA) Nevada Site Office (NNSA/NSO).

   b. This Manual provides requirements and processes for:

      (1) Development, submittal, independent review, and approval of Safety Basis (SB) documentation for nuclear facilities and activities.

      (2) Development of NNSA/NSO Authorization Agreements (AA) for Categories 1 and 2 nuclear facilities and/or operations.

      (3) Operational readiness to ensure that nuclear facilities, Nuclear Explosive Operations (NEO), and on-site transportation of nuclear materials will be operated safely within its approved safety envelope as defined by the SB.

      (4) An Unreviewed Safety Question (USQ) process for nuclear facilities.

2. POLICY. It is the policy of NNSA/NSO that the risks of operating nuclear facilities under the cognizance of the NNSA/NSO Manager are authorized in NNSA-approved SB documentation. SB documentation will be developed, submitted, and approved in accordance with all applicable laws, regulations, and Department of Energy (DOE) and NNSA guidance. AAs are established for Categories 1 and 2 nuclear facilities in order to specify the terms and conditions for which the contractor is authorized to perform work. Starting or restarting nuclear facilities will be authorized only after readiness to operate has been verified and documented by the contractor and NNSA/NSO as indicated in this Manual. NNSA/NSO will verify safe operations within SB in accordance with applicable DOE and NNSA Directives, laws, and regulations using trained and qualified personnel. Contractor, laboratory, and DOE and NNSA Readiness Reviews (RR) will be conducted to ensure effective hazard controls, including appropriate administrative control programs, are in place to protect the workers, the public, and the environment. An NNSA-approved USQ process ensures work is performed within NNSA-approved SB and provides operational flexibility in performance of nuclear facility operations.

3. CANCELLATION. NSO M 421.X-1A, NUCLEAR FACILITY SAFETY MANAGEMENT, dated 5-16-06.

4. APPLICABILITY.

   a. NNSA/NSO Organizational Elements. The provisions of this Manual apply to all NNSA/NSO organizational elements.

   b. Contractors. None.

   c. Exclusions. None.

5. REQUIREMENTS.

   a. NNSA/NSO management will ensure all nuclear facility safety management programs (SB, AAs, RR, and USQ) under their cognizance are established and operated in accordance with regulatory requirements, DOE and NNSA Directives, and this implementing Manual.

   b. The NNSA/NSO Manager or Deputy Manager will review and approve SB documentation, which includes AAs, Documented Safety Analysis (DSA) (preliminary and final), Technical Safety Requirements (TSR), and positive USQ Determinations (USQD). Evaluation of SB documentation adequacy and approval will be in the form of a Safety Evaluation Report (SER).

   c. AAs will be established and maintained by NNSA/NSO for Hazard Categories 1 and 2 nuclear facilities, and signed by the NNSA/NSO Manager and the designated representatives of the contractor/user organizations that are parties to the agreement.

   d. An AA will define the SB documents and SER applicable to the facility/operation, systems, and controls required to govern the work, and the documented basis of NNSA/NSO's determination that the contractor/user organization authorized to operate meets established requirements.

   e. NNSA/NSO AAs will contain information and signatures as specified in DOE G 450.4-1B. Changes to the AAs will be by modification to the agreement and signed by the parties to the original agreement. The designation of specific personnel to positions identified in AAs will be documented.

6. RESPONSIBILITIES.

a. Manager, NNSA/NSO.

(1) Approves nuclear facility SB documentation as delegated by NNSA. When approval authority is not delegated, the NNSA/NSO Manager and staff serve in a support role to NNSA processes. This documentation includes:

(a) Nuclear facility hazard categorization level performed per DOE-STD-1027-92 pursuant to DOE M 411.1-1C and NSO M 111.X-1F.

(b) DSA pursuant to 10 CFR 830.202(c)(2), Preliminary DSA (PDSA) pursuant to 10 CFR 830.206(b)(2), nuclear facility safety design criteria pursuant to 10 CFR 830.206(b)(1), and NNSA/NSO-issued SERs for nuclear facilities.

(c) TSRs pursuant to 10 CFR 830.205(a)(2) for nuclear facilities.

(d) AAs for Hazard Categories 1 and 2 nuclear facilities pursuant to DOE M 411.1-1C and DOE G 450.4-1B.

(2) Approves startup and restart of nuclear facilities pursuant to DOE O 425.1C, as delegated by NNSA. This includes approval of Plans of Action (POA) for both contractor and NNSA/NSO RRs. When approval authority is not delegated, the NNSA/NSO Manager and staff serve in a support role to DOE and NNSA processes.

(3) Appoints SB Review Team (SBRT) and RR Team (RRT) leaders and members as recommended by the Office of the Assistant Manager for Safety Programs (AMSP).

(4) Approves contractor USQ procedures pursuant to 10 CFR 830.203.

(5) Approves contractor positive USQDs pursuant to 10 CFR 203(e) and 203(g)(4).

(6) Concurs and transmits to NNSA Headquarters contractor requests to use nuclear facility alternative safety analysis methodology pursuant to 10 CFR 830.204(a) for nuclear facilities.

b. Assistant Managers for National Security (AMNS), Site Operations, and Environmental Management (AMEM).

(1) Ensure the requirements described in Section 5 of this Manual are met.

(2) Receive and coordinate with AMSP the review of nuclear facility hazard categorization and forward to the NNSA/NSO Manager for approval.

(3) Establish, in coordination with AMSP, SBRTs for review of nuclear facilities SB documentation (DSA and TSR or PDSA/nuclear safety design criteria).

(4) Ensure documents submitted to the SBRT for review meet in-process review requirements as defined by SBRT review plans.

(5) Develop with AMSP and facility management AAs for Hazard Categories 1 and 2 nuclear facilities. Submit AAs for NNSA/NSO Manager's approval.

(6) Develop NNSA/NSO POAs for RRs to be conducted at facilities under their cognizance (see Table 1). Submit to AMSP for review and concurrence and subsequent NNSA/NSO Manager's approval.

(7) Ensure, through contractual mechanisms, development and implementation of contractor POA for RRs to be conducted at facilities under their cognizance (see Table 1). Coordinate POA review with AMSP and submit for NNSA/NSO Manager's approval.

(8) Coordinate reviews of Startup/Restart Notification Reports (SNR) with AMSP for pending RRs and submit to the NNSA/NSO Manager for approval. Transmit a copy of the SNRs to the contractor and a copy to the NNSA Headquarters Program Senior Official (PSO), Lead PSO, and Office of Nuclear Safety and Environment for information or for approval for those items for which the PSO is the approval authority.

(9) Ensure timely closure of NNSA RR findings.

(10) Receive and coordinate with AMSP the review of nuclear facility USQ procedures or proposed changes to NNSA-approved procedures. Submit USQ procedure to the NNSA/NSO Manager for approval.

(11) Receive and coordinate with AMSP the review of nuclear facility annual USQD reports pursuant to 10 CFR 830.203(f).

(12) Receive and coordinate with AMSP the review of positive USQDs and the associated SB change. Forward the contractor submitted SB changes stemming from a positive USQD and subsequent NNSA/NSO SER for NNSA/NSO Manager's approval.

(13) Receive and coordinate with AMSP and NNSA/NSO Price-Anderson Amendment Act coordinator, the review of proposed nuclear facility exemptions to 10 CFR 830, Subpart B. Submit exemptions to DOE and NNSA Headquarters for approval, as appropriate, with the NNSA/NSO Manager's concurrence.

(14) Receive and coordinate with AMSP the review of proposed alternative safety analysis methodology for nuclear facilities. Submit proposed methodology to NNSA Headquarters for approval, as appropriate, with the NNSA/NSO Manager's concurrence.

(15) Consistent with NNSA oversight policy, conduct validations of nuclear facility safety management programs for SB documentation, USQ process, and RR activities to ensure effective implementation.

c. Assistant Manager for Safety Programs.

(1) Provides independent evaluation and recommendation(s) on the adequacy of nuclear facility's safety management programs inclusive of SB documentation, RR, and USQ processes.

(2) Provides guidance and technical support to NNSA/NSO line management (AMNS and AMEM) for SB review, RRs, and USQ process. This support includes but is not limited to:

(a) Technical review of nuclear facility hazard categorization.

(b) Recommending SBRT members for the independent technical review of SB documentation.

(c) Providing SBRT leaders and team member candidates for NNSA/NSO Manager's approval. Provide senior technical advisors to the SBRT as required.

(d) Technical review of proposed AAs.

(e) Supporting the development of POAs.

(f) Recommending RRT members for the independent technical review of facility readiness.

(g) Providing RRT team leaders and team member candidates for NNSA/NSO Manager's approval. Provide senior technical advisors to the RRT as required.

(h) Providing support for closure of RR findings.

(i) Evaluating new USQ procedures and proposed changes to NNSA/NSO-approved procedures.

(j) Reviewing nuclear facility positive USQDs and proposed SB changes needed to resolve the USQ.

(k) Reviewing nuclear facility annual USQD reports.

(l) Assessing the technical adequacy of proposed alternative safety analysis methodology for nuclear facilities.

(3) Ensures the adequacy of the SB process and RR process through concurrence on SERs and review of RRT reports.

(4) Manages lessons learned from RRs and SB documentation reviews to ensure they will be integrated into current and future processes.

(5) Reviews SNRs in coordination with AMNS and/or AMEM.

7. DEFINITIONS.

a. Authorization Agreement. A documented agreement between NNSA/NSO and a contractor or National Laboratory for Hazard Categories 1 and 2 nuclear facilities, incorporating the results of NNSA/NSO's review of the proposed authorization basis for a defined scope of work. The AA contains key terms and conditions (controls and commitments) under which the contractor or National Laboratory is authorized to perform work. The content and format of the AA will be consistent with DOE G 450.4-1B.

b. Authorization Authority. The individual who authorizes the startup or restart of nuclear facilities after all RRs are completed, and pre-start findings are closed and post-start findings have approved Corrective Action Plans (CAP). Additional responsibilities of the Authorization Authority include approval of SNRs and POAs, and the assignment of the RRT leader.

c. Basis for Interim Operation (BIO). A DSA prepared for (1) a DOE or NNSA nuclear facility with a limited operational life, or (2) the deactivation or the transition surveillance and maintenance of a DOE or NNSA nuclear facility. A BIO is prepared in accordance with DOE-STD-3011-2002, or successor document.

d. Corrective Action Plan. A defined and documented strategy for the correction of findings (which defines the deficiency), describes the actions that are to be taken, assigns responsibility for the actions, discusses how the actions address and correct the finding, and indicates the dates when the actions will be complete.

e. Documented Safety Analysis. A documented analysis of the extent to which a nuclear facility can be operated safely with respect to workers, the public, and the environment, including a description of the conditions, safe boundaries, and hazard controls that provide the basis for ensuring safety.

f. Facility/Operations Manager. An individual designated by the management of a contractor, National Laboratory, other federal agency, or user organization to control overall operations and safety of personnel within a defined nuclear facility/site boundary.

g. Hazardous Material. Any material that is toxic, explosive, flammable, corrosive, or otherwise physically or biologically threatening to health.

h. Justification for Continuing Operations (JCO). A mechanism by which a contractor or National Laboratory may request that NNSA/NSO review and approve a temporary amendment to the facility SB in response to an unexpected condition, event, or new information. The NNSA/NSO-approved JCO becomes a part of the facility SB and allows the facility to continue operations for a defined, limited period of time. A JCO is prepared in accordance with DOE G 424.1-1A, or successor document.

i. Major Modification. A facility modification that substantially changes the existing SB and requires consideration of factors such as (1) changes to existing safety Structures, Systems, and Components (SSC) that alter their safety functions or functional requirements, (2) design and construction of new safety SSCs, and (3) a safety analysis to derive aspects of design that are necessary to satisfy the nuclear safety design criteria.

j. Nonreactor Nuclear Facility. Those facilities, activities, or operations that involve or will involve radioactive and/or fissionable materials in such form and quantity that a nuclear or a nuclear explosive hazard potentially exists to workers, the public, or the environment, but does not include accelerators and their operations and does not include activities involving only incidental use and generation of radioactive materials or radiation such as check and calibration sources, use of radioactive sources in research and experimental and analytical laboratory activities, electron microscopes, and x-ray machines. Included are activities or operations that: (1) produce, process, or store radioactive liquid or solid waste, fissionable materials, or tritium; (2) conduct separations operations; (3) conduct irradiated materials inspection, fuel fabrication, decontamination, or recovery operations; (4) conduct fuel enrichment operations; (5) perform environmental remediation or waste management activities involving radioactive materials; (6) conduct NEOs; or (7) perform nuclear experimental activities (e.g., Subcritical Experiments [SCE]).

k. Nuclear Facility. A reactor or a nonreactor nuclear facility where an activity is conducted for or on behalf of NNSA and includes any related area, structure, facility, or activity to the extent necessary to ensure proper implementation of the requirements established by 10 CFR 830.

l. Preliminary DSA. Documentation prepared in connection with the design and construction of a new DOE or NNSA nuclear facility or a major modification to a DOE or NNSA nuclear facility that provides a reasonable basis for the preliminary conclusion that the nuclear facility can be operated safely.

m. Prerequisite. A set of specific, measurable actions, or conditions identified in the contractor, National Laboratory, and NNSA POAs that are to be completed prior to the start of the respective RR. At a minimum, prerequisites are identified for each of the applicable Core Requirements (CR) of DOE O 425.1C. Additional prerequisites may be established by line management. The prerequisites, when completed by line management, should be expected to bring the facility into a state of readiness.

n. Reactor. Any apparatus that is designed or used to sustain nuclear chain reactions in a controlled manner such as research, test, and power reactors, critical and pulsed assemblies, and any assembly that is designed to perform SCEs that could potentially reach criticality; and, unless modified by words such as containment, vessel, or core, refers to the entire facility, including the housing, equipment, and associated areas devoted to the operation and maintenance of one or more reactor cores.

o. Readiness Review. A disciplined, systematic, documented, performance-based process to ensure a nuclear facility will be operated safely within its approved SB. This is a generic term that encompasses Operational RRs (ORR) and Readiness Assessments (RA).

p. RRT Leader. A senior individual with the necessary qualifications to manage and conduct an RR. The basis of the qualifications should include: technical familiarity with the activities and functional areas being reviewed; previous performance-based review experience or training; demonstrated leadership and managerial skills; and RR experience or formal training. The RRT leader is responsible for overseeing the ORR or RA process, including: defining RRT membership; preparing and approving the RR Implementation Plan (IP); planning, coordinating, and conducting the RR; preparing and approving the RR Final Report; estimating the level of effort and schedule requirements; establishing RR objectives and milestones; compiling or acquiring access to all necessary background information (e.g., description of process equipment and control measures); and acting as the team interface with management.

q. Technical Safety Requirements. The limits, controls, and related actions that establish the specific parameters and requisite actions for the safe operation of a nuclear facility and include, as appropriate for the work and the hazards identified in the DSA for the facility: safety and operating limits, surveillance requirements, administrative and management controls, use and application provisions, and design features, as well as a bases appendix.

r. USQ Determination. A documented evaluation that involves a potentially positive USQ performed pursuant to 10 CFR 830.203(d), (f), and (g) to record the scope and logic for determining whether or not a USQ exists.

s. Work Scope. A specific documented scope of work, as mutually agreed to by NNSA/NSO and the performing organization, which is formally authorized by NNSA/NSO.

8. REFERENCES.

a. DOE O 226.1, IMPLEMENTATION OF DEPARTMENT OF ENERGY OVERSIGHT POLICY, dated 9-15-05.

b. DOE M 411.1-1C, SAFETY MANAGEMENT FUNCTIONS, RESPONSIBILITIES, AND AUTHORITIES MANUAL, dated 12-31-03.

c. DOE O 414.1C, QUALITY ASSURANCE, dated 6-17-05.

d. DOE O 420.1B, FACILITY SAFETY, dated 12-22-05.

e. DOE G 424.1-1A, IMPLEMENTATION GUIDE FOR USE IN ADDRESSING UNREVIEWED SAFETY QUESTION REQUIREMENTS, dated 7-24-06.

f. DOE O 425.1C, STARTUP AND RESTART OF NUCLEAR FACILITIES, dated 3-13-03.

g. DOE M 440.1-1A, DOE EXPLOSIVES SAFETY MANUAL, dated 1-9-06.

h. DOE P 450.4, SAFETY MANAGEMENT SYSTEM POLICY, dated 10-15-96.

i. DOE G 450.4-1B, INTEGRATED SAFETY MANAGEMENT SYSTEM GUIDE FOR USE WITH SAFETY MANAGEMENT SYSTEM POLICIES, dated 3-1-01.

j. DOE O 452.2C, NUCLEAR EXPLOSIVE SAFETY, dated 6-12-06.

k. NSO M 111.X-1F, FUNCTIONS, RESPONSIBILITIES, AND AUTHORITIES MANUAL, dated 7-17-06.

l. NV O 151.1, COMPREHENSIVE EMERGENCY MANAGEMENT SYSTEM, dated 12-26-00.

m. NSO M 226.X-1, ASSESSMENT AND OVERSIGHT MANUAL, dated 9-25-06.

n. NSO O 231.X, OCCURRENCE REPORTING AND PROCESSING OF OPERATIONS INFORMATION, dated 5-07-04.

o. NV M 412.X1D, REAL ESTATE/OPERATIONS PERMIT, dated 5-23-06.

p. NSO M 414.1-1A, QUALITY MANAGEMENT SYSTEM DESCRIPTION, dated 3-6-06.

q. NSO M 450.3X-1D, WORK SMART STANDARDS MANUAL, dated 9-21-05.

r. NV P 450.4B, SAFETY MANAGEMENT SYSTEM POLICY, dated 8-24-00.

s. NV O 450.4, SAFETY MANAGEMENT SYSTEM MAINTENANCE, dated 8-22-00.

t. NSO M 450.X2, UNDERGROUND NUCLEAR TESTING, TEST READINESS, AND THRESHOLD TEST BAN TREATY VERIFICATION, dated 5-19-04.

u. NSO O 450.X6, SUBCRITICAL EXPERIMENTS SAFETY PROGRAM, dated 8-20-03.

v. 10 CFR 830, *Nuclear Safety Management*, Subpart B, *Safety Basis Requirements*.

w. 10 CFR 835, *Occupational Radiation Protection*.

x. 48 CFR 970.5204-2, *Laws, Regulations, and DOE Directives*.

y. DOE Acquisition Regulation (DEAR) 970.5204-2, *Laws, Regulations, and DOE Directives*.

z. DEAR 970.5223-1, *Integration of Environment, Safety, and Health Into Work Planning and Execution*.

aa. DOE-STD-1027-92 Change Notice 1, *Hazard Categorization and Accident Analysis Techniques for Compliance With DOE Order 5480.23, NUCLEAR SAFETY ANALYSIS REPORTS*.

bb. DOE-STD-1104-96 Change Notice 1, *Review and Approval of Nuclear Facility Safety Basis Documents (Documented Safety Analysis and Technical Safety Requirements).*

cc. DOE-STD-3006-2000, *Planning and Conduct of Operational Readiness Reviews.*

dd. DOE-STD-3009-94, *Preparation Guide for U.S. Department of Energy Nonreactor Nuclear Facility Safety Analysis Reports.*

ee. DOE-STD-3011-2002, *Guidance for Preparation of Basis for Interim Operations (BIO) Documents.*

ff. DOE-HDBK-3012-2003, *Guide to Good Practices for Operational Readiness Reviews (ORR), Team Leaders Guide.*

gg. DOE-STD-3015-2004, *Nuclear Explosive Safety Evaluation Process.*

9. CONTACT. Questions concerning this Manual should be directed to AMSP at (702) 295-1326.

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Manager

CHAPTER I

SB REVIEW AND APPROVAL

1. PURPOSE. This chapter describes NNSA/NSO processes and expectations for providing oversight, review, and approval of nuclear facility SB documents to ensure compliance with the requirements of 10 CFR 830, Subpart B. This Manual was prepared to ensure adequate independent safety evaluations are conducted on facility SB documents, including the DSA, PDSA, TSRs, BIOs, and JCOs. Nuclear facility SB documents submitted to NNSA/NSO by a contractor or National Laboratory will be reviewed and approved with an SER in accordance with the guidance provided in DOE-STD-1104-96, Change Notice 3, or successor document. This chapter was developed consistent with and as a companion to DOE-STD-1104-96; however, it does not reiterate the provisions of the Standard.

2. RESPONSIBILITIES.

   a. SBRT Leader.

      (1) Leads independent technical reviews of SB documentation for nuclear and NEOs as appointed by the NNSA/NSO Manager.

      (2) Prepares the SB review plan and schedule for approval by the NNSA/NSO Manager.

      (3) Assembles qualified SBRT members.

      (4) Through the SBRT review plan and team review, provides an independent assessment of the technical adequacy of the SB documentation.

      (5) Prepares, obtains team concurrence, and submits the final SER and any conditions of approval to the NNSA/NSO Manager.

      (6) Acts as the single point of contact between NNSA/NSO and the facility contractor for all matters regarding SB document review.

      (7) Maintains sufficient independence throughout the SB preparation and review processes; however, keeps informed of the important issues that

arise during development of the SB and how NNSA/NSO line management responds to requests from the SB preparer to assist in resolving fundamental conceptual issues.

b. SBRT Members.

(1) Support the assigned SB documentation reviews in accordance with the SB review plan and associated schedule.

(2) Provide technical comments (with justification of the safety significance) to the SBRT leader.

(3) Support the timely resolution of technical comments.

(4) Support preparation of the SER as directed by the SBRT leader.

(5) Concur or nonconcur with the SER. Nonconcurrence with the SER will be documented in accordance with the Differing Professional Opinion process defined in NSO M 226.X-1.

3. SBRT PROCESS.

a. General. The SB documents for a nuclear facility or operation are developed by the responsible contractor or National Laboratory. After the SB documents are formally submitted to NNSA/NSO for review and approval, NNSA/NSO line management in consultation with AMSP, determines the type of review required. In support of the review, an independent SBRT is established to review the adequacy of the SB documentation. The SBRT develops a SER which documents: (1) that an appropriate review of the SB documents was conducted and (2) bases for approving these documents and any conditions of approval. The NNSA/NSO Manager relies upon the SER to ensure the facility SB is adequate and complies with the requirements of 10 CFR 830, Subpart B. Figure 1 shows the general process flow for the various SB reviews conducted by the SBRT.

b. SB Review Process.

(1) SBRT Leader Appointed. NNSA/NSO line management (AMNS and AMEM) determines when an SBRT should be convened. When it is determined that an SBRT is to be convened, the NNSA/NSO Manager appoints an SBRT leader. The SBRT leader identifies team members and

coordinates to ensure technical resources are made available. The team leader will conduct planning of schedules to ensure deliverables are met. The NNSA/NSO line management and the SBRT leader will plan SBRT activities such that there is minimal impact to facility or process specific schedules and sufficient review time is allotted for SB reviews.

(2) SBRT Established. Team members can be representatives from within NNSA/NSO, NNSA and their other Field Organizations, or other NNSA contractors or subcontractors. Examples of expertise that may be required are fire protection, engineering, criticality analysis, explosives, SB requirements, lightning analysis, and radiation protection.

(3) SBRT Review Plan Developed. The SBRT leader will prepare a review plan to assess the technical adequacy of the proposed SB documentation using the appropriate requirements. In developing the plan, the guidance provided in DOE-STD-1104-96, Change Notice 3, will be used. The review plan will be signed by the SBRT leader, concurred with by AMSP, and approved by the NNSA/NSO Manager or delegated to cognizant line management (AMNS or AMEM).

(4) Executing the SBRT Review Plan.

- In-Process Reviews. When possible, in order to maximize efficiency, the SBRT will conduct reviews of DSA and TSR documentation as it is being developed. These reviews provide the contractor, National Laboratory, and NNSA/NSO line management with high-level comments regarding the adequacy of the safety analysis and proposed hazard controls. These in-process SBRT reviews should take place at various intervals of document completion as specified by the SBRT review plan. Line management will ensure the documents submitted to the SBRT meet the expectations for the incremental in-process reviews. In each incremental review, a formal comment and resolution process will be used and documented. An example of what may be expected for an in-process facility DSA and TSR review is as follows:

  - Thirty percent review may be accomplished when:

    -- Hazards Analysis (HA) raw tables are completed.

-- Chapters 1 and 2 of the DSA are completed.

-- Chapter 3 sections on HA, defense-in-depth, and worker safety are in draft form.

-- Safety significant SSCs are proposed as appropriate.

-- Candidate accidents for accident analysis are proposed.

- Seventy percent review may be accomplished when:

  -- Chapter 3 accident analysis is completed for review.

  -- Chapters 6-17 (Safety Management Programs) are in draft form in accordance with the format and content guidance of DOE-STD-3009-94.

  -- Safety Class SSCs proposed, if applicable.

  -- Potential functional requirements proposed.

  -- Chapters 4 and 5 are in draft form.

  -- TSRs are in draft form.

  -- Fire HA is complete.

  -- Comments from the initial review are addressed.

- Ninety percent review when:

  -- The documents include all the SBRT input and resolution of comments; it is referred to as the 90 percent draft review. All chapters of the DSA and TSRs are ready for technical review.

- SB development teams should attempt to follow the above process for their particular program or facility and type of review, and use the basic framework so that the approval authority, program managers, contractor facility managers, and contractor Project Teams (PT) can benefit from the results of in-process reviews. However, it would also be acceptable for the SBRT to

modify the process to better reflect the needs of a particular review. The specifics of the review for the particular facility or process will be documented in the SB review plan.

- During these in-process reviews, the SBRT may interact with the facility contractor, National Laboratory, and/or the SB development team. However, the SBRT leader is the primary point of contact for all formal communications between the SBRT and NNSA/NSO line management organization.

  -- The SBRT will perform a comprehensive review of final SB documentation only after formal submittal by the NNSA/NSO line management organization. The final review will consider the extent to which the SB documents adequately address the applicable criteria set forth in 10 CFR 830, Subpart B. In accordance with DOE-STD-1104-96, Change Notice 3, the technical evaluation will address the following approval bases:

    --- Base information;

    --- Hazard and accident analyses;

    --- Safety SSCs;

    --- Derivation of TSRs; and

    --- Safety management program characteristics.

  -- Specifically, the review should include:

    --- Reviewing the technical adequacy of the safety analysis methodology and results using technical judgment, applicable technical support documentation, and walkdowns of the facility and operations.

    --- Reviewing the adequacy of safety analysis by reviewing the assumptions used, ensuring all hazards relevant scenarios and controls are identified, and reasonable and conservative likelihood of occurrence estimates have been applied to unmitigated accident scenarios.

--- Reviewing the proposed controls for the prevention or mitigation of potential accident scenarios and the designation of their importance to safety.

(5) Issue the SER.

(a) The SBRT leader issues the SER to present the results of the review to the NNSA/NSO Manager. Preparation of the SER should include:

1 Technical content as described in DOE-STD-1104-96, Change Notice 3.

2 Categorization of SBRT findings based on safety significance. Those issues that are considered conditions of approval must be clearly designated.

(b) The SBRT leader provides the SER and any associated conditions of approval to the NNSA/NSO Manager as follows:

1 The SBRT will provide a copy of SER to AMSP for review and transmittal to the NNSA/NSO Manager.

2 The NNSA/NSO Manager will formally document approval of the SB for those facilities/activities under her/his cognizance in a letter to the operating contractor or National Laboratory.

3 AMSP will maintain records of the SER and approval correspondence from the authorization authority.

(6) Review of SB Annual Updates, BIOs, JCOs, and USQDs. SBRTs may be formed to perform reviews of SB annual updates, BIOS, JCOs, or positive USQDs. Generally, a graded approach should be used to implement the processes described above to review and approve these limited-scope SB documents.

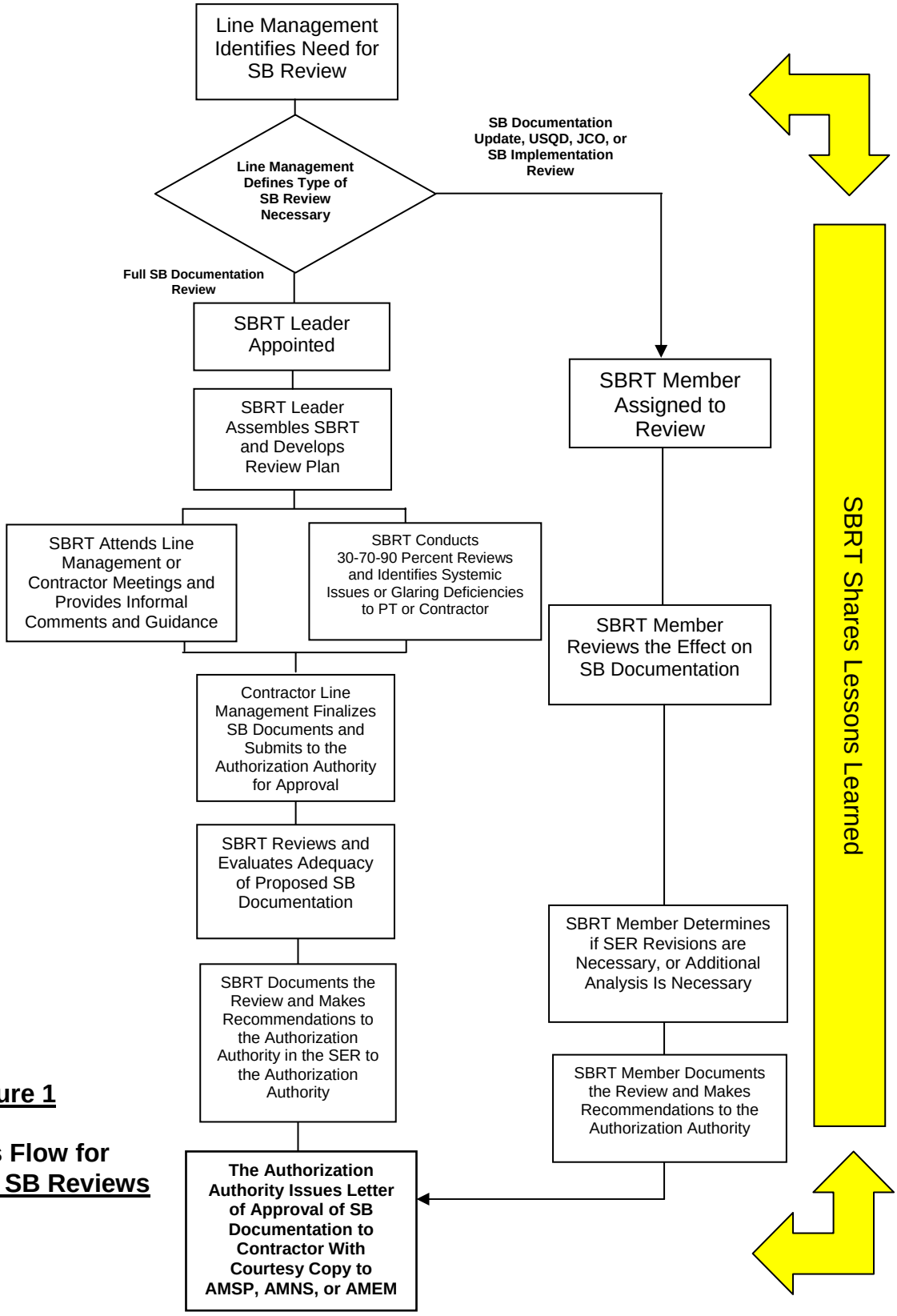

Figure 1

Process Flow for NNSA/NSO SB Reviews

CHAPTER II

READINESS REVIEW

1. PURPOSE.

   a. This section is a supplement to DOE O 425.1C. DOE O 425.1C provides requirements for Hazard Categories 1, 2, and 3 nuclear facilities. It does not change any of the Order's requirements, but it does establish supplemental requirements for:

      (1) RRs for restart of Hazard Category 3 nuclear facilities.

      (2) Conducting RRs for the startup or restart of NEOs.

      (3) SNR content and format for the startup/restart of all nuclear facilities as defined in this Chapter and Attachment 1.

   b. It sets forth policy and objectives, and delineates responsibilities and authorities for determining readiness to startup or restart nuclear facilities.

2. SCOPE. This Manual supplements DOE O 425.1C. The main focus is to define how NNSA/NSO implements the existing requirements specified in DOE O 425.1C.

3. APPLICABILITY. This Manual applies to all offices and elements of NNSA/NSO.

4. RESPONSIBILITIES. Roles and responsibilities for planning and implementing ORRs and RAs are delineated in DOE O 425.1C, DOE-STD-3006-2000, and DOE-HDBK-3012-2003.

   a. The same roles and responsibilities identified for the NNSA/NSO Manager are extended to the RA process for Hazard Category 3 nuclear facilities.

   b. RRT Leader.

      (1) Develops an IP in conjunction with the RRT Members.

(2) Conducts RR activities in accordance with DOE O 425.1C, this Manual, and applicable procedures using DOE-STD-3006-2000 and DOE-HDBK-3012-2003, as appropriate.

(3) Conducts and documents the results of the RR in a Final Report that the RRT leader approves and submits to the Authorization Authority.

(4) Works with the Authorization Authority, the applicable Line Manager, and the NSA/NSO RRT Functional Area Representative (FAR) concerning any conflict resolution that may arise during the RR that would have an adverse impact on the outcome or continuation of the RR.

(5) Recommends to the Authorization Authority readiness to startup or restart the applicable facility. AMSP and the applicable Line Manager will be informed of the outcome.

(6) Conducts lessons learned meetings during RRs, and ensure lessons learned are part of the RR Final Report.

5. GENERAL.

a. It is NNSA/NSO policy that starting or restarting nuclear facilities will be authorized only after readiness to operate has been verified and documented. Verifications will, in all cases, demonstrate safe operation within the SB in accordance with applicable DOE and NNSA Directives, laws, and regulations using trained and qualified personnel. This is accomplished by a contractor line management evaluation (or other similar process defined in the contractor procedures) and by contractor independent confirmation of readiness (i.e., a contractor RR). Contractor line management is responsible for establishing and declaring readiness and utilizing appropriate tools in accomplishing these goals. NNSA independent confirmation of readiness is also required when an NNSA official is the Authorization Authority for startup or restart of a nuclear facility.

b. RAs contain many of the same requirements as ORRs such as SNRs, POAs, IPs, and Final Reports. The differences between an RA and an ORR are in the approval level of all RR documents, and the degree of independence between the facility/activity, and the RRT leader and RRT Senior Advisor. For example, an RA to restart an existing Hazard Category 3 nuclear facility may be restarted after an RA where a member of the NNSA/NSO is the RRT leader, as long as

they do not have a conflict of interest in executing this role. Otherwise, RRT leaders for ORRs will be requested from the NNSA Service Center or NNSA Headquarters.

6. REQUIREMENTS.

a. In accordance with DOE O 425.1C, there are two types of independent reviews conducted by NNSA to verify readiness for startup or restart of a nuclear facility:

(1) Operational RR.

(2) Readiness Assessment.

b. These RRs vary in scope and depth. The required review depends on the nature and magnitude of the hazards of the nuclear facility and the requirements of DOE O 425.1C. Criteria to be used for determining the appropriate RR for nuclear facilities are delineated in DOE O 425.1C (Reference: NNSA Memorandum, L. Brooks to Distribution, Clarification of Roles and Responsibilities in Critical Functional Area, dated 1-2-03). NNSA/NSO further extends the requirements in DOE O 425.1C, Section 4a (as it applies to Hazard Category 2 nuclear facilities/activities), to the restart of Hazard Category 3 nuclear facilities/activities. See Table 1 below:

Table 1. Authorization Authority for Startup/Restart RRs

Hazard Category		New Facility	Basis for Shutdown			
			NNSA Directed	Extended Shutdown*	Substantial Modification[2]	Operation Outside SB
Category 1 Nuclear Facility	Authorization Authority	S-1 or Designee	Shutdown Official	*Six Months Cognizant Secretarial Officer (CSO)	CSO	SB Approval Authority
	Review Type[1]	ORR	ORR	ORR	ORR	ORR
Category 2 Nuclear Facility	Authorization Authority	S-1 or Designee	Shutdown Official	*12 Months CSO or Designee	CSO	SB Approval Authority
	Review Type[1]	ORR	ORR	ORR	ORR	ORR
Category 3 Nuclear Facility	Authorization Authority	S-1 or Designee	Shutdown Official	*12 Months NNSA/NSO	NNSA/NSO	NNSA/NSO
	Review Type[1]	ORR	ORR	RA	RA	ORR

[1.] Contractor and Federal.

[2.] The authorization authority will determine if the modifications are substantial based on the impact of the changes on the SB and the extent and complexity of changes.

c. Startup/Restart Notification Reports.

(1) An SNR for startup/restart of Hazard Categories 1, 2, and 3 nuclear facilities will be issued by the contractor to NNSA/NSO in accordance with DOE O 425.1C, Section 4a(4). The SNR will be provided by the NNSA/NSO line organization to AMSP for review and NNSA/NSO Manager's approval. During this SNR review, the AMSP RRT FAR will forward the SNR to the Office of the Chief of Defense Nuclear Safety (CDNS) for review. Any CDNS comments will be included in the comments provided by the AMSP RRT FAR to the responsible NNSA/NSO organization. See Attachment 1 for additional instructions regarding the adequacy of SNRs. If not adequate, SNRs will be returned to the contractor for resolution of issues.

(2) SNRs will be provided to the responsible NNSA/NSO organization on a quarterly basis and updated if a change has been made to the RR schedule or review type. The responsible NNSA/NSO organization will forward a copy of the SNR to the AMSP RRT FAR for review and comment. During this SNR review, the AMSP RRT FAR will forward the SNR for CDNS review. Any CDNS comments will be included in the comments provided by the AMSP RRT FAR to the responsible NNSA/NSO organization.

(3) The actions, reviews, and approvals for the SNR delineated in this section should be accomplished within ten working days of receipt of the SNR by the NNSA/NSO line organization. The SNRs are submitted to the Authorization Authority for approval action. If the NNSA/NSO Manager is not the Authorization Authority, the NNSA/NSO Manager takes concurrence action and forwards the letter to the Authorization Authority for approval action.

(4) Approved or concurred SNRs are to be provided to the following organizations so they may fulfill their oversight responsibilities:

(a) Office of Nuclear Safety and Environment, HS-21.

(b) NNSA Deputy Administrator for Defense Programs, NA-10.

(c) Office of Facilities Management and Environment, Safety, and Health (ES&H) Support, NA-17.

(d) CDNS, NA-1.

d. Plans of Action.

(1) Contractor and NNSA POAs are prepared by the appropriate line management, and they define the breadth of the RR. The following elements are required in the POAs:

(a) Name of the Facility Being Started or Restarted. This name must be specific to what is being evaluated.

(b) Description of the Facility. This description is instrumental in defining the scope of the RR, including physical systems or interfaces with existing programs. The description of the nuclear facility should be self-contained within the POA versus relying on another document.

(c) Identification of the Responsible Contractor. The responsible contractor is the organizational entity responsible for the management and operations of the nuclear facility and the organizational entity that certifies the readiness of the nuclear facility to startup or restart.

(d) Designation of Action as a New Start or a Restart. This element of the POA will discuss the following:

1 The hazard category of the nuclear facility (based upon the guidance and criteria established in DOE-STD-1027-92), and the basis (e.g., nuclear material limits or criticality) for characterization as a “new start” or “restart.”

2 The acquisition costs for the new facility.

3 Cause and duration of the shutdown (restart only).

4 Any repairs accomplished during the shutdown (restart only).

5 Modifications accomplished during the shutdown and its affect on the approved SB documentation (restart only).

6 Any anticipated process changes following restart.

(e) Proposed Breadth for the RR. This section of the POA will address the following:

1 The breadth is based on the minimum CR of DOE O 425.1C and the physical scope defined in the POA section on facility description.

2 The breadth must clearly discuss the physical or geographic boundaries of the RR. Clearly define SSCs, and individual processes or activities that are within the scope of the RR.

3 CRs will be addressed individually.

4 Justifications will be provided in the individual CR discussion to limit the scope of the RR. Otherwise, the POA must discuss the depth or detail to which CR will be reviewed. The level of detail must be sufficient to satisfy an objective reviewer that the justifications for review depth/detail are valid.

5 If a recent assessment is used to limit the applicability of one or more CRs, this assessment must be independent, and have been conducted within one year from the start date of the RR. Examples of such assessments are previous RRs or Integrated Safety Management (ISM) System (ISMS) verifications.

6 Operational events, such as occurrences, investigations, or systemic problems, should be considered as a basis for increasing the breadth or depth of the review of individual CRs.

(f) RR Prerequisites. Prerequisites are an important part of a successful RR as they should bring a facility to a state of readiness when line management completes them. The following requirements apply in defining prerequisites:

1 Contractor POA prerequisites will be discussed in the individual CR breadth/depth discussion. These prerequisites must specify when an acceptable level of preparation has been accomplished to enable the contractor's RR to begin.

2 NNSA POA prerequisites will be discussed in the individual CR breadth/depth discussion, and will also address the NNSA

oversight responsibilities contained in CRs 16, 17, and 18 of DOE O 425.1C. NNSA POA prerequisites must also include the following:

a NNSA/NSO will receive the contractor's declaration of readiness, which has been verified by the contractor's RR. Pre-start findings, if any, must be few in number, with a formal CAP to permit the NNSA RRT to review the results of the closure. Post-start findings will also be addressed by a formal CAP that describes the risks and mitigating actions, if any, to be taken during the interim that will reduce the risks associated with the finding to an acceptable level before final correction. NNSA/NSO will verify that the CAP has been entered into the appropriate quality program issue management system.

b NNSA/NSO will verify the contractor's readiness for startup or restart. This verification includes the following:

- Independent review and validation that the contractor adequately closed their RR findings.

- Review and validation that the contractor met RR prerequisites (contractor or NNSA).

c NNSA/NSO and NNSA Headquarters certifications of readiness to oversee the facility operations have been made.

3 Prerequisites will be specific and measurable.

a For example, activity personnel may require specific training to support the startup. An adequate prerequisite would identify those key personnel by job title/description, and the specific training they need. An inadequate prerequisite is that "personnel will be trained" because it is not specific as to who must be trained and to what level of training.

b Another example is that new SB documentation, or a revision to the approved SB, is approved and implemented before the contractor or NNSA RRs begin.

4 Any internal or external reviews will be identified as prerequisites and must be completed before the contractor or NNSA RRs begin if these reviews support the startup or restart of a facility. For example, an environmental permit is needed before the facility can startup. This permit must be reviewed and approved before the RRs begin.

(g) Estimated RR Start Date and Duration. This date is estimated so contractor and NNSA management can plan for this RR.

(h) RRT Leader. This individual must have the necessary independence from the facility, and possess the necessary experience and technical background to lead the RRT. This element must address the RRT leader's current position and title, organizational affiliation, and background and experience in leading RRTs.

(i) Requirement for Senior Advisors (Optional). A senior advisor may be needed for an NNSA ORR for a complex facility. If one is necessary, then this requirement will be addressed in the NNSA POA. This element must address the senior advisor's current position and title, organizational affiliation, and background and experience in leading RRTs.

(j) Official to Approve Start of the RR. The contractor POA will identify a senior manager as the official to start the contractor RR. This manager must be senior to the managers responsible for achieving facility readiness. The NNSA POA will use the Authorization Authority identified in the approved SNR, unless this authority has been formally delegated to the NNSA/NSO Manager.

(k) Official to Approve Startup or Restart of the Facility. This is the Authorization Authority identified in the approved SNR.

(l) Reviewer's Approval. Those individuals who prepared and reviewed the POA will be listed. Their signature indicates to the Authorization Authority that they recommend the POA's approval.

(m) Distribution. Individuals or organizations to receive copies of the approved contractor and NNSA POAs.

(2) The responsible NNSA/NSO line organization forwards the contractor or NNSA POA for review by AMSP. During this review, AMSP will forward the POA to the following organizations for review. Any comments will be included in the comments provided by AMSP to the responsible NNSA/NSO line organization:

(a) Office of Nuclear Safety and Environment, HS-21.

(b) NNSA Deputy Administrator for Defense Programs, NA-10.

(c) Office of Facilities Management and ES&H Support, NA-17.

(d) CDNS, NA-1.

(3) The POAs are submitted to the Authorization Authority for approval action. If the NNSA/NSO Manager is not the Authorization Authority, the NNSA/NSO Manager concurs and recommends approval by the Authorization Authority.

(4) Approved POAs are to be provided to the following organizations:

(a) Office of Nuclear Safety and Environment, HS-21.

(b) NNSA Deputy Administrator for Defense Programs, NA-10.

(c) Office of Facilities Management and ES&H Support, NA-17.

(d) CDNS, NA-1.

e. RR IPs. NNSA RR IPs are prepared by the RRT leader with input from the RRT members. CDNS will be provided RR IP for review before finalization by the RRT leader. These IPs will contain the following elements:

(1) Introduction/Background. This element describes the facility being reviewed, and the reason for shutdown if being restarted. The basic process, hazards, and other pertinent information are presented here.

(2) Purpose. This element describes why this RR is being performed.

(3) Scope. This element describes and justifies the physical and administrative boundaries of the facility. It defines the major RR objectives, and also incorporates the breadth of the RR as approved by the POA.

(4) RR Prerequisites. This element lists the prerequisites contained in the POA.

(5) Overall Approach. This element introduces the RR process, and defines how pre-start and post-start findings are classified. In addition, this element describes how the Final Report is prepared, findings are resolved, and the methods to achieve closure of the findings. The following criteria will be contained in the IP, and used to classify issues as findings and which findings are pre-start findings:

(a) Identify findings from issues found by the RRT. A finding is "a noncompliance with an established requirement. A finding may also involve failure to 'flow-down' a requirement through implementing procedures, or failure to perform a required action or execute a required responsibility."

(b) Evaluate all findings to determine if they are pre-start or post-start findings. If all questions can be answered with a "no," then the finding is a post-start finding:

1 Does the finding involve failure to completely implement the TSRs?

2 Does the finding involve failure to implement commitments in the DSA?

3 Does the finding involve loss of operability of a safety-class or safety-significant SSC?

4 Does the finding indicate a lack of control, which can result in an adverse impact on operability, or functionality of safety-class or safety-significant SSCs?

5 Does the finding involve a violation (or potential violation) of worker safety or environmental protection regulatory requirements that pose a significant danger to workers (e.g., death or disability), the public, or to the environment?

(6) RR Preparations. This element describes any preparations (e.g., pre-RR site visits, preliminary document reviews, or training) needed before the RR begins.

(7) RR Process. This element describes the Criteria and Review Approaches to be used during the RR. These approaches will be developed in a Criteria and Review Approach Document (CRAD). The CRAD will include the following items:

(a) Core Requirement.

(b) Criteria.

(c) Review approach.

NOTE: DOE-STD-3006-2000 provides information for each of these items.

(8) Administration. This element discusses when the RRT will meet during the review, interaction between the RRT and the RRT leader, and the RRT leader and the contractor line management. Interactions between the RRT, its leader, and any oversight or NNSA line organizations will also be discussed therein.

(9) Reporting and Resolutions. DOE-STD-3006-2000 provides information on the development of this element, and should be reviewed to address this element.

(10) Schedule. The proposed schedule is discussed in this element, including any pre-review visits, on-site reviews, report preparation, and closeout actions.

(11) Appendices. This element consists of those items that can stand alone in the IP. Examples of items to include in this element are CRADs, team member resumes, reporting forms, and guidance on how to complete them, and writing guides for use by the RRT. Hazard Category 3 nuclear facilities undergoing restart after an extended shutdown may use a

checklist approach provided no modifications were made to either the facility, or its SB. The checklist must be complete in order to ensure the safe restart of operations.

f. RR Final Reports.

(1) Upon completion of the contractor or NNSA RR, a Final Report must be prepared. This Final Report must document the results of the RRT, and conclude whether or not the startup or restart of the facility can be safely accomplished. See DOE O 425.1C, Section 4b(8), for specific requirements that must be addressed in the RR Final Report.

(2) The RR Final Report provides the basis for contractor and NNSA senior management decisions regarding startup or restart. This report must accurately reflect the conditions found during the RR.

(3) The Final Report must document and explain any deviations from the RR IP.

(4) The Final Report must be thorough in order to support the startup or restart decisions that contractor and NNSA senior management must make.

(5) The Final Report is submitted by the RRT leader to the Authorization Authority.

(6) The Final Report will provide a means for any team member to include a differing, or dissenting, professional opinion. While consensus is desirable, it cannot always be achieved. If there is disagreement, the RRT leader must decide on the final disposition of the issue, or finding. This decision may result in a dissenting opinion. This dissenting opinion will be attached to the Final Report to provide the Authorization Authority all relevant information.

(7) The RR must verify that the necessary approved requirements have been implemented by the contractor. The CRs address many of the core functions and guiding principles of ISMS. The Final Report will contain the RRT leader's assessment of how adequately the contractor implemented the principles of ISMS. The RRT leader's assessment is based upon the following:

(a) Each Team Member is responsible for binning the issues identified during the RR under the relevant ISM Guiding Principle(s) per the minimum CRs.

(b) Each Team Member submits a short paragraph to the RRT leader that evaluates how well the contractor implemented the ISM Guiding Principle(s) applicable to their CRAD.

g. A graded approach to RAs described in this Manual may be used based on hazard category and type of start/restart. Regardless of the level of the graded approach, the formality and documentation will be as described in this Manual.

h. NNSA RR and Nuclear Explosive Safety Study (NESS) Coordination. When a NESS is conducted for a specific NEO, the need for an ORR or RA will be determined on a case-by-case basis by NNSA/NSO management. If an ORR or RA is deemed necessary, then the following NESS coordination protocols should be followed:

(1) The NNSA RR (if required) and NESS, where possible, should be conducted in the same time frame for specific NEOs. The NNSA RRT leader will manage the RR in accordance with the geographic and technical scope defined in the NNSA POA. The NESS Group (NESSG) Chairperson should manage the scope of the study to adequately cover the proposed NEO in accordance with DOE O 452.2C.

(2) The NNSA RRT leader and NESSG Chairperson should manage their respective reviews in coordination to the extent practicable relative to the following:

(a) Ensure any issues or concerns identified by one review team that could potentially impact the other review team are effectively communicated and follow-up action assigned.

(b) Ensure the effective utilization of contractor support resources for needed review team briefings, performance-based demonstrations, and needed documentation.

(c) Ensure findings (pre-start and post-start) are communicated between the NNSA RRT leader and NESSG Chairperson during the course of the reviews.

i. Training and Qualification for NNSA RRTs. The following are requirements for RRT Members, senior advisors, and RRT leaders:

(1) RRT Leader Qualification Requirements.

(a) Basic Requirements (Prior to Selection).

1 Technical familiarity with the activities and functional areas being reviewed;

2 Previous performance-based review experience as team leader or assistant team leader;

3 Demonstrated leadership and managerial skills;

4 Participation in the DOE technical qualification program in one or more technical fields; and

5 Formal ORR training (preferred), or ORR experience.

(b) Requirements that must be satisfied prior to start of the review.

1 Facility-specific information that may be gained through a combination of required reading, facility tours, and presentations.

2 Completion of required reading.

(c) Required Reading.

1 DOE O 425.1C, STARTUP AND RESTART OF NUCLEAR FACILITIES.

2 DOE-STD-3006-2000, *Planning and Conduct of Operational Readiness Reviews*, Section 5.0.

3 DOE-HDBK-3012-2003, *Guide to Good Practices for Operational Readiness Reviews*.

4 Chapter II of this Manual.

5 SB for the affected facility undergoing startup/restart (this includes the DSA, TSR, and SER for a startup, or any SB changes stemming from a USQ leading to a restart).

(2) Team Member Qualification Requirements.

(a) Basic Requirements (Prior to Selection).

1 Personnel will be assigned to evaluate functional areas in which they are formally qualified through the applicable DOE technical qualification program. If such personnel are not available, then others may be assigned if they possess technical knowledge and experience in the assigned functional area.

2 Knowledge of evaluation processes and methods. This knowledge may be gained through experience as an auditor or inspector, or it may be gained through training evaluated as acceptable by the team leader.

3 Independence in that no team member may review activities for which they are directly responsible. Team members will not have line management responsibility (i.e., with respect to cost, scope, and schedule) for management of the activities and thus are able to provide an independent perspective on readiness to start or restart operations.

4 RR experience or formal ORR/RA training.

(b) Requirements that must be satisfied prior to start of the review.

1 Facility specific information that may be gained through a combination of required reading and facility tours and presentations.

2 Completion of required reading.

(c) Recommended Reading. DOE-HDBK-3012-2003, *Guide to Good Practices for Operational Readiness Reviews*.

(d) Required Reading.

1 DOE O 425.1C, STARTUP AND RESTART OF NUCLEAR FACILITIES.

2 DOE-STD-3006-2000, *Planning and Conduct of Operational Readiness Reviews*, Section 5.0.

3 Chapter II of this Manual.

4 SB for the affected facility undergoing startup/restart (this includes the DSA, TSR, and SER for a startup, or any SB changes stemming from a USQ leading to a restart).

(3) Senior Advisor Qualification Requirements.

(a) Basic Requirements (Prior to Selection).

1 Technical familiarity with the activities and functional areas being reviewed;

2 Previous performance-based review experience as senior advisor or team leader;

3 Demonstrated leadership and managerial skills; and

4 ORR formal training and experience, with complex-wide ORR experience preferred.

(b) Requirements that must be satisfied prior to start of the review.

1 Facility specific information that may be gained through a combination of required reading and facility tours and presentations.

2 Completion of required reading.

(c) Required Reading.

1 DOE O 425.1, STARTUP AND RESTART OF NUCLEAR FACILITIES.

2 DOE-STD-3006-2000, *Planning and Conduct of Operational Readiness Reviews*, Section 5.0.

3 DOE-HDBK-3012-96, *Guide to Good Practices for Operational Readiness Reviews*.

4 Chapter II of this Manual.

5 SB for the affected facility undergoing startup/restart (this includes the DSA, TSR, and SER for a startup, or any SB changes stemming from a USQ leading to a restart).

j. Line Management Verification of Contractor Readiness. As required by DOE O 425.1C, NNSA/NSO must certify that the contractor is ready for the NNSA RR. This certification as to the contractor's readiness is based on the following actions:

(1) Startup and Verification (S&V) Assessment. This assessment verifies that contractor efforts were adequate to startup/restart the facility, and that an adequate level of NNSA management and oversight is available. The deliverables for this assessment are the following:

(a) S&V Assessment Plan.

1 The S&V assessment plan defines the scope and criteria for assessing contractor and NNSA actions to startup or restart a facility. The plan is organized to define those NNSA/NSO actions required during each of the various phases of the facility/activity startup/restart process:

a Contractor planning and preparation.

b Contractor Management Self-Assessment (MSA).

c NNSA/NSO MSA.

d Contractor RR.

e Contractor certification of readiness.

f NNSA RR.

g Startup authorization.

h Execution of startup/restart.

i Lessons learned.

2 The S&V plan will specify actions and documentation to assess each of the criteria, and identify the responsible closure official.

3 An acceptable method for conducting the S&V is a performance-based review using CRADs, which is similar to the approaches used in a RR. Other methods are acceptable if they provide the technical basis for the NNSA/NSO to declare readiness for the NNSA RR.

(b) S&V Assessment Report.

1 A formal report will document completion of the NNSA/NSO S&V assessment. This report serves as a basis for NNSA/NSO to certify to the Authorization Authority that both the contractor organization and the Site Office are ready for the subsequent NNSA RR.

2 This report will contain completed NNSA/NSO Finding Validation forms for all contractor RR findings. See Attachment 2 for the format and content for completing these forms.

3 This report will document the conduct of the S&V, and any findings, opportunities for improvement, and noteworthy practices.

4 If there are deviations between the S&V plan and its actual conduct, the S&V report will document the deviation and its basis.

5 The S&V report will be sufficiently detailed so that an objective reviewer can follow the review logic and understand its conclusions and findings.

(2) NNSA/NSO MSA.

(a) The NNSO/NSO MSA is scheduled via the Management Assessment Schedule.

(b) This MSA is led by a senior manager assigned by the NNSA/NSO Manager. MSA team members will be from NNSA/NSO organizations. If available, the scope of the MSA will reflect the RRT IP; otherwise, the approved POA will provide the necessary scope.

(c) All MSA issues and findings will be entered and tracked in the site-wide issues management system. The results of the MSA will be presented to the NNSA/NSO Executive Council, and provided to the RRT for their information.

(3) NNSA/NSO Concurrence on the Contractor's Declaration of Readiness.

(a) The contractor's declaration of readiness is provided in a "Readiness to Proceed" memorandum for NNSA/NSO concurrence before the NNSA RR is started.

(b) The contractor Readiness to Proceed memorandum must identify any pre-start findings scheduled for closure after the NNSA RR is started; however, all findings must be closed before the NNSA RR ends so the RRT may be able to assess the adequacy of the contractor's closure actions.

(c) The contractor's RR Final Report is provided as an attachment to the Readiness to Proceed memorandum; however, an acceptable method is for the contractor to formally provide this report via a separate letter from the contractor's line management.

k. Records.

(1) The following RR documents are subject to retention as records in accordance with NSO M 414.1-1A:

(a) Startup/Restart Notification Reports.

(b) Plans of Action.

(c) RR IPs.

(d) RR Final Reports.

(e) RR finding closure documentation.

(f) S&V plans.

(g) S&V reports.

(h) NNSA/NSO MSA plans.

(i) NNSA/NSO MSA reports.

(j) Contractor correspondence related to readiness certification.

(k) NNSA/NSO certification of readiness memorandum to NNSA Headquarters.

(2) The facility is responsible for maintaining the official records of contractor and NNSA RR documents in accordance with the DOE Programmatic Records Schedule, Authorization Number N1-434-98-28, Item 1b(4)(a).

(3) The project manager will maintain a convenience set of the SNR, contractor, and NNSA POAs (as applicable), the IPs for the contractor and NNSA RRs, the RR Final Reports, and the documents that verified that contractor and NNSA RR findings were adequately closed. This set of convenience records will be retained for three years, and be destroyed afterwards.

(4) The AMSP RRT FAR will maintain a convenience set of the SNR, the NNSA POA, the NNSA RRT IP, and the NNSA RRT Final Report. This set of convenience records will be retained for three years, and be destroyed afterwards.

CHAPTER III

USQ PROCESS

1. PURPOSE. This chapter provides pertinent information regarding the NNSA/NSO oversight of the USQ process.

2. USQ PROCESS.

   a. USQ Process Review.

      (1) The USQ processes are developed by each organization (contractor and/or laboratory) responsible for the operation of NNSA/NSO Categories 1, 2, or 3 nuclear facilities, with input as necessary from other organizations.

         (a) After the documents (process or procedure) that define the USQ processes are developed, or revised, and formally submitted to the NNSA/NSO for approval, AMSP will assign an SBRT to review the contractors' or laboratories' USQ process documents.

         (b) If not adequate, the USQ process documents will be returned to the contractor or laboratory for resolution of issues.

         (c) The SBRT will issue an SER for approval of contractor or laboratory USQ process documents when they meet the requirements of 10 CFR 830.203, and the expectations of DOE G 424.1-1A.

      (2) AMSP will periodically conduct validation assessments of contractors' or the laboratories' NNSA-approved USQ process in accordance with NNSA policy.

      (3) AMSP will review any changes to the contractors' or the laboratories' USQ process in support of NNSA/NSO line management.

   b. Positive USQD Review and Approval for Categories 1, 2, and 3 Nuclear Facilities. Upon receipt of a positive USQD and associated proposed SB changes submitted by the contractor for NNSA/NSO approval, AMSP in consultation with NNSA line management will determine the rigor of the review

process required and assign appropriate resources to perform the review of the proposed SB changes. The review and approval process are prescribed in Chapter I of this Manual.

STARTUP/RESTART NOTIFICATION REPORT (SNR)

1. The SNR addresses all nuclear facility startups and restarts, including activity startups and restarts within an operating nuclear facility, up to a year in advance, and is typically submitted in a format similar to the table below.

Facility and/or Activity	Hazard Category	Scheduled Start Date of the Contractor Review	Scheduled Start Date of the DOE Review	Type of Review	Authorization Authority	Startup or Restart	Scheduled Start of Activity	Reason for Restart

2. An SNR is required for every startup or restart of a nuclear operation regardless of whether a Readiness Review (RR) is required. It is the vehicle for the contractor to propose the level of RR, if any, for the National Nuclear Security Administration (NNSA) to approve.

3. The table categories are discussed below. Information is either filled into the table or attached.

   a. Facility and/or Activity and Hazard Category. The facility or program work is identified. A brief description is provided in the SNR. The description is in sufficient detail for a person to gain a basic understanding of what is to be started up or restarted. The hazard categorization or class must be a part of the description. If the hazard classification is not available, a preliminary hazard classification based on DOE-STD-1027 and preliminary material-at-risk quantities will be used. Updates to the SNR will reflect the final hazard categorization as reflected in the approved Safety Basis (SB).

   b. Scheduled Start Date of the Contractor Review and Scheduled Start Date of the Department of Energy (DOE) Review. The scheduled start date of both the contractor and DOE reviews is identified.

   c. Type of Review.

      (1) The review type (Operational RR [ORR] or Readiness Assessment [RA], contractor and/or NNSA) and justification for the recommenced type of

review are identified. The justification is provided as an attachment to the SNR, and should be sufficiently detailed to satisfy an objective reviewer that the appropriate RR approach was recommended. An example for such detailed information is that there may be occasions where an RA, or normal contractor procedures for startup, may be sufficient to ensure a safe startup or restart of program work within an operating facility because previous NNSA RRs may bound the proposed program work. A correlation between the previously performed NNSA RR and the proposed program work may provide the technical basis for NNSA Nevada Site Office's (NNSA/NSO) acceptance of the proposed RR approach.

(2) For RAs, this justification should discuss the level of involvement by NNSA/NSO, and, if NNSA/NSO is involved, whether the NNSA/NSO review is concurrent with, or follows, the contractor RA.

d. Authorization Authority. An Authorization Authority is recommended, and the basis for the recommendations is provided as an attachment to the SNR.

e. Startup or Restart and Reason for Restart.

(1) A restart or startup is identified. For restarts, the reason for shutdown (e.g., maintenance outage, no program work, shutdown for safety concern, etc.) and the approximate date operations were last conducted are included as an attachment to the SNR.

(2) If previous operations subjected to an ORR are being used by the contractor to justify an RA in lieu of an ORR, specific details must be provided as to how and why this previous activity supports the proposed level of RR, and differences between these two operations must be explained. This discussion must also state when this activity was last conducted in this facility in order to determine if a restart exceeds the time constraints of DOE O 425.1C, Section 4a(1)(c).

(3) Regardless of whether the approved SB for the facility discusses a proposed activity, if the proposed activity has never started up, it will be considered a new start.

(4) For startups or restarts of activities or operations within an existing Categories 1, 2, or 3 nuclear facility, treat the startup or restart as if it is a

restart after substantial process, system, or facility modifications, even though current program work or operations were not shutdown to support the process, system, or facility modification.

(5) Routine resumption of operations or activities after a short, planned interruption should not be included in the SNR (e.g., entering and leaving shutdown/cold operations mode). Routine presumptions of operations or activities after short, unplanned interruptions that do not fall into the categories of DOE O 425.1C, Section 4a(1)(b), (d), or (e) do not have to be included in the SNR; however, such operational interruptions should not be approaching the time constraints of DOE O 425.1C, Section 4a(1)(c), or this Manual.

f. Scheduled Start of Activity. The projected date of startup is specified. While the initial SNR for a facility/activity startup/restart may not be known to an exact date (e.g., month and year), SNR updates within six months of the startup/restart should indicate the scheduled date of the contractor and NNSA RRs.

FINDING VALIDATION FORM

NATIONAL NUCLEAR SECURITY ADMINSITRATION (NNSA) NEVADA SITE OFFICE (NNSA/NSO) FINDING VALIDATION FORM		
Functional Area:	**Objective Number:**	**Finding Number:**

Finding Designation: Pre-Start ☐ Post-Start ☐

Finding:

Provide the wording of the original finding including any unique identifier or numbering convention (e.g., FP-1.1).

Corrective Action Plan (CAP):

Provide the wording of corrective action(s) developed by either the contractor or NNSA/NSO, as extracted from the associated CAP. Include any unique identifier or numbering convention associated with the corrective action (e.g., caWeb Issue/Action number).

Documents/Records Examined:

List the documents or records that were examined to determine whether the finding was adequately addressed and satisfactorily closed. These documents may include, but not be limited to plans, procedures, reports, checklists, training records, and logs. Provide the document title, date of issuance/approval, and revision number, as applicable. Also provide any unique document number or identifier.

Personnel Interviewed:

List any personnel (by position title and organizational affiliation) that were independently interviewed to corroborate or validate the satisfactory completion of actions. Such interviews may also be used to gauge the effectiveness of the actions completed (e.g., retraining or additional training of personnel to improve knowledge or understanding).

Discussion:

Briefly discuss the results of the validation review. State or explain the relationship of documents reviewed or personnel interviewed to the finding or corrective actions. Include an evaluation of the consistency or adequacy of any new or revised program, process, or procedure against governing Department of Energy or NNSA requirements and implementation guidance, as appropriate.

NNSA/NSO FINDING VALIDATION FORM		
Functional Area:	**Objective Number:**	**Finding Number:**

Conclusion:

Succinctly summarize the conclusions of the review using one or two sentences. The conclusions should either be affirmative (i.e., Finding XYZ has been adequately closed.), or identify any residual issues. If the specified corrective actions were subsequently found to be inadequate or ineffective, the original finding or issue should be considered still "open." If during the course of the validation review, additional issues were discovered or identified, the original finding should be validated as "closed" and a new issue(s) should be documented and entered into the appropriate organization's issues management system (e.g., caWeb).

Corrective Action Validation	
Validation By: NNSA/NSO Program/Project Manager Date	Concurrence: NNSA/NSO Functional Area Representative Date

Concurrence: NNSA/NSO Facility Representative Date	

ACRONYMS

AA	Authorization Agreement
AMEM	Assistant Manager for Environmental Management
AMNS	Assistant Manager for National Security
AMSP	Assistant Manager for Safety Programs
BIO	Basis for Interim Operation
CAP	Corrective Action Plan
CDNS	Chief of Defense Nuclear Safety
CFR	Code of Federal Regulations
CR	Core Requirement
CRAD	Criteria and Review Approach Document
CSO	Cognizant Secretarial Officer
DEAR	DOE Acquisition Regulation
DOE	Department of Energy
DSA	Documented Safety Analysis
ES&H	Environment, Safety, and Health
FAR	Functional Area Representative
HA	Hazards Analysis
ISM	Integrated Safety Management
ISMS	ISM System
JCO	Justification for Continued Operation
MSA	Management Self-Assessment
NEO	Nuclear Explosive Operation
NESS	Nuclear Explosive Safety Study
NESSG	NESS Group
NNSA	National Nuclear Security Administration
NNSA/NSO	NNSA Nevada Site Office

ORR	Operational Readiness Review
PDSA	Preliminary DSA
POA	Plan of Action
PSO	Program Senior Official
PT	Project Team
RA	Readiness Assessment
RR	Readiness Review
RRT	Readiness Review Team
S&V	Startup and Verification
SB	Safety Basis
SBRT	SB Review Team
SCE	Subcritical Experiment
SER	Safety Evaluation Report
SNR	Startup/Restart Notification Report
SSC	Structure, System, and Component
TSR	Technical Safety Requirement
USQ	Unreviewed Safety Question
USQD	USQ Determination