No.: Y15-190
Subject: Readiness Manual
Title: Readiness Planning and Achievement
Vol. 1, Chapter 6.0: Drafting a Plan-of-Action
Revision Date: 01/09/07
This Chapter provides direction in the preparation, development and approval of the Plan-of-Action (POA) required for the initial startup or restart of a FACILITY, OPERATION or ACTIVITY.

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PURPOSE

This Chapter provides direction in the preparation, development and approval of the Plan-of-Action (POA) required for the initial startup or restart of a FACILITY, OPERATION or ACTIVITY. The POA contains the following elements, as a minimum:

- Identification of the breadth of the assessment by determination of the applicable Core Requirements for startup/restart.

- Identification of applicable Review Team Leader and Startup/Restart (a.k.a. Authorization) Authority.

- Identification of prerequisites that must be completed before initiating a Readiness Assessment (RA) or Operational Readiness Review (ORR).

APPLIES TO

This Chapter applies only when the Readiness Applicability and Review Level Determination process as described in Volume I, Chapter 1, has determined that an ORR or a Level II RA is required to be performed to confirm readiness.

This Chapter does not apply to startup or restarts where a Level I RA is to be performed.

OTHER DOCUMENTS NEEDED

- UCN-21052, *Readiness Activity Checklist*

- UCN-21679, *Readiness Applicability and Review Level Determination*

- Startup/Restart Readiness Plan

REFERENCES

- DOE M 251.1-1A, *Directives System Manual*

- DOE O 425.1, *Startup and Restart of Nuclear Facilities*

- DOE-STD-3006-2000, *Planning and Conduct of Operational Readiness Reviews (ORR)*

- Y15-001 *Grading Criteria for Y-12 Facilities and Systems*

- Y15-009, *Criteria for Application of the Y-12 Configuration Management Program*

- Y15-101, *Manual for the Management of Records and Controlled Documents*

- Y15-187, *Integrated Safety and Change Control Process*

- Y15-232, *Technical Procedure Process*

- Y15-312, *Issues Management*

- Y15-331, *Lessons Learned Program*

- Y17-007INS, *Transitioning Technical Documents to Operations*

- Y17-011, *Startup Testing Program Manual*

- Y73-045, *Job Hazard Analysis Manual*

- Y80-101PD, *Software Management Program Description*

- Y90-027, *Conduct of Training Manual*

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WHAT TO DO

A.   Developing the POA

Readiness Leader

NOTE 1   Appendix 6-A, *Plan-of-Action Development Guide* and Appendix 6-B, *Guiding Principles, Core Requirements, and Y-12 Guidance*, provide guidance for identification of the requirements to be included in the review scope.

NOTE 2   The POA should be based on a graded approach, consistent with the hazards and significance or complexity of changes and if applicable the duration of inoperation and reason for inoperation. Appendix 6-C, *Application of the Graded Approach in Review Planning*, provides information on use of the graded approach for a review.

NOTE 3   Justification for the exclusion of a Core Requirement (CR) for an ORR typically involves positive results from another recent independent review. A RA does not require written justification for excluding CRs, although some discussion is expected. The justification for exclusion of a Core Requirement for a RA should be included in the Readiness Plan.

1.   Review Appendix 6-A, *Plan-of Action Development Guide*, Appendix 6-B, *Guiding Principles, Core Requirements, and Y-12 Guidance*, and Appendix 6-C, *Application of the Graded Approach in Review Planning*.

2.   IF the POA is for a Level II RA, THEN evaluate each of the CRs listed in Appendix 6-B for applicability.

3.   IF the POA is for an ORR, THEN incorporate each of the CRs as identified in Appendix 6-B, OR document the justification/rationale for the exclusion of any CR from consideration in the review.

4.   IF the POA is for a Level II RA or ORR where NNSA will conduct their own review, THEN incorporate the NNSA specific CRs and indicate that they are NNSA CRs.

The POA may be written to cover both reviews with NNSA concurrence.

5.   IF a scoping meeting has been held THEN ensure the scope of CRs address any issues from the meeting.

6.   Prepare the POA utilizing the outline in Appendix 6-A, *Plan-of Action Development Guide*.

B.   Defining and Developing Prerequisites

Readiness Leader

NOTE 1   Prerequisites, when completed, are expected to bring the startup or restart into a state of operational readiness. Therefore, prerequisites must address the entire scope of the startup or restart and not just focus on the readiness confirmation review.

NOTE 2   It is a good practice to use prerequisites to delineate specific actions for different organizations (e.g., operations training, support organization training, etc.). Prerequisites may also include specific NNSA or management issues (e.g., the completion of two integrated dry runs through the process without the need for intent changes to procedures or stopping for equipment or personnel issues, etc.).

1.   Define the prerequisites for operational readiness by performing the following:

   a.   Address each applicable CR as listed in Appendix 6-B.

   b.   Identify key activities that must be completed to meet each CR prior to initiating the readiness confirmation review (i.e., RA or ORR).

   c.   Identify and review any additional prerequisites that may be established by Operations Management or NNSA.

2.   Ensure the prerequisites identified are developed as specific action statements in the POA (per Appendix 6-A) that identify what must be completed before readiness is declared.

3.   Ensure the prerequisite statements provide for measurable evidence that the prerequisite has been met.

   It is a good practice to review the evidence as it is finalized for each of the prerequisites to ensure that it is complete and is technically adequate to satisfy the prerequisite. This may be done as a part of the Readiness Assist Team or Management Self-Assessment if one is conducted.

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C.   Designation of Review Team Leader and Authorization Authority

Readiness Leader, Responsible Manager, Readiness Assurance Manager

NOTE   The Review Team Leader is an individual with the necessary qualifications for managing and conducting the RA/ORR. The basis of the qualifications include:

- Technical familiarity with the activities and functional areas being reviewed.

- Previous performance-based review experience or training.

- Demonstrated leadership and managerial skills.

- Readiness Assessment or Operational Readiness Review experience or formal training.

1. Name the Review Team Leader for the RA/ORR.

Readiness Leader

2. Add the name of Review Team Leader and qualifications to the POA.

   In some situations where the POA is developed early in a project with a long duration the Review Team Leader may not be known and a designation of "TBD" may be used to indicate that the name is yet to be determined.

NOTE   For a Level II RA where YSO is the Startup/Restart Authority, YSO may choose to not perform a separate RA.

3. Ensure the appropriate Startup/Restart Authority is identified in the POA as indicated in the approved Startup Notification Report (SNR).

Readiness Assurance Manager

4. Ensure the Review Team Leader is qualified and will NOT review work for which he or she is or has been directly responsible.

D.   Submitting the POA for Review and Approval

Readiness Leader

1. Ensure the POA is complete and adequately describes the scope of the startup or restart.

2. Distribute the POA for review by applicable individuals (e.g., Responsible Manager, Production Manager, Project Manager, System Engineer, Process Engineer, Training, etc.).

   Where NNSA is the Startup/Restart Authority, they should review and provide comments prior to submittal for their approval.

D.   Submitting the POA for Review and Approval (cont.)

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Readiness Leader

      3.   Incorporate review comments and finalize the POA for approval.

Responsible Manager

      4.   Review the final POA and IF acceptable, THEN sign the document indicating approval.

Readiness Leader

      5.   Ensure that other managers (e.g., Production Manager, Project Manager, etc.) approve the POA.

      6.   IF applicable, THEN forward the POA to the Department Manager responsible for the FACILITY in which the startup or restart will occur for approval.

Department Manager (when applicable)

      7.   Review and approve the POA.

      8.   Submit the approved POA to Senior Management (e.g., Division Manager responsible for the FACILITY in which the startup or restart will occur for final review and approval.

Senior Manager

      9.   Review the POA.

     10. WHEN satisfied, THEN approve the POA.

     11. Return the POA to the Readiness Leader.

Readiness Leader

     12. IF NNSA is the Startup/Restart Authority, THEN forward the POA to NNSA for Approval.

     NOTE   Documents sent to NNSA must be sent to the NNSA Mailroom and not the physical address of the individual.

     13. WHEN required approvals have been obtained, THEN ensure the POA is distributed to involved parties including NNSA.

         This may be accomplished by including the individuals on the distribution made by the applicable Document Management Center (DMC).

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E.   Identifying Exemptions

Senior Manager and Readiness Leader

NOTE   Exemptions to NNSA requirements are rare and approval should not be sought except under extenuating circumstances.

1. Determine if obtaining an exemption to the RA/ORR process might be appropriate, such as when a short duration, one-time startup or restart is to be conducted for which the requirements for an ORR are not warranted.

   Examples may include one-time, unique startup or short duration actions necessary to support national commitments in unusual circumstances.

NOTE   The justification for exemption will be reviewed and must be approved by NNSA and any other appropriate Startup/Restart Authority. Exemptions are approved on a case-by-case basis.

2. Ensure the exemption request complies with the requirements of DOE Order 425.1 and DOE-STD-3006-2000.

   Exemptions to DOE Directives are requested in accordance with the process described in DOE Order 251.1.

RECORDS

Records generated as a result of this procedure are maintained in accordance with Y15-101, *Manual for the Management of Records and Controlled Documents* and established retention and disposition schedules in the Approved Comprehensive Records Schedule at https://home1.y12.doe.gov/scripts/eicms/prod/SMARTMain.cfm.

Owner/DMC

The Records generated as a result of this Chapter include:

- Plan-of-Action

This record is to be maintained by the applicable DMC for the Organization responsible for the FACILITY in which the startup or restart is occurring.

SOURCE DOCUMENTS

- Standards/Requirements Identification Document (S/RID) Requirement Unique Identifiers (RUIDs): 10906, 10907, 10914, 10925, 11598, and 11601.
- YSO-CRD-03-01, *Start-Up and Restart of Operations, Activities and Facilities at Y-12*

APPENDICES

Appendix 6-A, *Plan-of-Action Development Guide*
Appendix 6-B, *Guiding Principles, Core Requirements, and Y-12 Guidance*
Appendix 6-C, *Application of the Graded Approach in Review Planning*

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APPENDIX 6-A
Plan-of-Action Development Guide
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Prior to developing the POA it is important to have the scope of the startup or restart well defined in as much detail as possible including interfaces with the existing infrastructure (both physical and administrative). The scope is often described in the Activity Description (see Volume I, Chapter 1) or Project Execution Plan (PEP) and associated documentation including the detailed schedule, Standards and Requirements Document, Process Description, etc.

The important element in the development of the POA is the definition of the breadth of the review through the creation of the list of objectives (Core Requirements) and supporting criteria that when met will ensure that operational readiness has been attained. Identification of the objectives and criteria is accomplished by an evaluation of the entire scope of startup or restart to determine what is different from the operations ongoing in the facility in which the startup or restart is planned. For example, if the operations personnel are newly assigned, trained and qualified, then the operators would be evaluated during the readiness confirmation review. If security plan changes were needed to support the startup or restart, then the security plan and its implementation would be evaluated. If the startup or restart is in an operating facility in which support programs and systems already function and different functions are not required for the startup or restart, then the support programs and systems would not be included in the POA for the readiness confirmation review.

Those organizations or programs that were identified as providing a product or service required to attain operational readiness for the startup/restart but are not directly involved in the actual day-to-day operation after startup or restart may be excluded from the scope of the review when their function has not changed as a result of the startup/restart. However, those functional area programs and responsible organizations must be prepared to demonstrate that their function has been implemented in compliance with applicable Y-12 Management Requirements and contractual flow-down requirements.

Once the objectives and criteria which will be within the scope of the readiness confirmation review are defined, the prerequisites that must be met to achieve operational readiness can be defined.

The key elements of the POA are the objectives and criteria to be reviewed and the prerequisites that when met will ensure readiness for operation. The following process provides a method to identify the minimum set of objectives and criteria that should be included in the POA. The scope of each as well as the prerequisites will logically follow based on the defined scope of the startup or restart.

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STEP ONE: Identification of the Core Requirements to be included in the POA.	
Consider the following questions as regards to the startup or restart for which the POA is being developed. If the answer is "Yes," the Core Requirements (See Appendix 6-B) in the next column listed should be <u>considered</u> for inclusion in the POA	**Core Requirements**
1. Will new operating or support personnel be required for the startup or restart? Personnel must be identified by job description or position (e.g., chemical operator, machinist, etc.). The level of training and qualification should be understood. The CRs must evaluate that the training program and the execution of that program are adequate to assure that the new personnel can conduct operations within safety and security requirements. The review includes program, record, and level of knowledge. Personnel are considered new because they have not performed the operation before or are new to the job position.	2, 3, 4, 5, 6
2. Will new management personnel be assigned to the startup or restart? Management personnel should be identified by job description or position (e.g., Shift Manager, Operations Manager, etc.). The management selection and training process may not be new, therefore not require evaluation. The scope of the review may be to determine that the new managers meet the selection criteria and understand their individual responsibilities.	2, 3, 4, 6
3. Will existing operations or support personnel require retraining or re-qualification for the startup or restart? Personnel should be identified by job description or position. The changes in existing qualification requirements or the new qualification requirements that are required should be identified. The new records and level of knowledge to verify these changes should be the extent of the depth of the core objectives.	2, 3, 4, 5, 6
4. Will safety class, safety-significant, or safety significant non-nuclear SSCs require changes to support the startup or restart? Safety-class, safety-significant, or safety significant non-nuclear SSCs that have been modified, and the extent of the changes should be described. The individual CRs should be evaluated to the degree necessary to insure the affects of the changes have been reflected in the safety documentation, security documentation, maintenance work instructions, and operational procedures, and the training and qualification requirements. The results of question 10 will also have a bearing on the scope of the individual CRs.	5, 7, 8, 9, 10, 12

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STEP ONE (cont.): Identification of the Core Requirements to be included in the POA.	
Consider the following questions as regards to the startup or restart for which the POA is being developed. If the answer is "Yes," the Core Requirements (See Appendix 6-B) in the next column listed should be considered for inclusion in the POA	**Core Requirements**
5. Will new processing systems or components be installed to support the startup or restart? The new systems and components should be listed. Configuration management of the systems and components must be evaluated, including the technical baseline and change control processes. Maintenance Post-work testing and startup testing will be evaluated. The scope will indicate the impact of the changes on support systems, procedures, training, and qualification.	5, 7, 8, 9, 10, 12
6. Will existing processing systems or components be modified or restarted following extended shutdowns to support the startup or restart? The modified systems or components should be listed. Configuration management of the systems and components must be evaluated, including the technical baseline and change control processes. Post installation and startup testing will be evaluated. The depth discussion will indicate the impact of the changes on support systems, procedures, training, and proficiency of the operators. Systems or components to be restarted after extended shutdowns must be evaluated for condition of equipment, confirmation of operability, adequacy of procedures, and proficiency of the operators.	3, 4, 5, 7, 8, 9, 10, 12
7. Will new site support programs be required or will changes be needed to meet the needs of the startup or restart? See #8 below.	1, 2, 3, 4

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STEP ONE (cont.): Identification of the Core Requirements to be included in the POA.	
Consider the following questions as regards to the startup or restart for which the POA is being developed. If the answer is "Yes," the Core Requirements (See Appendix 6-B) in the next column listed should be considered for inclusion in the POA	**Core Requirements**
8. Will (any) site support programs have a significant interface or unusual involvement with the startup or restart? Both Questions 7 and 8 require the same consideration to define the scope of the review. The support programs that require evaluation must be identified. The degree of the evaluation should be described. For example, it may not be necessary to evaluate the training and qualification programs for ongoing support programs, only the availability and capability of personnel, and their understanding of their role in supporting the startup or restart. If a new support program were to be required or a significant change needed, then a greater scope would be specified than if it were only an extension of an existing program. New or significantly modified programs should be evaluated as part of Core Requirement 1. Where the program is existing and is only being applied to the startup or restart, then it is permissible to examine that program within the particular Core Requirement where it is being applied (e.g., if a training program is only being applied to new or revised procedures then it can be fully evaluated in Core Requirement 3).	1, 2, 3, 4, 5, 6
9. Will new or modified procedures be required to carry out the startup or restart? The breadth will be defined by listing the affected procedures. The individual CRs will evaluate, as necessary, adequate procedure changes were met, properly managed, and that the personnel have been trained on the latest versions. This question is closely related to questions 4, 5, and 6.	3, 9, 10, 13
10. Will facility safety basis (SB) documentation require changes to accommodate the startup or restart? (e.g., SAR, TSR, BIO, OSR, HER, etc.) Did the USQD or Change Evaluation process evaluation have a positive result? Identify the SB documentation related to the startup or restart and the changes that are required. The Core Requirements will, as necessary, insure the changes to the safety documentation were adequately incorporated in derivative, flow down, documents and procedures. If the nature of the changes require that an Implementation Validation Review (IVR) be conducted and the IVR is completed prior to the declaration of readiness, then the scope of the RA or ORR may be reduced to eliminate duplication of items being reviewed.	7,9,10

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STEP ONE (cont.): Identification of the Core Requirements to be included in the POA.	
Consider the following questions as regards to the startup or restart for which the POA is being developed. If the answer is "Yes," the Core Requirements (See Appendix 6-B) in the next column listed should be considered for inclusion in the POA	**Core Requirements**
11. Will the startup or restart require changes to the operational or emergency drill programs (e.g., add new drill scenarios, modified security plan, require different responses, etc.)? Describe the changes to the respective drill programs. The scope of the evaluation will be as necessary to review the adequacy of the applicable drill program following the changes. The information associated with questions 1 and 9 will affect the scope of this Core Requirement.	11
12. Will further startup testing, operator training, procedure finalization, or other actions be required to fully transition to the routine conduct of program work or will additional oversight be used to validate procedure/personnel adequacy due to inability to fully demonstrate some elements of performance? Describe the details of the transition to routine operations. The presumption is that it will be done in accordance with a startup plan. The startup plan, evaluation criteria, methods for removing controls, evaluations and qualifications, and recording of results must be reviewed for adequacy as part of the readiness review.	12
13. Will changes to the Conduct of Operations implementation matrix or implementing procedures be required to accommodate the startup or restart? Describe the changes. New chapters may now be applicable. New control rooms may be brought into operation. The description of the project and the changes required should define the depth of the evaluation of Conduct of Operations. The current status of Conduct of Operations compliance should also be considered (e.g., recent reviews indicate lax step-by-step procedure compliance or weak work planning). The operational formality demonstrated by operations personnel will be evaluated based on questions 1, 3, and 9.	13

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STEP ONE (cont.): Identification of the Core Requirements to be included in the POA.	
Consider the following questions as regards to the startup or restart for which the POA is being developed. If the answer is "Yes," the Core Requirements (See Appendix 6-B) in the next column listed should be <u>considered</u> for inclusion in the POA	**Core Requirements**
14. Does the startup or restart require a change to the Authorization Agreement, Clean Air Permits or a specific evaluation of the issues management program or corrective action status? The reasons that this question was answered "yes" will provide the basis for the scope. Core Requirement 14 can often be removed from the scope of the review based on there being no need to change current agreements. In general, open CAPS issues within the facility should be evaluated for proper closure or technical basis to justify their remaining open (i.e., pre/post screening).	14,15

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STEP TWO: Define the scope that each Core Requirement (CR) will evaluate.

The extent of detail that the scope of each Objective or CR will evaluate should be determined by an evaluation of the individual elements of the startup or restart reflected in the questions presented in STEP ONE.

For CRs, it is important to identify the end state that satisfies the CR, since this is what the reviewers will be evaluating (e.g., operators will be certified, DSA requirements are implemented, procedures can be performed, etc.). Each CR should define the process or procedure that will be used to achieve the desired operational readiness end state (e.g., procedures used per Y15-232, *Technical Procedure Process*; SB documents developed and approved per Y74 series procedures, SB documents implemented per Y14-190, *Safety Basis Implementation Plans and Implementation Validation Reviews,* and Training conducted per Y90-027, *Conduct of Training Procedure,* etc.). It is important to include as much detail in the scope of each CR as is practical since this is the information that will form the basis for the Criteria Review and Approach Document that will be developed in accordance with Volume II, Chapter 5, as a part of the Implementation Plan for the review.

STEP THREE: Description or Identification of Prerequisites to the Review.

Upon completion of STEP ONE and STEP TWO, the actions and conditions necessary to satisfactorily complete the readiness confirmation review should be clear. The prerequisites are identified as action steps which, when satisfied, will ensure the attainment of operational readiness. For example, STEP TWO identified the personnel required, the procedures requiring change, the systems being installed and tested, etc. This information defines specifically what must be completed to achieve operational readiness for the startup or restart. In addition, the detailed description of the startup or restart should lead to an understanding of what actions must be completed to achieve a state of operational readiness.

Action statements that describe these requirements should be developed and included as the prerequisites in the POA. The prerequisites must address the entire scope of the startup or restart. Prerequisites must address each applicable Core Requirement. It is not acceptable to have one prerequisite stating that the entire set of applicable Core Requirements has been met. Some Core Requirements will require several prerequisites to ensure satisfactory completion. An example is "CR-3," where it would be prudent to have several prerequisites for operations and if applicable each of the support organizations. This method will facilitate better organization of evidence and allow for easier tracking of prerequisite completion. When properly defined, the closure criteria in the Readiness Plan developed in accordance with Volume I, Chapter 5, can provide much of the basis for the prerequisites.

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A suggested Plan-of-Action (POA) format:

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POA Outline

Cover Page

• Document number

• Title

• Date

> **Note:** It is desirable to keep the POA unclassified and no more than Official Use Only. Particular items in this outline may reference other documents for details to achieve this objective.

I. Description of facility

   • Y-12 Plant

   • Evaluation Activities

      o Building Number

      o Facility Hazard Categorization

      o General area of startup or restart within the building

      o Description of the startup or restart

II. Identification of Responsible Contractor

III. Designation of action as New Start or Restart

   • Statement defining reason for conducting review as related to DOE Order 425.1 requirements.

IV. Startup or Restart discussion

   • Reason for inoperation (if applicable)

   • Length of inoperation (if applicable)

   • Changes and repairs

   • Special conditions

      o Demonstration configurations

      o Use of mock-ups or surrogate materials

      o Use of actual parts/materials

V. Proposed breadth

   1. Basis for breadth

   2. Focus of preparations

      • Core Requirements excluded (if for an ORR exclusion must be justified)

      • Core Requirements included

         o Discussion of detailed scope for each CR

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POA Outline (cont.)

VI.   Prerequisites
- Should include at least one per CR

VII.   Estimated start date
- Start date for contractor review

VIII.   Proposed Team Leader
- Identification of the contractor Review Team Leader

IX.   Official to approve start of contractor review
- Include the estimated start date for the review

X.   Official to approve facility startup/restart (Startup/Restart Authority)

XI   Approval Page
- Preparer/Readiness Leader
- Responsible Manager
- Production Manager (if applicable)
- Department Manager (if applicable)
- Project Manager (if applicable)
- Program Manager (if applicable)
- Senior Manager
- NNSA (for Startup/Restarts where NNSA is the Startup/Restart Authority)

Appendices
- Personnel by category
- Equipment by type
- Documents by type

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APPENDIX 6-B
Guiding Principles, Core Requirements, and Y-12 Guidance
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The following information is provided to assist in developing the Plan-of-Action (POA) and preparing the facility for safe, secure, and compliant operations. Specifically, this guidance is provided to assist the Responsible Manager and Readiness Leader in selecting the appropriate Core Requirements to attain operational readiness. This information is organized around (a) the DOE guiding principles for Integrated Safety Management as listed in DOE Order 425.1, (b) DOE Core Requirements for startup/restart (found in DOE Order 425.1, DOE STD-3006-2000), and (c) guidance specifically intended for Y-12 startup/restart work.

Guiding Principle #1 – *Line Management is responsible for the protection of employees, the public, and the environment. Line management includes those contractor and subcontractor employees managing or supervising employees performing work.*

CORE REQUIREMENT 1: Line management has established programs to assure safe accomplishment of work (the authorization authority should identify in the plan-of-action those specific infrastructure programs of interest for the startup or restart). Personnel exhibit an awareness of public and worker safety, health, and environmental protection requirements and, through their actions, demonstrate a high priority commitment to comply with these requirements. (DOE Order 425.1)

Guidelines:

- Appropriate management programs are identified and established:

  o Fire Protection

  o Procedure development and use

  o Industrial Safety and Health

  o Radiation Protection

  o Maintenance

  o Engineering Support (System and Process)

  o Quality Assurance

  o Criticality Safety

  o Training

  o Environmental Protection

  o Waste management

  o Emergency Preparedness

  o Safeguards and Security

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- o Transportation and Packaging

- o Conduct of Operations

- o Configuration Management and Change Control

- o Specific programs are established to promote a site-wide safety culture.

- o Safety Awareness

- o Employee Concern

- o The Integrated Safety Management System (ISMS)

Guiding Principle #2 - *Clear and unambiguous lines of authority and responsibility for ensuring ES&H (Environmental, Safety, and Health criteria, requirements, and/or standards) are established and maintained at all organizational levels.*

CORE REQUIREMENT 2: Functions, assignments, responsibilities, and reporting relationships [including those between the line operating organization and Environment, Safety and Health (ES&H) support organizations] are clearly defined, understood, and effectively implemented with line management responsibility for control of safety.

- Roles and responsibilities are defined.

- Personnel understand their assignments, responsibilities, and reporting relationships.

- Management assigns only qualified personnel to operational or support positions.

- Management monitors field activities for safe operations and promptly stops work when unsafe conditions arise.

Guiding Principle #3 - *Personnel shall possess the experience, knowledge, skills, and abilities that are necessary to discharge their responsibilities.*

CORE REQUIREMENT 3: The selection, training, and qualification programs for operations and operations support personnel have been established, documented, and implemented. The selection process and applicable position-specific training for managers assure competence commensurate with responsibilities. (The training and qualification program encompasses the range of duties and activities required to be performed.)

An adequate Training Program is in place.
- Training and qualification requirements are identified and implemented.

- Job Task Analysis (JTA) has been performed

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- The training program encompasses the attributes of the JTA.

- Positions requiring qualification or certification have been identified and personnel filling those positions are qualified or certified.

- Operations and operations support personnel have been, as a minimum, trained to:

  o Operating and Surveillance Procedures and associated changes

  o Importance of operational constraints

  o Terms and conditions or limits and conditions of applicable environmental permits or safety requirements

  o Conduct of Operations

  o Security Plan

  o Emergency preparedness and response to upset conditions

  o Hazards of materials associated with operation, Material Safety Data Sheet (MSDS) reviewed

- Operations and Operations support personnel are qualified on facility equipment, systems, and processes.

- The following Training Descriptions may be applicable to this Core Requirement:

  o ALARA Training Program Description

  o NCS Training Program Description

  o Radiological Worker Training Program Description

  o GET Training Program Description

  o Radiological Control First Line Manager Training Program Description

  o Radiological Control Technician Training Program Description

CORE REQUIREMENT 4: Level of knowledge of managers, operations, and operations support personnel is adequate based on reviews of examinations and examination results and selected interviews of managers, and operating and operations support personnel.

- Management position descriptions have been written and personnel filling those positions meet position description criteria.

- The technical basis for each position is adequate for the position and technical support personnel meet the technical basis for their position.

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- Examinations adequately test personnel

  o Exams include responses to process alarms, abnormal plant conditions, and emergency actions

- Assigned personnel have successfully passed examinations.

- Interviews adequately test the level of knowledge.

- Performance evaluations for positions (including surveillance), facility systems, and processes adequately test each individual and ensure proficiency.

CORE REQUIREMENT 5: Modifications to the facility have been reviewed for potential impacts on training and qualification. Training has been performed to incorporate all aspects of these changes.

- Facility changes for the startup or restart have been reviewed; including the USQD process, to determine if the security plan and what procedures could have been affected by the changes.

- Those procedures and security plan identified are reviewed to ensure they have been updated.

- Applicable personnel have been trained and qualified (if necessary) on the revised procedures and/or security plan.

__Guiding Principle #4__ - Resources are effectively allocated to address ES&H, programmatic, and operational considerations. Protecting employees, the public, and the environment is a priority whenever activities are planned and performed.

CORE REQUIREMENT 6: Sufficient numbers of qualified personnel are available to conduct and support operations. Adequate facilities and equipment are available to ensure operational support services are adequate for operations (Such support services include operations, training, maintenance, waste management, environmental protection, industrial safety and hygiene, radiological protection and health physics, emergency preparedness, fire protection, quality assurance, criticality safety, and engineering).

- There are sufficient numbers of qualified personnel to support safe, secure, and compliant operations.

- Task analysis defines the minimum required number of qualified personnel.

- The minimum number of qualified personnel has been defined to support the startup or restart.

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- The minimum number of personnel are qualified and/or certified to perform their duties, this may include:

  o Emergency Response Personnel

  o Facility Operations Personnel

  o Production Personnel

  o Operations Support Personnel such as:

    ▪ Environmental and Waste Management

    ▪ Fire Protection

    ▪ Industrial Safety and Health

    ▪ Radiation Protection

    ▪ Maintenance

    ▪ Engineering

    ▪ Quality Assurance

    ▪ Criticality Safety

    ▪ Training

    ▪ Environmental

    ▪ Emergency Preparedness

    ▪ Safeguards and Security

    ▪ Transportation and Packaging

__Guiding Principle #5__ - Before work is performed, the associated hazards are evaluated and an agreed upon-set of standards and requirements are established that, if properly implemented, provide adequate assurance that employees, the public, and the environment are protected from adverse consequences.

CORE REQUIREMENT 7: Facility safety documentation is in place and has been implemented that describes the "safety envelope" of the facility. The safety documentation should characterize the hazards/risks associated with the facility and should identify preventive and mitigating measures (e.g., systems, procedures, and administrative controls, etc.) that protect workers and the public from those hazards/risks. Safety structures, systems, and components (SSCs) are defined and a system to maintain control over their design and modification is established.

Note: Some or all of the items listed below may be confirmed through the performance of an Implementation Validation Review (IVR) conducted in accordance with Y14-190, *Safety Basis Implementation Plans and Implementation Validation Reviews.* If this is accomplished prior to the Declaration of Readiness, then those items already covered by the IVR may be removed from the scope of the RA or ORR.

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- NNSA has approved the Safety Basis.

- Safety basis requirements are traceable from the SB documentation to the implementing directive/procedure, and back.

- A system is in place to manage change to the SB documents

- Implementation of the SB requirements has been demonstrated down to the implementing document.

- The required nuclear criticality safety evaluations have been completed and reviewed.

- The required fire hazard evaluations have been completed and reviewed.

- The required Safety Analyses are completed and approved.

- New or updated security plans have been prepared and where necessary approved by NNSA.

- Unreviewed Safety Questions (USQD or Change Evaluation process) have been evaluated.

- Hazard Evaluation Study and Accident Analysis updated for operations phase.

- Safety Evaluation Report (SER) Conditions of Approval have been resolved or tracked in CAPs.

- TSR document complete, approved and implemented.

- Safety Basis commitments are engineered or are in administrative controls, procedures or postings.

- Permits (e.g., Radiological Work Permit) have been developed and identify applicable

- Configuration Management of safety systems and design features for safety systems are identified and established to prevent unauthorized change.

CORE REQUIREMENT 8: A program is in place to confirm and periodically reconfirm the condition and operability of safety SSCs. This includes examinations of records of tests and calibration of these systems. The material condition of safety, process, and utility systems will support the safe conduct of work.

- The programs that confirm and reconfirm the condition and operability of safety and safety related systems are in place, including:

  o Calibration Recall

  o Metrology

  o Configuration Management Program (Y15-009INS)

  o Integrated Safety and Change Control (Y15-187)

  o Engineering Design

  o Deficiency reports

  o Non-conformance reports

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o   Software Configuration Control (Y80-101PD, Y80-102)

- Safety systems and other instruments, which monitor OSR/TSRs or process parameters are calibrated and monitored for calibration.

- Safety related instrumentation has been identified, calibrated, and preventive maintenance completed.

- Safety and safety-related utility systems are identified and are currently operational, in a satisfactory condition.

- Equipment has been tested to meet established functional testing requirements and acceptance criteria or post maintenance criteria.

- Essential equipment items are identified (safety systems and safety related systems and labeling is complete), have been calibrated, preventive maintenance (if required) is complete, and the equipment is on-line.

- Vital Safety Systems (VSS) have been identified and assigned system engineer(s) meet minimum qualification requirements.

- Configuration of process equipment, emission control equipment, sampling equipment or other equipment, agrees with the terms and conditions or limiting conditions for operation of applicable permits or safety requirements and complies with Y-12 requirements.

CORE REQUIREMENT 9: The facility systems and procedures, as affected by facility modifications, are consistent with the description of the facility, procedures, and accident analysis included in the safety basis.

- Changes to facility systems and components comply with the Safety Basis and security plan requirements.

- An effective document change procedure has been demonstrated.

- Procedures necessary for operation have been identified, prepared, and approved. Operational constraints, terms and conditions or limiting conditions, if any, are identified and visible in System Operating Procedures or other documents.

- System Operating Procedures have been verified and validated.

- Maintenance requirements, system operating procedures, and current forms have been distributed and are available to operating crews.

- Qualified personnel manage the USQD/Change Evaluation process.

Guiding Principle #6 - *Administrative and engineering controls to prevent and mitigate hazards are tailored to the work being performed and associated hazards. Emphasis should be on designing the work and/or controls to reduce or eliminate the hazards and to prevent accidents and unplanned releases and exposures.*

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CORE REQUIREMENT 10: Adequate and correct procedures and safety limits are in place for operating the process systems and utility systems, and they include revisions for modifications that have been made to the facility

- Define the list of procedures to be implemented.

  o Procedures associated with implementing Safety Basis requirements [e.g., Limiting Condition of Operations (LCO), Technical Safety Requirement (TSR), Operational Safety Requirement (OSR), Safety Analysis Report (SAR) requirements, Security Plan requirements, etc.]

  o Controls identified through the Job Hazard Analysis are implemented in operating procedures.

  o Operational procedures

  o Operational drill procedures and emergency procedures

  o Alarm response procedures

  o Abnormal operating procedures

  o Maintenance procedures/work instructions

  o Facility changes have been reviewed, including the USQD/Change Evaluation process, to determine what procedures could have been effected by the changes

  o Applicable personnel have been trained and qualified (if necessary) on the revised procedures

CORE REQUIREMENT 11: A routine drill program and emergency operations drill program, including program records, have been established and implemented.

- A routine operations drill program has been established and implemented

  o Operators and operations support personnel can satisfactorily respond to upset conditions

  o Operators have been trained and have demonstrated their ability to respond to the range of abnormalities associated with the facility and the specific startup or restart

  o Operators are knowledgeable of the methods for reporting process upsets

- Upset conditions identified and drills prepared and are consistent with the Process Description.

- An Emergency Preparedness Drill Program has been established and implemented

  o Emergency plan prepared, approved, and demonstrated effective

  o Evacuation plan prepared and demonstrated effective

  o Back shift operators have demonstrated proper use of emergency notification lists

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CORE REQUIREMENT 12: An adequate startup or restart program has been developed that includes plans for graded operations and testing after startup or resumption to simultaneously confirm operability of equipment, the viability of procedures, and the performance and knowledge of the operators. The plans should include if applicable the validation processes for equipment, procedures, and operators after startup or resumption of operations, including any required restrictions and additional oversight.

- The startup plan includes:

    o Deliberate controlled operations used to transition to unrestricted routine operations

    o Procedures for gaining or regaining operator proficiency where pre-startup conditions (e.g., surrogate material, hazardous materials, etc.) prohibit this from being accomplished prior to startup.

    o Testing required to confirm operability or to define operating parameters where the testing can only be performed with real materials.

    o Initial product quality checks

Verify that the Startup Plan (a) describes the process of deliberate, controlled operations that the contractor will follow after authorization to start or restart operations following an RA or ORR, (b) provides a summary-level schedule that illustrates a systematic approach to full operations, and (c) includes management approval requirements for key events. Key elements of the startup plan shall accomplish the following if not demonstrated during the RA/ORR:

- Identify and describe the equipment startup testing to be performed to confirm that changes meet design criteria and integrated tests planned to confirm operability of equipment during initial operations.

- Identify facility management observers necessary for initial operations oversight, including summary level duties, responsibilities, and shift staffing requirements.

- Identify plans for implementation of the startup plan with compensatory oversight, including approvals for progressing to normal unrestricted operations.

- Identify and describe the mechanism for confirmation of the viability of procedures during actual performance.

- Identify and describe the mechanism for real-time in-plant management observer evaluation of operator proficiency to confirm the adequacy of operator training.

- Identify and describe the mechanism established for remediation of any identified weaknesses.

- Identify how and when "first use" controls may be suspended.

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Startup Plan prerequisites may include confirmation of the completion of Pre-start findings from the RA and other specific actions, such as:

- Assignments of Managers to oversight roles have been completed, and the responsible personnel are knowledgeable of their responsibilities

- Pre-operations functional tests are complete or planned as an initial part of the Startup.

- Human Factor considerations tested.

CORE REQUIREMENT 13: The formality and discipline of operations are adequate to conduct work safely and programs are in place to maintain this formality and discipline.

Conduct of Operations program is completely and adequately implemented per the applicability matrix.

- Operating organizations and administration ensures a high level of performance is achieved through effective implementation and control of operations activities:

  o Facility policies describe the philosophy of standards of excellence under which the facility is operated and clear lines of responsibility for normal and emergency conditions are established

  o Effective implementation and control of operational activities are achieved by written standards, periodic monitoring and assessing performance, and holding personnel accountable

- Shift routine and operating practices ensure professional conduct of operations.

- Control area activities are conducted in a manner that achieves safe and reliable facility operations in a professional manner.

- Communications are highly reliable in providing accurate transmission of information.

- Personnel under instruction are carefully supervised and controlled by qualified personnel.

- Abnormal events are thoroughly investigated:

  o Assesses the impact of the event

  o Determines the root cause of the event

  o Determine if the event is reportable

  o Identify corrective actions to prevent recurrence

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- Timely notifications ensure the facility is responsive to public health and safety concerns.

- Facility configuration is maintained and the operating shift knows the status of equipment and system.

    o Equipment and instrument malfunctions are tracked

- Lockout/Tagout program ensures proper energy isolations and includes proper independent verification.

- Independent verification provides a high degree of reliability in ensuring the correct facility operation.

- Key positions maintain proper logs.

- Shift turnovers provide oncoming operators with an accurate picture of the overall facility status.

- Facility chemistry or unique process data and parameters ensure that parameters are properly maintained.

- Required reading ensures that appropriate individuals are made aware of information that is related to job assignments.

- Operations management communicates short-term information and administrative instructions to operations personnel.

- Operator Aid Postings are identified and controlled.

- Facility personnel are able to positively identify equipment they operate through equipment labeling.

__Guiding Principle #7__ - The conditions and requirements to be satisfied for operations to be initiated and conducted are established and agreed upon by NNSA and the contractor. These agreed-upon conditions and requirements are requirements of the contract and are binding on the contractor. The extent of documentation and level of authority for agreement shall be tailored to the complexity and hazards associated with the work and shall be established in a Safety Management System.

CORE REQUIREMENT 14: Formal agreements between the operating contractor and NNSA have been established via the contract or other enforceable mechanism to govern the safe operations of the facility. A systematic review of the facility's conformance to these requirements has been performed. These requirements have been implemented in the facility, or compensatory measures are in place, and were formally agreed to during the period of implementation. The compensatory measures and the implementation period are approved by NNSA.

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- The Contractor Assurance database is current for the FACILITY and reflects any new functional area programs being implemented as a result of the startup or restart.

- S/RID assessment program is established and adequate.

- Order nonconformance and schedules for gaining compliance have been justified and approved.

- Compensatory measures are adequate and in place where nonconformance exist.

CORE REQUIREMENT 15: A feedback and improvement process has been established to identify, evaluate, and resolve deficiencies and recommendations made by oversight groups, official review teams, audit organizations, and the operating contractor.

- The process to identify, evaluate and resolve deficiencies is adequately implemented.

- Management adequately evaluates open issues and verifies that no single open issue or group of issues in aggregate will preclude the start of safe and compliant operations.

- The Corrective Action Planning System (CAPS) is implemented, adequate, and working.

- Lessons learned input evaluated for the startup or restart.

CORE REQUIREMENT 16: The technical and managerial qualifications of those personnel at the DOE field organization and at DOE Headquarters who have been assigned responsibilities for providing direction and guidance to the contractor, including the Facility Representatives, are adequate *(DOE Readiness Review only)*.

CORE REQUIREMENT 17:   The breadth, depth, and results of the responsible contractor Readiness Review are adequate to verify the readiness of hardware, personnel, and management programs for operations *(DOE Operational Readiness Review only)*.

CORE REQUIREMENT 18: DOE operations office oversight programs, such as occurrence reporting, Facility Representative, corrective action, and quality assurance programs, are adequate *(DOE Operational Readiness Review only)*.

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APPENDIX 6-C
Application of the Graded Approach in Review Planning
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For the purposes of attaining operational readiness and confirming that through the review process, the graded approach is defined as the process by which the readiness determination is adjusted in depth of detail required to be evaluated commensurate with the potential impact on safety, environmental compliance, safeguards and security, and its programmatic importance, including present and future mission. The graded approach is commensurate with:

1.   The relative importance to safety, safeguards, and security

2.   The magnitude of any hazard involved

3.   The life cycle stage of a facility

4.   The programmatic mission of the startup or restart

5.   The particular characteristics of the startup or restart

6.   The relative importance of radiological and non-radiological hazards

7.   The cause and circumstances of the shutdown (restarts only)

8.   Complexity of the startup or restart

9.   Other relevant factors

ORRs address the minimum set of Core Requirements plus any additional requirements as deemed necessary for adequate review (breadth). A recent (within the last 6 to 12 months) review may be used as justification for eliminating a Core Requirement from the scope of an ORR. With respect to planning, a graded approach is utilized to determine the level of detail, that is, the depth. The combination of breadth and depth forms the envelope (scope) within which the review is conducted. Proper utilization of the graded approach is essential to conducting a successful review. The supporting principle governing the use of the graded approach must be that knowledgeable personnel analyze the factors surrounding the start or restart, determine the depth of the review needed, and then document this determination. Precise documentation facilitates communication with knowledgeable outside officials that the proper scope of review has been conducted and that readiness to operate has been accurately confirmed.

The depth of a review cannot be determined using a cookbook or formula approach. Depth requirements depend on knowledgeable people identifying relevant topics based on their experience, the characteristics of the startup or restart, the operating environment, the operating and support organizations' capabilities, and the risks associated with the proposed startup or restart. The breadth discussion in the approved plan-of-action should provide a basis for determination of the depth of the review of individual criteria or Core Requirements.

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Criteria and Review Approaches (CRADs) are developed in the Implementation Plan (IP) for each Core Requirement, which specify the level of detail that is appropriate for that area. The following factors and their implications should be considered in developing the depth of the review and should be considered in preparation of the plan-of-action:

- Physical changes to the facility: Any change must be assessed for its potential effect on the startup or restart hazards and risks, on the facility safety basis as documented in the DSA, on facility procedures, on the need for personnel to be trained on the reconfiguration, etc.

  In addition, the integrity of the facility design baseline may need to be validated. This includes confirming that documents are properly identified and retrievable from the records center, construction and start-up tests were properly defined and completed and test deficiencies resolved, drawings have been updated to reflect the as-built configuration, change packages are complete and identified documents updated, procurement records indicate appropriate design specified equipment and components were procured and installed and appropriate vendor records and documents were received and are retrievable, Title III inspections were completed, equipment has been properly labeled, and deficiencies and nonconformance's resolved.

- Procedural changes: Changed or new procedures (including operating, utility, surveillance, etc.) must be reviewed to determine if they have been adequately verified and validated, if the operators have been adequately trained on the modified procedures and are proficient in their use, and if the procedures at the workstations clearly reflect the changes and can be performed as written.

- Personnel changes: Continuity of the operations team must be assessed to determine if significant loss of experienced personnel has occurred and, if so, has been adequately mitigated. Training and qualification of new and reassigned personnel must be verified.

- Length of shutdown: There is a characteristic loss of operator familiarity with normal facility operations that increases with the length of the shutdown. If the shutdown is unusually long, a review and possibly re-qualification of the operators may be necessary. There are also physical processes (e.g., corrosion, radioactive decay, evaporation, etc.) that may become important following an extended outage. The longer the outage and the more complex the activity during the outage, the more rigorous should be the review to identify unanticipated changes.

- Overall hazard characteristics of the startup or restart: The nature of the hazards to safety and the environment associated with the startup or restart are a major component in determining the depth of the review. The depth of a review for a facility that handles small quantities of depleted uranium would not be as complex as one that handles large quantities of enriched uranium.

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- The complexity of the startup or restart: The size and complexity of the startup or restart being reviewed drives the size and complexity of the review. The depth of the review requires that reviewers be able to comprehend and accomplish the criteria provided them. The number of criteria developed is based on the size and complexity of the startup or restart.

- A new startup versus the restart of an existing operation: A new process would involve confirmation of training and qualification of workers and new procedures without any significant reference points available onsite. This would drive the review to be more thorough and comprehensive than the review for one that has a significant experience base onsite or even within the FACILITY.

- The programmatic significance of the subsequent operations: A startup or restart that is intended for long-term programmatic operations would necessarily require a more comprehensive and thorough review in some specific area than would a temporary operation.

- Introduction of new hazards: The proposed startup or restart must be evaluated for potential new hazards. While some new hazards will be obvious, a critical review is needed to identify subtle new hazards introduced by the startup of new processes or changes to existing processes. Changes made to improve operations in one aspect may unexpectedly introduce hazards in a different area.

- Increase in existing hazards or risk: Changes to the facility, personnel, or procedures must be evaluated for their potential to increase the hazard level (i.e., by increasing the inventories of hazardous materials) or the hazard potential (i.e., by introducing a new mechanism for the release of hazardous materials).

- Operating history of the facility: The record of operational reliability, (e.g., reliability during most recent operation), may identify issues to be addressed in the proposed review. Additionally, the nature of the startup or restart transition to standby or shutdown status needs to be considered. A shutdown resulting from systemic safety concerns may require greater review depth than would a shutdown in response to an individual safety concern.

- Confidence in site-wide functional programs: Even if the proposed startup or restart does not directly involve changes to site functional programs (e.g., emergency preparedness, site fire response, environmental monitoring, security plans, etc.), it may be prudent to evaluate these in a review unless recent reviews have shown them to be acceptable. A Startup or restart maybe problematic within a significantly flawed site infrastructure. Conversely, a strong record of implementing management requirements, (e.g., Conduct of Operations would allow for a justifiable reduction in depth in that area in the review).

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- Issues raised through other internal or external reviews: The review may need to confirm that previously raised issues have been adequately addressed. These issues may be specific to the startup or restart or they may relate to the site infrastructure within which the startup or restart will operate. The experiences in implementing the corrective actions and lessons learned may also provide a valuable perspective for determining the depth of the review. **(Caution must be exercised in utilizing previous reviews as justification for eliminating a topic or limiting the breadth of review.)** The adequacy of any previous review to be used in this manner should be equivalent.

- DOE Order 425.1 requires that reviews document lessons learned. Such lessons may assist in determining the depth of the review. Previous reviews may highlight issues to be considered or may provide the justification for doing a less detailed review if recent reviews and restart experience can be cited.

- Extent to which the startup or restart has been evaluated or operated using the standards and level of excellence being used in the review. In applying the graded approach, the extent to which the startup or restart has utilized or been evaluated against the current nuclear safety standards should be considered. One that has operated successfully using the DOE nuclear safety standards may require a less extensive review depth.