Revision 2

PPA AP-907-001
Procedure Process Description

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PPA AP-907-001, Revision 2, Procedure Process Description

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Approved By Bruce Mills, PPA Chairman

Notice

Revision Summary
Rev 2 - In 2012, PPA chartered a sub-committee to develop a risk based set of Performance Measures for procedure programs. The resulting Performance Measures were presented to the PPA membership during the 2013 PPA Symposium and a number of members have adopted them within their procedure programs. With Revision 2 of this standard, these Performance Measures are incorporated into the PPA Procedure Standards as an important element of a sound procedure program. PPA AP-907-001-001, Procedure Performance Metrics, is published in conjunction with Revision 2 of this standard and referenced herein. Additional minor changes were made to align this standard with Department of Energy (DOE) document needs in support of cancellation of DOE-STD-1029-92. DOE adopted PPA AP-907-001 and PPA AP-907-005 as the writing standards for DOE in conjunction with cancellation of DOE-STD-1029-92 in July of 2015 In Attachment 2 - Error traps have been updated and descriptions are added for all the error traps.
Rev 1 - In 2010, the Procedure Professionals Association (PPA) assumed ownership and maintenance responsibilities for AP-907-001, Procedure Process Description, and AP-907-005, Procedure Writers' Manual. PPA is an industry working group for procedure related interests and is composed of subject matter experts from the U.S. commercial nuclear field, the U.S. Department of Energy, and other similar business interests. PPA is an open forum for procedure related issues and accepts membership from a variety of business entities. In November 2010, PPA formed a standards committee and commenced work on a revision to AP-907-001 and AP-907-005. These revisions were completed and published in August 2011.
Rev 0 - In March 2005, at the direction of the Nuclear Information Management Strategic Leadership (NIMSL) steering committee, an Institute of Nuclear Power Operations (INPO) Community of Practice (CoP), an industry task force was chartered to address the broader scope of the procedure process through the development of an industry process description. This task force was composed of representatives from the NIMSL CoP and industry subject matter experts.

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ATTACHMENTS

1.0 PURPOSE

1. The purpose of this procedure process description is to provide a standard process for creating and altering procedures.

2.0 SCOPE

1. This document is intended to be used by facility owners and operators to assess their organization's management of the procedure process as defined in the Electric Utility Cost Group (EUCG) Standard Nuclear Performance Model. This process description establishes a baseline for consistent procedure activities.

2. This document is also intended to be used as a tool for performing effective self assessments and benchmarking. An effective process description enables standardized comparisons to be made and provides a basis for improvement suggestions.

3. Performance Measures are an important element of a procedure program and are discussed in PPA AP-907-001-001, Procedure Program Measures.

3.0 DEFINITIONS

1. **Administrative Procedure:** A document that specifies requirements and actions necessary to implement a program or process (definition of Procedure provides additional details).

2. **Alteration:** A generic term used to describe types of activities that modify approved procedures.

3. **Approval Authority:** The individual, by organizational title, designated in writing to approve procedures.

4. **Backlog:** Total quantity of uniquely identified procedure change requests (PCR) within a single tracking system.

5. **Bases:** The source of information for or the rationale behind procedure steps or sequence of steps.

6. **Change of Intent:** A procedure alteration that modifies what is accomplished by the procedure or changes the method by which processes are performed in a manner that may have safety significance.

7. **Change Management:** The application of tools and techniques that promote the successful initiation, planning, communication, implementation, and evaluation of change.

8. **Comments:** Feedback provided to the procedure writer during the procedure review process.

9. **Commitment:** Requirements that are uniquely identified to ensure future alterations do not inadvertently remove the requirement. Source Requirement is the DOE equivalent term for Commitment.

10. **Continuous Improvement:** The ongoing betterment of a process based on constant measurement and analysis of results produced by the process and use of that analysis to modify the process. Continuous improvement includes the act of monitoring and measuring processes and products against policies, objectives, and requirements for the product and reporting the results as well as taking the appropriate actions to make the necessary adjustments to improve the processes and products.

11. **Cross Discipline Review:** A review conducted by knowledgeable personnel in organizations affected by the procedure to verify functional and technical adequacy of those portions of the procedure that describe the process directly controlled by the affected organizations. This review also includes the potential impact on any other applicable controlled documents under the ownership of the affected organization.

12. **Editorial Correction:** Alteration of the procedure which maintains the original intent and does not change the technical content of the procedure.

13. **Effective Date:** The date that an approved procedure can be used to perform a task.

14. **Electric Utility Cost Group (EUCG):** A global association of energy and electric utility professionals that meets semiannually to discuss current and emerging industry issues, share best practices, and exchange data for benchmarking purposes.

15. **Error Trap:** Procedure format or content that challenges the users' ability to successfully perform a task.

16. **Human Performance:** The system of processes, values, behaviors, and their ultimate results that determine performance.

17. **Immediate Change:** A procedure alteration which typically involves a stop work situation or business need of the facility that requires an immediate change to the procedure.

18. **Information Management:** The activities and costs that comprise the formal process by which information important to the business is generated, revised, received, stored, retrieved, distributed, and destroyed.

19. **Institute of Nuclear Power Operations (INPO):** An organization created by the U.S. nuclear electric industry in 1979 to promote the highest levels of safety, reliability, and excellence in the operation of nuclear electric generating plants. All U.S. organizations that operate commercial nuclear power plants are INPO members. Nuclear operating organizations in other countries and nuclear steam supply system, architect/engineering, and construction firms are INPO participants.

20. **Issuance Date:** The date that an approved procedure can be used to perform a task.

21. **Level of Detail:** The technical detail necessary within a procedure step to successfully interface the individual user's knowledge to the technology being manipulated or task being performed.

22. **Level of Use:** A procedure classification that designates the minimum requirements for procedure use during an activity. The following levels of use are described in INPO 11-003, Guideline for Excellence in Procedure and Work Instruction Use and Adherence.

    a. **Continuous Use:** Required for complex or infrequent work activities for which the consequences of an improper action could have an immediate, possibly irreversible adverse impact on safety, production, or reliability. Each step is read before that step is performed.

    b. **Information Use:** Allowed for activities, usually administrative in nature, that do not involve direct contact with plant equipment, are performed frequently, have no immediate consequences if performed improperly, and are within the knowledge and skills of experienced individuals. The user may complete the task from memory; however, the user is responsible for performing the activity per the procedure.

    c. **Multiple Use:** Procedures in which sections or subsections are designated as different levels of use.

    d. **Reference Use:** Allowed for activities for which the consequences of an improper action are not immediate and are not irreversible. The procedure is referred to at least once and as often as required to complete the task per the requirements.

23. **Limited Use:** An alteration of a procedure that is valid only for the job package being worked or a specified period of time.

24. **Major Revision:** An alteration, based on the scope and complexity, that requires full and rigorous reviews.

25. **Minor Revision.** An alteration, based on the scope and complexity, for which limited reviews are appropriate.

26. **New Procedure:** A task that is not currently addressed in any existing procedure and is assigned a unique identifier.

27. **Nuclear Energy Institute (NEI):** The policy organization of the U.S. nuclear energy and technologies industry and participates in both the national and global policy-making process. NEI's objective is to ensure the formation of policies that promote the beneficial uses of nuclear energy and technologies in the United States and around the world.

28. **Nuclear Regulatory Commission (NRC):** An independent agency created by Congress in 1974 to enable the nation to safely use radioactive materials for beneficial civilian purposes while ensuring that people and the environment are protected. The NRC regulates commercial nuclear power plants and other uses of nuclear materials, such as in nuclear medicine, through licensing, inspection, and enforcement of its requirements.

29. **Onsite Safety Review Committee:** Standing committee for the review of items which may affect the safety of the facility.[Section 5.0 Reference 15]

30. **Operating Experience Review:** Use of internal and industry operating experience and lessons learned to make organizational improvements.

31. **Performance Measure:** Standards of measurement by which efficiency, performance, progress, or quality of a plan, process, or product can be assessed. Refer to PPA AP-907-001-001, Procedure Performance Metrics, for additional information.

32. **Procedure:** A controlled document designed to improve human performance by clearly providing the purpose, specific intent, and sequenced direction for an activity or process.

33. **Procedure Alteration Package:** The information generated for obtaining required reviews and approval for a new or altered procedure.

34. **Procedure Change Request (PCR):** A request to alter or develop a procedure (includes technical and administrative procedures).

35. **Procedure Owner:** The organizational position holder accountable for the integrity of the procedure throughout its life-cycle.

36. **Procedure Reviewer:** A knowledgeable individual to perform a specific type of procedure review.

37. **Procedure Writer:** The author or major contributor assigned to develop or alter a procedure. The procedure writer is responsible for the accuracy and usability of the revised portion of the procedure, its impact on the unrevised portion, and any other controlled documents. This individual is also responsible for developing a procedure alteration package, determining required reviews, and coordinating comment resolution for the alteration.

38. **Process:** A sequence of behaviors or series of steps designed to produce a product or service in a predictable, repeatable fashion.

39. **Process Owner:** The individual who coordinates the various functions and work activities at all levels of a process, regardless of the functional organizations involved. Process owners have the resource control and job skills to evaluate overall process operation and to evaluate potential process improvements. They design and manage the process end to end so as to ensure optimal overall performance. Process owners are responsible for ensuring the total process is both effective and efficient, and appropriate performance measures are in place to measure the process accordingly and ensure performance is continually improved.

40. **References:** Information used to develop the procedure content and support the requirements established within a procedure.

41. **Regulatory Requirement:** A federal, state, or local obligation that shall be met.

42. **Requestor:** Any person who identifies the need for a new procedures or a change to a procedure.

43. **Review:** A critical evaluation of a procedure alteration package.

44. **Source Requirement:** See definition for 'Commitment'. Source Requirement is the DOE equivalent term for Commitment.

45. **Stakeholder:** An individual representing a business area that could be affected by the proposed change such that it may alter their behavior or processes as a result of a specified change. Stakeholders are in a position to provide the necessary input ensuring the final outcome meets required standards.

46. **Standard Nuclear Performance Model (SNPM):** An industry guiding document that is the result of a six year effort by NEI, INPO, and EUCG. This model includes all INPO and NEI process descriptions, an aligned set of activity-based costing definitions for use in submission of cost data to the EUCG, and an aligned set of key performance indicators consistent with INPO guidance and supported by industry process owners known as Communities of Practice.

47. **Subject Matter Expert (SME):** An individual that, by education, training and experience, is recognized as an expert on a particular system or subject.

48. **Tacit Knowledge:** Undocumented knowledge.

49. **Technical Procedure:** A document that outlines a series of steps for the operation, maintenance, or testing of a structure, system, or component. (definition of Procedure provides additional details).

50. **Technical Review:** A review of the technical requirements and adequacy of a procedure.

51. **Template:** A writers' manual tool that determines the basic structure for a document and may contain document settings such as AutoText entries, fonts, key assignments, macros, menus, page layout, special formatting, and styles.

52. **Validation:** The process of exercising procedures to ensure that they are useable, the language and level of information is appropriate for the individuals for whom they are intended, and the procedures will function as intended.

53. **Verification:** The process of checking that procedures are technically correct, there is a correspondence between the procedures and the hardware, and the procedures accurately adhere to the guidance found in the writers' manual.

54. **Writers' Manual:** A controlled document that provides direction for the format, human factoring, and content of procedures.

4.0 INSTRUCTIONS

4.1 Evaluate Request for New or Altered Procedure

4.1.1 Process Summary

1. A procedure change request (PCR) is received and placed into a single tracking system along with a minimal set of attributes which uniquely identify the request.

2. A general review of the technical and administrative aspects of the request determines the validity and priority along with a review of impact on other procedures.

3. Feedback on the request is provided to the submitter.

4.1.2 Receive Request

1. When a PCR is received, it is placed into a single tracking system and assigned a unique number.

2. This tracking system includes a minimal set of attributes for each PCR, including the following:

    - Procedure number
    - Clear description of the issue
    - Date issue identified
    - User or contact identification

4.1.3 Perform Initial Screening

1. Once the PCR and associated attributes are entered into the single tracking system, the technical and administrative aspects of the request are reviewed to determine if the request is reasonable and appropriate.

    a. If the PCR is determined to be reasonable and appropriate, then it is evaluated further.

    b. If the PCR is determined not to be reasonable or appropriate, then it is rejected.

2. The procedure writer provides feedback on the status of the PCR to the requestor.

4.1.4 Evaluate Request

1. The screened PCR is evaluated and either accepted or rejected.

    a. If accepted, then status the PCR as such in the single tracking system.

    b. If rejected, then close the PCR in the single tracking system or refer to another group for consideration and input.

2. The following are potential reasons for rejecting a request:

   - Cost versus benefit
   - Risk versus benefit
   - Duplicate request
   - Technically incorrect
   - Format changes without human performance benefit
   - Personal preference alterations with insufficient management approval
   - Training issue
   - Individual accountability issue
   - Non-procedural issue (refer to Attachment 1, Procedure Decision Tree)

3. The evaluation also addresses the impact of the proposed alteration on other procedures.

4. Feedback on the status of the PCR is provided to the requestor.

4.1.5 Determine Priority

1. Key attributes of the accepted PCR are evaluated to determine the risk and importance that the request presents to the facility. Some key attributes include the following:

   - Stop work issue
   - Reactivity issue
   - Safety issue
   - Potential for a direct impact on generation
   - Regulatory requirement
   - Next scheduled use of the procedure
   - Production or generation outage activity
   - Engineering change request related activity

2. Once risk and importance have been determined, scheduling is considered and the appropriate priority is assigned. Typical priorities include the following:

   - Technically incorrect such that the procedure must be revised to complete the task
   - Enhancement that provides additional level of detail to preclude a condition adverse to quality
   - Enhancement that is not adverse to quality
   - Editorial correction

4.2 Plan Procedure Development

4.2.1 Process Summary

1. The appropriate procedures to be revised are selected by reviewing the backlog and evaluating task priority, quantity, and other commitments.
2. The type of change and appropriate work flow are based on the technical level of request.
3. The task is then assigned to a procedure writer.

4.2.2 Evaluate Backlog and Select Next Priority Tasks

1. Outstanding PCRs (backlog) are reviewed by priority, age, and the total number of PCRs per procedure.
2. Outstanding PCRs are also reviewed for other considerations such as the following:

   - Outage goals
   - Management expectations
   - Cultural inputs

3. The total number of PCRs against an individual procedure is also considered as it may be general indicator of overall procedure quality.
4. Based on the review of outstanding PCRs, the appropriate procedures are selected for alteration.

4.2.3 Determine Workflow

1. Based on the technical level of all planned alterations, time available to process the alteration, and duration of the alteration, the appropriate workflow is determined.

2. Typical workflows include the following:

   - New procedure or major revision
   - Minor revision
   - Editorial correction

3. Variations on these workflows may include but are not limited to the following:

   - An immediate change typically involves a stop work situation or business need that requires an immediate change to the procedure.
   - A limited use change is only valid for the job package being worked or a specified period of time.

4. Use of the major revision process is considered for:

   - Changes of intent
   - Change in methodology
   - Majority of steps altered
   - Time since the last major revision

4.2.4 Assign Work

1. Once the workflow type is determined, the task is assigned to a procedure writer.

4.3 Research Request and Develop Procedure Draft

4.3.1 Process Summary

1. The assigned procedure writer (hereafter called writer) assembles a procedure alteration package. The alteration package includes the procedure alteration and relevant documents (e.g., copy of the procedures, procedure approval documentation, procedure review documentation, regulatory compliance documentation, incorporated procedure change requests, revised forms, bases documents, and commitment documents). Other items to include could be checklists or guides for performing required procedure reviews.

2. The writer validates the scope of the assigned work.

3. The writer determines the change to the procedure by reviewing:

   - Applicable operating experience
   - Outstanding issues
   - References
   - Human performance challenges
   - Technical content

4. The writer then develops the detailed draft of the procedure using the correct template and the writers' manual.

4.3.2 Validate Scope

1. The writer begins to assemble a procedure alteration package and performs the following actions, depending upon the workflow, to validate the assigned task.

2. At this point, a questioning attitude is essential.

   a. Verify type of workflow to be followed.

   b. Determine appropriate level of use.

   c. Review plan with procedure owner and requestor to ensure issues are being addressed.

   d. Review material with the Subject Matter Expert (SME) and appropriate stakeholders (e.g., licensing, engineering, safety analysis, training).

3. The writer identifies the following change management needs:

   - Impact on other documents (e.g., design basis documents, other procedures)
   - Impact to other processes (e.g., work management, design change)
   - Impact on training
   - Appropriate due date

4.3.3 Identify Applicable Internal and External Operating Experience

1. The writer reviews applicable operating experience that addresses issues related to the validated procedure alteration task. This includes the following actions:

    - Searching external databases for related issues (e.g., INPO, WANO, NRC)
    - Searching internal resources for related issues (e.g., Corrective Action Program, post-job critiques, tacit knowledge, self assessments, benchmarking)
    - Identifying applicable operating experience

2. To be effective, the writer's review considers not only the event but the error-likely situation and its precursors for applicability.

    - Carefully reviewed operating experience can be used to identify error precursors and their associated organizational weaknesses.
    - This review can take the form of a facilitated discussion of operating event precursors, flawed defenses, and the use of jobsite tools to prevent the event.
    - Any gaps indicate a need for modified or additional tools.

4.3.4 Evaluate Outstanding Issues

1. The writer evaluates outstanding issues related to the procedure and determines if they should be incorporated into the alteration. This includes the following actions:

    - Reviewing open PCRs
    - Reviewing the procedure to determine compliance with the writers' manual and other administrative changes
    - Evaluating other work in process on this procedure (e.g., pending licensing amendments, modifications)

4.3.5 Verify References

1. The writer verifies existing references are current and the references for this alteration are correct.

4.3.6 Determine Technical Content

1. The writer determines the technical content to be incorporated into the procedure. Depending upon the extent of the alteration, the writer should identify the following when developing this content:

   - Performance objectives
   - Necessary activities
   - Level of detail (PPA AP-907-005, Procedure Writer's Manual provides additional guidance)
   - Need to define and refine processes
   - Interfaces with other processes and work groups
   - Impact of potential critical steps
   - Control points (e.g., quality, health physics, engineering, supervisory)
   - Expected plant responses, including effects on reactivity and nuclear safety
   - Configuration management and equipment status control requirements (e.g., independent verification of as-left positions)
   - Job hazards from radiological and industrial safety points of view, including consideration of any special precautions and personnel protective equipment
   - Special methods of communication
   - The environment and location where the work will be performed
   - Unique procedure use and adherence requirements (e.g., working out of sequence, wavier of placekeeping, use of not applicable)
   - Unique management controls (refer to INPO SOER 91-01 which describes application of such controls during high risk and infrequently performed activities)
   - When addressing level of detail, the writer takes into account the level of detail considerations described in PPA AP-907-005, Procedure Writer's Manual.

2. If incorporating a new methodology or creating a new procedure, then the writer considers the need for a task analysis and process flow map.

4.3.7 Evaluate Human Performance Challenges

1. The writer identifies and develops defenses to human performance challenges, including the identification of latent weaknesses and potential error traps such as those listed in Attachment 2, Error Traps.

2. The writer considers that administrative and technical procedures have different purposes and thus contain different error potentials.

    a. Administrative procedures have the potential to contain embedded latent organizational weaknesses. These weaknesses may be difficult to identify from a cursory glance and may require an extensive evaluation of the procedure's intent and content.

    b. Technical procedures direct activities at the man-machine interface. As such, they can directly impact human performance, and are more susceptible to error traps.

4.3.8 Develop Detailed Draft

1. From the information gathered in the previous steps, the writer creates a draft that will be used for the review process. In doing so, the writer performs the following actions:

    a. Determine the correct template based on hardware, software, the type of procedure being altered, and the type of alteration being made.

    b. Comply with the writers' manual (e.g., procedure numbering, organization, format, writing style).

    c. Update bases and references, if applicable.

    d. Assemble a procedure alteration package that includes the draft procedure, description of changes, and supporting documentation.

    e. Perform a self-check to ensure quality of the drafted procedure alteration.

4.3.9 Requestor Evaluate Draft

1. The writer provides the requestor a draft of the procedure and the opportunity to provide feedback on the proposed changes.

2. The writer addresses any feedback from the requestor before proceeding.

4.4 Review Procedure Draft

4.4.1 Process Summary

1. The writer determines the appropriate review(s) for the procedure change and routes it accordingly.

2. The writer makes a determination as to which reviews are in series and which may be performed in parallel.

3. The reviewers perform these reviews and provide documented comments.

4. The writer ensures that comments are resolved.

5. To ensure usability, the writer considers whether validation by a user or team of users is warranted.

4.4.2 Determine Appropriate Reviews

1. The writer recommends the appropriate reviews to be implemented for the procedure alteration, gains concurrence, and routes accordingly.

    a. This recommendation considers which reviews are to occur in series and which may be performed in parallel.

b. The following table lists possible reviews that may be required, depending upon the extent and type of alteration. This list is not all-inclusive.

Procedure Reviews	Workflow Type			
	Major and Limited	**Minor**	**Editorial**	**Immediate**
Independent Technical Review	R	O	O	R
10 CFR 50.59 and Design Basis Documentation (license compliance review including - EQ, UFSAR, Tech Spec, flooding, facility license renewal, heavy loads, instrumentation impact (NRC Reg. Guide 1.97), NRC Reg. Guide 1.33, 10 CFR 50 Appendix B, 10 CFR 50 Appendix R, etc.)	R	R	NA	R
Writers' Manual (provides for procedure use and adherence alignment [NRC Inspection Manual Part 42700 - Plant Procedures, Appendix A])	R	O	O	NA
10 CFR 72.48 and Design Basis Documentation	PS	PS	NA	O
Emergency Plan	PS	PS	NA	O
Environmental Compliance	PS	PS	NA	O
Security	PS	PS	NA	O
Industrial Safety	PS	PS	NA	O
Cross Discipline (ALARA, health physics, chemistry, engineering, etc.)	O	O	O	O
Probabilistic Risk Assessment and Maintenance Rule	PS	PS	NA	O
Operational Risk	PS	PS	NA	O
Reactivity Management	PS	PS	NA	O
Training	PS	PS	NA	O
Table legend: R - Required PS - Prescreen O - Optional NA - Not Applicable				

4.4.3 Perform Reviews

1. The designated reviewers perform a review of the drafted procedure alteration and provide comments to the writer in such a manner that it can be tracked for resolution and verification.

   - Reviewers are to be knowledgeable of the information being reviewed.
   - Independent technical reviews are performed by persons not involved in authoring the change.

4.4.4 Resolve Review Comments

1. The writer ensures that comments are resolved by performing the following:

    a. Ensure sufficient reviews are obtained and comments incorporated, as appropriate.

        (1) Independent and thorough reviews are critical to ensure a quality product.

        (2) Significant changes incorporated during the review process may require the procedure be re-routed or additional reviews be obtained.

        (3) If problems occur during the review process indicating lack of or poor quality responses, then the writer should stop further processing of the procedure and escalate the issue to higher management.

2. The writer provides comment resolution to reviewers.

3. If a comment cannot be resolved, then the writer escalates the issue to higher management.

4.4.5 Validate Procedure

1. A user or team of users performs a validation of the following procedure alterations:

    - New procedures
    - Technical procedures that are going through extensive change or revision
    - Support procedures for Emergency and Abnormal Operating Procedures

2. Typical validation methods include the following:

    - Performance on a mock-up or spare equipment
    - Simulator scenario
    - Walkthrough
    - Comparison
    - Table top

4.5 Approve Procedure

4.5.1 Process Summary

1. The writer ensures:
   - The procedure is ready for approval
   - The procedure owner is identified
   - The applicable reviews were obtained and properly documented
2. The writer submits the procedure for approval.
3. Procedures that impact nuclear safety may require review by the facility onsite safety review process.
4. The designated approval authority then approves the procedure.

4.5.2 Ensure Procedure is Ready for Approval

1. The writer ensures that review and comment resolution have been successfully completed and prepares a procedure approval package, including the updated procedure draft, description of alterations, and supporting documentation. In doing so, the writer ensures completion of the following actions, when applicable:
   - Concurrence has been obtained (includes cross-discipline concurrence when another work group is affected or involved in performing the process or procedure)
   - Procedure is in proper format, (e.g., revision number is correct, page numbering correct)
   - Owner of the process or procedure is identified
   - Verification and validation are satisfactory
   - Procedure alteration package documentation is complete
   - Controlled computer files are updated with the latest version of the draft

4.5.3 Determine if Onsite Safety Review is Required

1. Using facility specific guidance, the writer determines if an onsite safety review is required for procedures that impact nuclear safety.

4.5.4 Obtain Onsite Safety Review

1. If the procedure alteration requires review by the onsite safety review committee, this committee uses a deterministic process to ensure that procedure alterations have not compromised nuclear safety.

4.5.5 Obtain Final Approval

1. Once all necessary reviews have occurred, the procedure is approved by the designated approval authority or designee having responsibility for implementing the procedure.

    a. Speed and simplicity of procedure approval are essential.

    b. Appropriate approvals are necessary; however, multiple approvals dilute accountability and should be avoided.

4.6 Finalize and Implement Change Management Plan

4.6.1 Process Summary

1. While change management should be considered throughout the procedure process, the change management plan may not be finalized and the implementation tools put into place until the procedure change is approved.

2. The resulting change management plan helps ensure a successful transition from the current state to a desired future state.

4.6.2 Evaluate Need for Change Management

1. While change management should be considered throughout the procedure process, this step ensures that change management is evaluated.

2. A change management plan is considered when the procedure change:

    - Affects training (tools and personnel qualifications)
    - Impacts other departments or facilities
    - Impacts scheduled work
    - Impacts routinely used work products or services (e.g., forms, software applications, databases)
    - Involves a new procedure or limited use procedure change
    - Involves a safety significant, high risk, or complex task [Section 5.0 Reference 11]

4.6.3 Develop Final Change Management Plan

1. The following are considered as the change management plan is developed:

    - Description of the alteration and the stakeholder impacts
    - Implementation schedule
    - Training needs
    - Effective date
    - Expiration date for limited use changes or infrequently performed procedures
    - Bases document update (e.g., drawings, Technical Specifications, Final Safety Analysis Report)
    - Coordination of alterations to related procedures
    - Transition plans for products or services that are started under the old procedure but will be completed under the new one
    - Completion of equipment modifications and changes
    - Special tools, aids, permits, and other items
    - Communication plan

2. Appropriate change management implementation tools are identified and developed.

3. Stakeholder concurrence is obtained and the change management plan is adjusted as necessary for specific stakeholder requirements.

4. Work assignments to implement the change management plan are also made (e.g., training, line organizations).

4.6.4 Implement Change Management Plan

1. The change management plan is implemented according to the previously developed implementation schedule and milestones are tracked to completion.

2. Implementation feedback is factored into any necessary adjustments to the change management plan.

4.7 Issue Procedure for Use

4.7.1 Process Summary

1. Depending on the needs of the facility, a procedure may be approved and staged in advance of its intended effective date.

2. Once approved, the procedure may be submitted for issuance and distribution with an immediate or delayed effective date.

3. The effective date is based on completion of key change management activities.

4.7.2 Authorize Issuance

1. Once the procedure alteration package and implementation plan are approved, the procedure alteration package is prepared and authorized for issuance. This includes the following actions:

    a. Determine effective date.

    b. Release procedure alteration for use.

4.7.3 Submit for Issuance

1. Once the procedure alteration is authorized for issuance, the following actions are performed:

    a. Submit approved procedure for issuance.

    b. Transfer completed procedure alteration package to the document management process.

    c. Disposition completed change request(s).

    d. Provide feedback to the original requestor(s).

5.0 REFERENCES AND COMMITMENTS

1. 10 CFR 50 Appendix B, Quality Assurance Criteria for Nuclear Power Plants and Fuel Reprocessing Plants

2. 10 CRF 71.113, Document Control

3. 10 CFR 73.55.B.3.1, Requirements for Physical Protection of Licensed Activities in Nuclear Power Reactors Against Radiological Sabotage

4. ANSI N18.7-1976/ANS-3.2, Administrative Controls and Quality Assurance for the Operational Phase of Nuclear Power Plants

5. IAEA TECDOC-1058, Good Practices with Respect to the Development and Use of Nuclear Plant Procedures

6. INPO 85-026, Writing Guideline for Maintenance, Test, and Calibration Procedures

7. INPO 01-002, Guidelines for the Conduct of Operations at Nuclear Power Stations

8. INPO 06-002, Human Performance Tools for Workers

9. INPO 11-003, Guideline for Excellence in Procedure and Work Instruction Use and Adherence

10. INPO SOER 91-1, Conduct of Infrequently Performed Tests or Evolutions

11. INPO SOER 92-1, Reducing the Occurrence of Plant Events Through Improved Human Performance

12. NEI AP-907, Information Management Process Description and Guideline

13. NEI/EUCG TASK Force Report, Standard Nuclear Performance Model – a Process Management Approach, Revision 4

14. NRC Generic Letter 83-28 and Supplement, Required Actions Based On Generic Implications of Salem Anticipated Transient Without Scram Events

15. NRC Regulatory Guide 1.33, Quality Assurance Program Requirements (Operation)

16. NSAC-105, Guidelines for Design and Procedure Changes in Nuclear Power Plants

17. NUREG-0737, Post TMI-Requirements

18. NUREG-1358, Lessons Learned from the Special Inspection Program for Emergency Operating Procedures

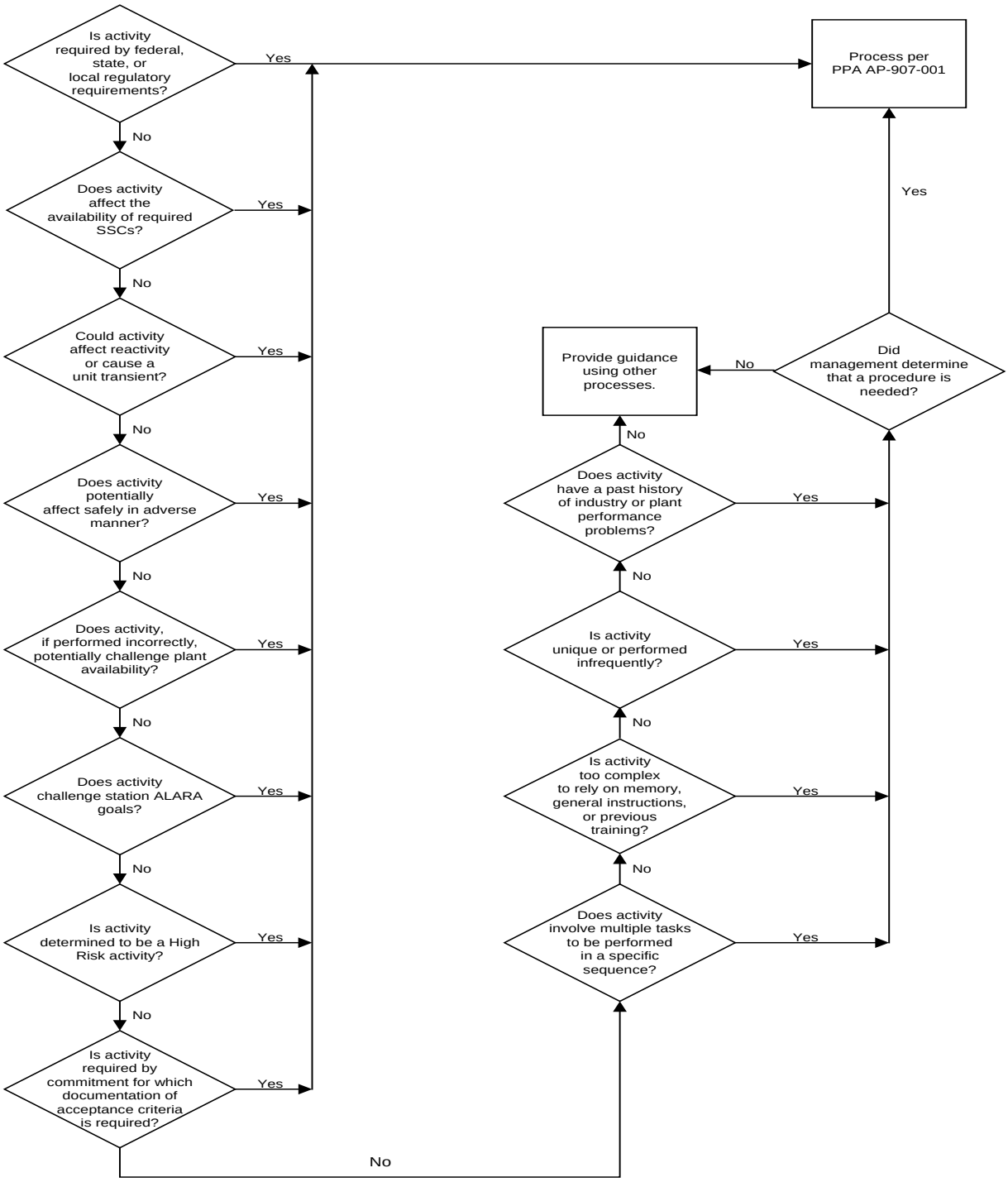
19. NUREG/CR-1369, Procedure Evaluation Checklist for Maintenance, Test, and Calibration Procedures

20. NUREG/CR-3817, Development, Use, and Control of Maintenance Procedures in Nuclear Power Plants: Problems and Recommendations

21. NUREG/CR-3968, Study of Operating Procedures in Nuclear Power Plants: Practices and Problems

22. NUREG/CR-4613, Evaluation of Nuclear Power Plant Operating Procedures Classifications and Interfaces

Procedure Decision Tree



Error Traps

	Error Trap	Description
1.	In-field decisions without clear guidance	Terms such as **IF** necessary and **IF** applicable shift the worker to the knowledge-based performance mode and a higher error rate. Instead, provide sufficient detail to support consistently good decisions.
2.	Excessive in-field decisions	Too many well-written decisions can fatigue and confuse the worker, resulting in error. This is usually the result of too much job scope or poor document design.
3.	Decisions without conditional step structure	Atypical or inconsistently written conditional steps can inhibit proper decision making. Always use a conditional structure (e.g., **IF**…**THEN**, **WHEN**…**THEN**) when making a decision.
4.	Vague steps or steps missing critical detail	Vague steps or inadequate detail can put the worker in knowledge-based performance mode with its corresponding high error rate. Overall, the level of detail should be suitable for an inexperienced, qualified user with no direct supervision. This includes the necessary detail to successfully implement steps that are contrary to normal convention (e.g., left-handed threads).
5.	Multiple actions in the same step	Including more than one action in the same step increases the probability that the worker will miss the additional action(s). Steps with one action verb and two objects affecting configuration are also an error trap. However, two actions in one step are acceptable if they are functionally related and HAVE to be performed simultaneously to obtain a single result. Unrelated actions are never acceptable.
6.	Atypical action steps	Action steps not written as short active voice imperative sentences can be difficult to understand and consistently implement. The use of passive voice is especially problematic.
7.	Negative statements	Negative statements in action steps and conditional logic can be difficult to understand and implement. Double negatives are especially problematic. Also, they can result in knowledge-based errors when a worker attempts to determine the possible positive responses. Whenever possible, use positive statements.
8.	Inadequate defense-in-depth, termination criteria not specified	Ensure risk is understood and appropriate defenses are established. Plan for both success and possible failure – what if the desired results are not obtained?
9.	Actions or acceptance criteria in Precautions, Limitations, notes, cautions, and warnings	Embedding actions or acceptance criteria in content not normally having this information increases the probability of actions being missed. Precautions, Limitations, notes, cautions, and warnings NEVER have actions, explicit or implicit.
10.	Excessive branching and referencing	Branching and referencing is an administrative burden for the worker that might lead to error if used excessively.
11.	Inappropriate use of verifications	Low value verifications can dilute the meaning and importance of the more important ones. There should be a regulatory, risk, or performance based reason for every verification.
12.	Complex calculations without verification	Experience has shown that complex calculations should be separately verified by a second person so that any errors are caught before they affect the asset.

Error Traps

13.	Excessive physical challenges	The selected components or sequence of steps may not be the most convenient or practical for the worker. What looks good on a diagram or at a desk may not look so appealing at the job site. Use validation to flesh out any issues.
14.	Inconsistent placekeeping methods	A consistently applied placekeeping standard should be used for both Continuous Use and Reference Use documents. In turn, design each document to support this standard, including the choice to use initial blanks or checkboxes.
15.	Time constraints	Avoid any words that could unnecessarily cause perceived time pressure. If time is of the essence (e.g., regulatory limit, time critical operator action), clearly communicate both the reason for the time constraint and the method for meeting it. Use validation to ensure that the time limit can easily be met.
16.	Atypical terms	Using slang, uncommon words, or two different words to mean the same thing can make the document harder to understand, which can lead to error. Consistency in writing and terminology is key to success.
17.	Inconsistent format, layout, and writing style	Inconsistent format, layout, or writing style is a user and writer burden and a precursor for error. In particular, a proper and consistent use of attributes such as fonts, emphasis, step numbering, association, abbreviations, acronyms, numbers, and action verbs have been proven to reduce error.
18.	Non-value added information in Precautions, Prerequisites, notes, cautions, warnings, and steps	The cumulative effect of including boiler plate and redundant technical and administrative information in a document results in what is called bloat. Workers tend to just skim this information and can miss important task-specific details. A better, more sustainable solution is to use worker pre-job checklists.

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Revision 0

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