

PROJECT
INSTRUCTION

Sargent & Lundy

INSTRUCTION PI-MP3-05
REV. 1

Client: Northeast Utilities

Station: Millstone Unit 3

Title: **PHYSICAL PLANT CONFIGURATION WALKDOWNS**

Safety-Related

Non-Safety-Related

Reviewed By:

Approved By:


System Lead	Programmatic Lead	O&M Lead	Accident Mitigation Lead	QA Engineer	Internal Review Committee Chairman	Verification Team Manager
<i>AD Reis</i>	<i>J. Ryan</i>	<i>R. Evans</i>	<i>P. Nichols</i>	<i>L. ...</i>	<i>A. ...</i>	Date: <u>4-28-97</u> <i>[Signature]</i>

Description

Rev. 1

Revised PI to:

- Clarify scope of Phase 2 dimensional checks.
- Clarify scope of upper tier vs. lower tier drawing review.
- Clarify CRG responsibilities regarding identification of system boundary.
- Clarify SRG/CRG scope regarding identification of modification packages to be included in the walkdown scope.


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1.0 PURPOSE

This instruction establishes the requirements for conducting physical walkdowns of the systems included in the scope of the Independent Corrective Action Verification Program. The scope includes Phase 1 - System Functional Walkdowns and Phase 2 - Detailed Walkdowns of Modification Implemented After Receipt of Operating License.

2.0 REFERENCE

- 2.1 NRC Inspection Manual Procedure 93801, Safety System Functional Inspection
- 2.2 NRC Oversight Inspection Plan for the Millstone Independent Corrective Action Verification Program dated 12/19/96
- 2.3 NRC Confirmatory Order Establishing Independent Correction Action Verification Program - Millstone Nuclear Power Station, Units 1, 2, and 3
- 2.4 PI-MP3-01, ICAVP Communications Protocol
- 2.5 PI-MP3-02, Review of System Design for Compliance with the Design and Licensing Basis
- 2.6 PI-MP3-03, Review of Plant Modifications Prepared After Receipt of Operating License for Technical Adequacy and for Configuration Control
- 2.7 PI-MP3-09, Preparation and Approval of Checklists
- 2.8 PI-MP3-11, Discrepancy Report Submittal and Closure
- 2.9 PI-MP3-12, Project File Index

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2.10 CK-MP3-05, Series Checklists as follows:

- CK-MP3-05-01 Walkdown Control Checklist
- CK-MP3-05-02 Physical Drawing Review Attributes Checklist
- CK-MP3-05-03 Functional Walkdown Checklist
- CK-MP3-05-04 Modification Walkdown Checklist

Note: Checklists used in the performance of this PI are not included as attachments to the PI. Checklists are prepared and controlled as separate documents per PI-MP3-09.

3.0 DEFINITIONS

- 3.1 **System Review Group (SRG)** - The subgroup of the ICAVP Verification Team responsible for performing an in-depth review of the design of the systems in the scope of the ICAVP.
- 3.2 **Configuration Review Group (CRG)** - The subgroup of the SRG Verification Team responsible for walkdowns to verify the current as-built conditions are in conformance with the design output documents.
- 3.3 **Design Output Documents** - Controlled plant documents such as specifications, drawings, vendor drawings, datasheets lists and databases (Reference 2.4).
- 3.4 **Walkdown Team** - The team from within the CRG responsible for performing walkdowns in accordance with the instructions. The team shall consist of, as a minimum, an engineer (Lead Verifier) and one mechanical and one electrical designer (Verifier).

4.0 RESPONSIBILITIES

- 4.1 The SRG Lead shall have overall responsibility for the implementation of the physical configuration walkdowns.
- 4.2 The CRG Lead shall be responsible for providing overall direction to the CRG at S&L's offsite office and shall be responsible for interfacing with the SRG Lead.
- 4.3 The Lead Verifier shall be responsible for:
 - Coordination of system walkdowns

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- Reviewing checklists, system boundary drawings and redline drawings prepared by the walkdown team verifiers

4.4 The Verifier(s) shall be responsible for:

- Performing system and modification walkdowns & completing applicable checklists
- Preparing redline drawings
- Preparing system boundary drawings
- Verifying that modification packages agree with current design drawings

5.0 PROCEDURE

5.1 General

The Nuclear Regulatory Commission (NRC) Confirmatory Order (Reference 2.3) requires Northeast Utilities (NU) to implement the ICAVP. The confirmatory order also defines the scope of the ICAVP. Item 2 of the scope of the ICAVP described on page 13 of the confirmatory order requires the Licensee to verify the current as-modified plant conditions against design basis and licensing basis documentation for the specific systems selected by the NRC. This procedure describes one aspect of the process needed to perform the verification described above. Specifically, this procedure shall determine if the current system design as reflected on design output documents is consistent with the physical installed condition of the plant. This determination shall be made by performing physical walkdowns of the plant systems. The walkdowns shall be performed in two phases. Phase 1 shall perform functional walkdowns of the entire system to verify the current configuration is consistent with the current design output documents. Phase 2 shall perform a detailed walkdown of the portions of the system modified after receipt of operating license to verify the modified installation is consistent with the modification package. The Phase 2 walkdown shall include more extensive dimensional checks. Phase 2 will verify critical dimensions such as those which form the analysis/calculation bases, specific limits on drawings, etc., which are not required for the Phase 1 walkdown.

The decision to exclude dimensional checks for the Phase 1 walkdown was based on the guidance provided in References 2.1

and 2.2 and the fact that various inspection programs were typically implemented during initial plant construction and startup prior to receipt of an operating license.

The systems to be included in the scope of the ICAVP will be defined by the Nuclear Regulatory Commission. Once the systems have been identified, the first step is to gather the applicable system documents. This activity shall be performed in conjunction with the SRG as outlined in PI-MP3-02. Once the documents have been gathered, the following tasks shall be implemented per this procedure:

- a. General Walkdown Preparation
- b. Phase 1 Walkdown and Planning
- c. Phase 2 Walkdown and Planning
- d. Walkdown Documentation Package Assembly
- e. Discrepancy Report Preparation and Closure
- f. Final Report Preparation

Attachment 6.1 is a process flowchart illustrating the Physical Configuration Walkdown process.

5.2 General Walkdown Preparation Requirements

- 5.2.1 The CRG Lead shall be responsible for assigning a walkdown team for each system in the scope of the ICAVP. The CRG Lead shall document the walkdown team assignment in the appropriate blocks of the Walkdown Control Checklist (CK-MP3-05-01). The Walkdown Team shall consist as a minimum of an engineer (Lead Verifier), and one electrical and one mechanical designer (Verifier(s)).

Note: The assigned walkdown team is responsible for implementing both phases of the walkdown for that system.

- 5.2.2 The Lead Verifier shall obtain a copy of all applicable design output documents for the system and all plant modification packages for that system (Refer to Section 5.2 of PI-MP3-02).
- 5.2.3 The Lead Verifier shall identify the plant areas which contain the system from general arrangement drawings. The Lead Verifier shall schedule the walkdown, notify the appropriate plant personnel and obtain all necessary clearances. Discussions and/or contacts with NU

personnel shall be in accordance with the protocol outlined in PI-MP3-01.

5.3 Phase 1 Walkdown & Planning

5.3.1 The Walkdown Team shall indicate the system boundaries on the following drawings, as applicable:

- a. Piping Isometrics
- b. Electrical Physical Conduit and Tray Routing Drawings
- c. Vendor Skid Drawings

System boundaries added on the above physical drawings shall be based on the boundaries agreed to by the NRC, NEAC, NU and S&L as discussed in PI-MP3-02.

5.3.2 The Walkdown Team shall identify and obtain all support drawings (pipe and electrical), equipment mounting details, component vendor drawings and instrument details for components to be verified in the walkdown. The Walkdown Team shall have access to the Installation Specifications applicable to their area of responsibility in order to become familiar with general installation requirements.

5.3.3 The Lead Verifier shall review the boundary drawings and commodity drawings with the applicable Lead Verifier from the SRG. The respective Lead Verifiers shall resolve any comments and denote their concurrence by signing and dating the applicable blocks on the Walkdown Control Checklists. The CRG Lead Verifier shall list all applicable documents including revision number or date on the Walkdown Control Checklist (CK-MP3-05-01).

5.3.4 The Walkdown Team shall incorporate all open change documents (redline) into the parent document. Redlining shall be limited to incorporation of only those details which will be verified during the walkdown (i.e., since Phase 1 walkdowns do not verify dimensions, dimensional data need not be shown). The Lead Verifier shall list all the incorporated change documents on the redlined documents.

Note: Only those change documents which have been completely installed shall be included in the redline scope. These will be identified by the SRG.

5.3.5 The Lead Verifier shall note completion of the redline step on the Walkdown Control Checklist (CK-MP3-05-01) and shall initial and date the entry.

5.3.6 The Walkdown Team shall perform a review of the lower tier drawings versus the upper tier drawings as follows:

Note: Upper tier drawings will be reviewed against calculations, specifications and design and licensing bases by the SRG per PI-MP3-02. The intent of this review is to verify the consistency of the piping isometrics, electrical physical drawings, electrical wiring diagrams and cable schedules to the upper tier documents.

5.3.6.1 The Walkdown Team shall review the following drawings:

- a. P&IDs versus Piping Isometrics
- b. Electrical Schematics and Electrical Single Lines versus Wiring Diagrams, Cable Schedule and Electrical Physical Drawings.
- c. Pipe Hangers Drawings vs. Piping Drawings.


The review attributes shall be in accordance with the Physical Drawing Review Attributes Checklist (CK-MP3-05-02).

5.3.6.2 The Walkdown Team shall prepare an individual CK-MP3-05-02 Checklist for each type of drawing reviewed and shall sign and date each checklist.

5.3.6.3 Discrepant conditions identified during this review shall be processed in accordance with Subsection 5.6 of this project instruction.

5.3.6.4 The Lead Verifier shall indicate completion of the physical drawing review step on the Walkdown Control Checklist (CK-MP3-05-01) and shall initial and date the entry.

5.3.7 The Walkdown Team shall perform the Phase 1 system functional walkdowns as follows:

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5.3.7.1 Phase 1 system functional walkdowns shall be performed using the Functional Walkdown Checklist (CK-MP3-05-03). Each attribute verified during the walkdown shall be verified by two walkdown team members.

5.3.7.2 The Phase 1 functional walkdown shall in general verify the nameplate data of the system components, check for physical damage and functionally check system installation by checking the following items for proper configuration (not dimensions):

- a. Equipment Nos. and Equipment Location
- b. Piping Line Size (Diameter)
- c. Pipe configuration functional location of bends, valves, supports, and other in line components
- d. Valve orientation and flow direction
- e. Insulation and/or heat tracing
- f. Support type
- g. Equipment and support mounting type and anchorage details (No. of bolts, weld pattern, etc.)
- h. Cables are functionally routed to appropriate "To" and "From" equipment.
- i. Conduit size, cable size where practical
- j. Conduit support and cable tray support type
- k. Configuration of tubing and electrical for instrumentation

Note: If pipelines are insulated, verification shall be accomplished by adding insulation thickness to line size and measuring outside diameter of insulation.

Refer to checklists CK-MP3-05-03 for further details and attributes.

5.3.7.3 The Walkdown Team shall enter the nameplate data found on the components in the applicable section of the Functional Walkdown Checklist (CK-MP3-05-03).

5.3.7.4 The Walkdown Team shall note visible physical damage, such as separated supports, in the applicable section of the Functional Walkdown Checklists (CK-MP3-05-03).

5.3.7.5 The Walkdown Team shall mark any configuration discrepancies identified during the walkdown directly on the redline drawings developed in step 5.3.4.


- 5.3.7.6 The Walkdown Team shall initial and date any entries made on the Functional Walkdown Checklists (CK-MP3-05-03) or Redline drawings.
- 5.3.7.7 Following completion of the walkdown, the Walkdown Team will verify nameplate data recorded in the field with the vendor drawings and indicate any discrepancies on the Functional Walkdown Checklist (CK-MP3-05-03).
- 5.3.7.8 The Lead Verifier shall review the completed Functional Walkdown Checklist (CK-MP3-05-03) to ensure it has been properly completed and shall note his concurrence by signature and date.
- 5.3.7.9 Discrepant conditions identified during this review shall be processed in accordance with Subsection 5.6 of the project instruction.
- 5.3.7.10 The Lead Verifier shall indicate completion of the functional walkdown step on the Walkdown Control Checklist (CK-MP3-05-01) and shall initial and date the entry.

5.4 Phase 2 Walkdown & Planning

- 5.4.1 During the system modification review, the SRG shall per PI-MP3-03, identify any modifications to the system being reviewed which resulted in plant configuration changes. The SRG will define which portions of a modification were subsequently revised by another modification and which modifications are only partially installed or not yet installed.
- 5.4.2 Upon receipt of the modification data from the SRG, the Lead Verifier shall initiate a physical walkdown of the modified portion of the system by initiating a Modification Walkdown Checklist (CK-MP3-05-04). A separate modification walkdown checklist shall be prepared for each system modification being reviewed. The Lead Verifier will enter the modification number and description on the checklist (CK-MP3-05-04).

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- 5.4.3 The Walkdown Team shall review the document changes contained in the modification package versus the redline drawings prepared as part of the system walkdown (Subsection 5.3 of this project instruction). Discrepancies shall be noted on the Modification Walkdown Checklist (CK-MP3-05-04).
- 5.4.4 The Lead Verifier shall identify key critical dimensions that will be checked by the Walkdown Team. The Lead Verifier shall note these key critical dimensions on the Modification Walkdown Checklist (CK-MP3-05-04). Key critical dimensions may include analytical/calculation bases, specific dimensional limits and requirements stated on the drawings which deviate from the standard installation tolerances, etc.
- 5.4.5 The Walkdown Team shall perform a walkdown of the modified area to verify installation is in accordance with the modification package. This step includes checking critical dimensional data included in the modification package. Any discrepancies shall be noted on the Modification Walkdown Checklist (CK-MP3-05-04).
- 5.4.6 Upon completion of the walkdown, the Walkdown Team shall sign and date the completed Modification Walkdown Checklists (CK-MP3-05-04) and shall generate a Discrepancy Report per Subsection 5.6 for any discrepant conditions identified during the walkdown.
- 5.4.7 The Lead Verifier shall review the completed Modification Walkdown Checklists (CK-MP3-05-04) for completeness and shall signify his concurrence by signing and dating the checklist.
- 5.4.8 The Lead Verifier shall indicate completion of the modification walkdown on the Walkdown Control Checklist (CK-MP3-05-01) and shall initial and date the entry.
- 5.5 Walkdown Documentation Package Assembly
- 5.5.1 The Lead Verifier shall assemble a documentation package consisting of the following:
- Reference Drawings
 - Redline Drawings
 - CK-MP3-05 Series Checklists

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5.5.2 The Lead Verifier shall distribute the package to the project file in accordance with PI-MP3-12.

5.5.3 The Lead Verifier shall indicate completion of this step by signing and dating the Walkdown Control Checklist (CK-MP3-05-01).

5.6 Discrepancy Report Preparation and Closure

5.6.1 Discrepancy Reports for discrepant items identified during the system and modification walkdowns shall be prepared and processed in accordance with PI-MP3-11. Discrepancy reports shall not be initiated for findings already identified by NU during implementation of the CMP.

5.6.2 Review of NU dispositions for the Discrepancy Reports generated during the review cycle shall be in accordance with PI-MP3-11.

5.7 Final Report

5.7.1 The Lead Verifier shall draft a final report summarizing the results of the system and modification walkdowns.

5.7.2 The report format shall be determined by the Verification Team Manager.

6.0 ATTACHMENTS

6.1 ICAVP Process Flowchart, "Physical Plant Configuration Walkdowns". (1 page)

ICAVP PROCESS FLOWCHART PLANT PHYSICAL CONFIGURATION WALKDOWNS

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ATTACHMENT 6.1

