

OPERABILITY DETERMINATIONS AND FUNCTIONALITY ASSESSMENTS

Effective Date: 04/30/2019

INSPECTABLE AREA: Operability Determinations and Functionality Assessments

CORNERSTONES: Mitigating Systems
Barrier Integrity

INSPECTION BASES: Improperly evaluated degraded and/or non-conforming conditions may result in continued operation with a structure, system, or component (SSC) that is inoperable or nonfunctional.

This inspectable area verifies aspects of the Mitigating Systems and Barrier Integrity cornerstones for which there are no performance indicators.

LEVEL OF EFFORT: Review the following sample sizes of operability determinations or functionality assessments of degraded and non-conforming conditions which impact mitigating systems and barrier integrity: 15 to 21 per year at one reactor unit sites; 19 to 25 per year at two reactor unit sites; and 22 to 30 per year at three reactor unit sites.

71111.15-01 INSPECTION OBJECTIVE

To review operability determinations or functionality assessments affecting mitigating systems and barrier integrity to ensure that operability or functionality is properly justified and the SSC remains capable of performing its specified safety function or current licensing basis (CLB) function, such that no unrecognized increase in risk has occurred.

71111.15-02 INSPECTION REQUIREMENTS

02.01 Sample Selection

Select operability determinations or functionality assessments involving risk significant SSCs.

02.02 Operability Determination or Functionality Assessment

- a. Review the technical adequacy of the licensee's operability determination or functionality assessment, and verify it is justified.
- b. If the operability or functionality evaluation involves compensatory measures:
 - 1. Verify that the measures are in place, will work as intended, do not cause system operation to be outside the design basis and are appropriately controlled, and
 - 2. Verify that use of a compensatory measure does not require a license amendment. NOTE: NEI 96-07, Revision 1, Appendix E shall not be used by NRC staff in evaluating compliance with the provisions of 10 CFR 50.59.
- c. If operability or functionality are not justified, verify appropriate actions are taken including a determination of impact on any Technical Specification (TS) limiting condition for operation (LCO).

02.03 Problem Identification and Resolution

Verify that the licensee is identifying problems with operability determinations and functionality assessments at an appropriate threshold, entering them in the corrective action program, and is identifying and implementing appropriate corrective actions.

71111.15-03 INSPECTION GUIDANCE

03.01 Sample Selection

Inspectors should apply risked informed insights together with other factors, such as engineering analysis and judgment, operating experience, and performance history, to determine which operability determinations or functionality assessments should be selected for review. Selection of operability determinations or functionality assessments can emerge from the inspector's review of plant status documents such as operator shift logs, emergent work documentation, deferred modifications, and standing orders to determine if an operability determination or functionality assessment is warranted for a degraded or nonconforming condition.

The following can be used to assist the inspector in identifying SSCs that have a risk priority:

Operating - Mitigating systems and barrier integrity features as determined by plant-specific risk information such Risk Achievement Worth. Examples: High Pressure Coolant Injection (HPCI) system or Reactor Core Isolation Cooling (RCIC) system.

Shutdown - Mitigating systems and barrier integrity features that perform key safety functions during shutdown. Examples: SSCs associated with decay heat removal, inventory control, electrical power availability, reactivity control, core configuration, or containment.

03.02 Inspection

IMC 0326, "Operability Determinations and Functionality Assessments for Conditions Adverse to Quality or Safety" provides guidance to NRC inspectors to assist in their review of licensee determinations of operability, assessments of functionality, and resolution of degraded and nonconforming conditions. This section contains excerpts and discussions from IMC 0326. More detailed information can be found in IMC 0326.

The identification of degraded or nonconforming conditions may call into question the ability of a SSC to perform its specified safety function or CLB function. A degraded condition is one in which the qualification of an SSC or its functional capability is reduced. Examples of degraded conditions are failures, malfunctions, deficiencies, deviations, and defective material and equipment. Examples of conditions that can reduce the capability of a system are aging, erosion, corrosion, improper operation, and maintenance. A nonconforming condition is a condition of an SSC that involves a failure to meet the CLB or a situation in which quality has been reduced because of factors such as improper design, testing, construction, or modification. The following are examples of nonconforming conditions: 1) An SSC fails to conform to one or more applicable codes or standards (e.g., the CFR, operating license, TS, UFSAR, and/or licensee commitments); 2) An as-built or as-modified SSC does not meet the CLB; 3) Operating experience or engineering reviews identify a design inadequacy; or 4) Documentation required by NRC requirements such as 10 CFR 50.49 is unavailable or deficient.

Operability refers to the capability of a TS SSC to perform its specified safety function. The scope of SSCs considered within the operability determination process are: 1) SSCs that are required to be operable by TS (these SSCs may perform required support functions for other SSCs required to be operable by TS); and 2) SSCs that are not explicitly required to be operable by TS, but that perform required support functions for SSCs that are required to be operable by TS.

Determinations of operability are appropriate whenever a review, TS surveillance, or other information calls into question the ability of SSCs to perform specified safety functions. The operability determination process is used to assess operability of SSCs and their support functions for compliance with TS when a degraded or nonconforming condition is identified for a specific SSC required to be operable by TS, or when a degraded or nonconforming condition is identified for a necessary and related support function. The licensee's process of ensuring operability for any SSC described in TSs is a continual process.

Functionality generally refers to the capability of a non-TS SSC to perform its function set forth in the CLB. A CLB function may also perform a necessary and related support function for a SSC controlled by TS. Functionality assessments should be performed for SSCs not described in TS, but which warrant programmatic controls to ensure that SSC availability and reliability are maintained. In general, these SSCs and the related controls are included in programs related to Appendix B to 10 CFR Part 50, "Quality Assurance Criteria for Nuclear Power Plants and Fuel Reprocessing Plants," and the maintenance rule (10 CFR 50.65). Additionally, SSCs not described in TS may warrant functionality assessments within the processes used to address degraded and nonconforming conditions because they perform functions described in the Updated Final Safety Analysis Report (UFSAR), technical requirements manual, emergency plan, fire protection plan, regulatory commitments, or other elements of the CLB.

Determinations of functionality are appropriate whenever a review, TS surveillance, or other information calls into question the ability of an SSC not required to be operable by TS to perform its CLB function(s). As stated above, a CLB function may also perform a necessary and related support function for a SSC controlled by TS. Normally, functionality is assessed and documented through other plant processes such as the corrective action process. It is appropriate to consider safety significance in determining the appropriate depth of a functionality assessment. Also, the effect of nonfunctional SSCs on compliance with other regulatory requirements (e.g., Appendix R, station blackout, ATWS, environmental qualification, maintenance rule) should be determined. In addition, other licensee processes and programs may need to be considered (e.g., availability, maintenance rule, reportability) when SSCs are not functional.

When evaluating the effect of a degraded or nonconforming condition, a licensee may decide to implement compensatory measures as an interim action until final corrective action to resolve the condition is completed. Section 07.03 of IMC 326 contains guidance on the use of compensatory measures. In addition, compensatory measures that substitute manual operator actions for automatic actions should be resolved expeditiously. Appendix C.05 of IMC 0326 contains additional guidance on the temporary use of manual actions instead of automatic actions. A licensee may refer to these compensatory measures as “Operator Work Arounds (OWAs).”

In addition, if a compensatory measure involves a temporary facility or procedure change, 10 CFR 50.59 should be applied to the temporary change with the intent to determine whether the temporary change/compensatory measure itself (not the degraded or nonconforming condition) impacts other aspects of the facility or procedures described in the UFSAR. In considering whether a temporary facility or procedure change impacts other aspects of the facility, a licensee should apply 10 CFR 50.59, paying particular attention to ancillary aspects of the temporary change that result from actions taken to directly compensate for the degraded condition. Licensees may use the guidance in NEI 96-07, Revision 1, “Guidelines for Implementing 10 CFR 50.59,” which is endorsed by Regulatory Guide 1.187, “Guidance for Implementation of 10 CFR 50.59, Changes, Tests, and Experiments.” NEI has also published a NEI 96-07, Revision 1, Appendix E, “User’s Guide for NEI 96-7, Revision 1, Guidelines for 10 CFR 50.59 Implementation.” However, NEI 96-07, Revision 1, Appendix E has not been reviewed or endorsed by the NRC. If needed, questions regarding potential 10 CFR 50.59 issues as a result of a licensee’s use of Appendix E can be raised with the DORL PM.

The intent of this inspection is to sample licensee’s operability determinations and functionality assessments for risk significant SSCs to determine if prompt and immediate operability determinations and functionality assessments are justified, such that operability and availability are assured, and no unrecognized increase in risk has occurred. Also, the inspections should determine if operability and functionality concerns associated with plant issues and events are being identified. Aspects that an inspector should consider include:

- The selected operability determination or functionality assessment has appropriately considered the potential cause(s), extent of the condition, and adverse effects on associated SSC specified safety functions or CLB functions. Refer to the updated final safety analysis report (UFSAR) and other design basis documents during the review.

- The licensee is looking beyond the prominent symptoms of the condition to ensure that a narrow focus or non-conservative assumption does not compromise the justification that the SSC remains capable of performing all of its specified safety functions or CLB functions.
- The licensee is considering other conditions and their impact on any compensatory measures for the condition being evaluated.

Depending on the complexity and risk significance of an issue, an inspector may consider consulting with regional specialists to complete a review of a licensee's operability determination or functionality assessment. The regional specialist's time spent on reviewing the issue should be charged to this procedure.

03.03 Problem Identification and Resolution

For additional guidance, see Inspection Procedure (IP) 71152, "Problem Identification and Resolution."

71111.15-04 RESOURCE ESTIMATES

The annual resource expenditure for this inspection procedure is estimated to be 87 to 113 hours for sites with one reactor unit; 107 to 137 hours for sites with two reactor units; and 127 to 161 hours for sites with three reactor units.

71111.15-05 PROCEDURE COMPLETION

Inspection of the minimum sample size will constitute completion of this procedure in the Reactor Programs System (RPS) inspection tracking system. That minimum sample size will consist of 15, 19, and 22 operability determinations or functionality assessments of degraded and non-conforming conditions in a year at 1-unit, 2-unit, and 3-unit sites, respectively. Refer to IMC 2515, "Light-Water Reactor Inspection Program - Operations Phase" for further guidance on procedure completion.

71111.15-06 REFERENCES

IP 71152, "Problem Identification and Resolution"

IMC 0326, "Operability Determinations and Functionality Assessments for Conditions Adverse to Quality or Safety"

IMC 2515, "Light-Water Reactor Inspection Program - Operations Phase"

10 CFR 50.59, "Changes, tests, and experiments."

NRC Regulatory Guide 1.187, "Guidance for Implementation of 10 CFR 50.59, Changes, Test, and Experiments," Nov 2000. (ML003759710)

NEI 96-07, Revision 1, "Guidelines for 10 CFR 50.59 Evaluations," (Nov 2000). (ML003771157)

END

Attachment 1 - Revision History for IP 71111.15

Commitment Tracking Number	Accession Number Issue Date Change Notice	Description of Change	Description of Training Required and Completion Date	Comment Resolution and Closed Feedback Form Accession Number (Pre-Decisional, Non-Public Information)
	ML003729444 04/03/00 <u>CN 00-003</u>	Initial Issuance	Yes	
N/A	ML020380579 01/17/02 CN 02-001	Revised to provide minor clarifications to inspection requirements and additional inspection guidance concerning operability determinations. In addition, inspection resource estimates and inspection level of effort are revised to provide a band for more inspection	N/A	N/A
N/A	ML040690557 02/02/04 CN 04-003	Revised to include deferred modifications to the inspection sampling list.	N/A	N/A
N/A	ML060060380 01/05/06 CN 06-001	Increased the estimated resources required to complete this inspection activity based on increased inspection hours charged to this IP during last several ROP cycles. Completed historical CN search.	N/A	N/A
N/A	ML061730334 07/26/06 CN 06-018	Revised to reflect changes of reference documents: GL91-18 was superseded by RIS 2005-20. Revision history reviewed for the last four years.	N/A	N/A
N/A	ML073050448 01/31/08 CN 08-005	Add inspection guidance to verify that licensee has correctly implemented 10 CFR 50.59 regulatory requirements if operability determinations warrant such 50.59 evaluations be performed.	N/A	N/A

Commitment Tracking Number	Accession Number Issue Date Change Notice	Description of Change	Description of Training Required and Completion Date	Comment Resolution and Closed Feedback Form Accession Number (Pre-Decisional, Non-Public Information)
N/A	ML092300320 11/16/09 CN 09-027	Added 6 hours of inspection resources. See 2009 ROP Realignment Results (ML092090312)	N/A	N/A
N/A	ML110030073 04/05/11 CN 11-005	This change clarifies and enhances the sample selection guidance related to functionality assessments associated with TS SSC operability determinations and provides the additional latitude to select risk significant SSCs which may not be identified in TS for sampling (71111.15 – 1597). Added the definition of a degraded condition (71111.15 – 1625).	N/A	ML110630221
N/A	ML112010663 10/28/11 CN 11-025	Resources changed to reflect the 2011 ROP Realignment (ML11178A329).	N/A	N/A
N/A	ML14260A356 12/17/14 CN 14-030	1. Relocate operator workaround from IP 71152 per BIP Enhancement Project Encl. 5 Operability Recommendation 1; 2. Delete 02.01.f. as it is redundant with IMC 0612 App. B; 3. Update 71111.15-06 REFERENCES; This revision addresses or partially addresses ROPFF #'s 71111.15-1742, 71111.15-1974, and beyond-scope administrative comments that were accepted during 30-day comment process (ML14287A037).	Yes 12/31/14	ML14287A037 FBF 71111.15-1742 ML14351A020 FBF 71111.15-1974 ML14351A022

Commitment Tracking Number	Accession Number Issue Date Change Notice	Description of Change	Description of Training Required and Completion Date	Comment Resolution and Closed Feedback Form Accession Number (Pre-Decisional, Non-Public Information)
N/A	ML16147A250 12/22/16 CN 16-035	Revisions are made to address use of mandatory and discretionary language concerns and recommendations found in OIG-16-A-12 (ML16097A515). Requirement to inspect at least one sample associated with OWAs has been deleted.	None	ML16158A083
N/A	ML19113A142 04/30/19 CN 19-013	Editorial revision to support proposed modification to RPS-Inspections for tracking inspection activity / completion.	None	N/A - Editorial change issued without comment period.