ATTACHMENT 71111.15

INSPECTABLE AREA: Operability Determinations and Functionality Assessments

CORNERSTONES: Mitigating Systems
Barrier Integrity

EFFECTIVE DATE: January 1, 2015

INSPECTION BASES: Improperly evaluated degraded and/or non-conforming conditions may result in continued operation with a structure, system, or component (SSC) that is not capable of performing its design function.

Operator workarounds (OWAs) can adversely affect the functional capability of SSCs that may not be capable of performing design functions without operator intervention. An excessive number of OWAs or those requiring complex operator actions increase risk by reducing operator effectiveness in responding to transient conditions and increasing error opportunities.

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. Although the number of required samples is an annual goal, available operability determination or functionality assessment samples should be inspected each quarter to ensure a reasonable distribution throughout the year. At least one annual sample must include an OWA review

71111.15-01 INSPECTION OBJECTIVE

01.01 To review operability determinations or functionality assessments affecting mitigating systems and barrier integrity to ensure that operability or functionality is properly justified and the component or system remains capable of performing its design functions, such that no unrecognized increase in risk has occurred.

01.02 To verify that licensees are identifying and addressing OWAs in a manner that effectively manages OWA-related adverse effects on operators and SSCs.

71111.15-02 INSPECTION REQUIREMENTS

Operability refers to the capability of a Technical Specification (TS) SSC to perform its design safety function. Functionality generally refers to the capability of a non-TS SSC to perform its specified function set forth in the current licensing basis.

02.01 Operability and Functionality Review

a. Select operability determinations or functionality assessments involving risk significant SSCs. Inspectors may select functionality assessments of TS support systems and evaluate their effect on TS operability or select functionality assessments of SSCs which are not related to TS operability as a sample. 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 evaluation is warranted for a degraded component. One annual sample must include an OWA review.

b. Review the technical adequacy of the licensee's operability determination or functionality assessment, and verify it is justified.

i. Verify that the licensee considered other degraded conditions and their impact on compensatory measures for the condition being evaluated. Refer to the updated final safety analysis report (UFSAR) and other design basis documents during the review.

ii. Verify that the selected operability determination or functionality assessment has appropriately considered the potential cause(s), extent of the condition, and adverse effects on associated SSC safety functions.

iii. Look beyond the salient symptoms of the condition to ensure that an unnecessarily narrow licensee focus or non-conservative assumption does not compromise the justification that the SSC remains capable of performing all of its safety functions.

iv. If operability or functionality is justified without compensatory measures, no further review is required.

c. If the operability or functionality evaluation involves compensatory measures, determine if the measures are in place, will work as intended, do not cause system operation to be outside the design basis and are appropriately controlled.

d. Verify that degraded SSCs or compensatory measures taken to address degraded SSCs do not result in changes to tests or experiments described in UFSAR (an SSC utilized in a way that is either outside the design basis or inconsistent with the safety analyses could be an example of such a change). If the changes to tests or experiments are different than what is described in UFSAR, verify that these changes or experiments meet criteria specified in 10 CFR 50.59 for not requiring a license amendment.

e. If operability is not justified determine impact on any TS limiting condition for operation (LCO).

02.02 OWA Management. OWAs are operator actions taken to compensate for degraded or non-conforming conditions. OWAs that cannot be implemented effectively can increase the baseline core damage- or large early release frequency. Verify that the licensee is identifying OWAs at an appropriate threshold and addressing them in a manner that effectively manages OWA-related adverse effects on operators and SSCs.

02.03 Problem Identification and Resolution. Verify that the licensee is identifying problems with operability determinations and functionality assessments at an appropriate threshold and entering them in the corrective action program. For a sample of significant operability determinations and functionality assessments issues documented in the corrective action program, verify that the licensee has identified and implemented appropriate corrective actions. For additional guidance, see Inspection Procedure (IP) 71152, "Problem Identification and Resolution."

71111.15-03 INSPECTION GUIDANCE

Determinations of operability are appropriate whenever a review, TS surveillance, or other information such as degraded conditions, nonconforming conditions, or unanalyzed conditions calls into question the ability of SSCs as described in TSs to perform their design functions. The operability determination process is used to assess operability of SSCs and support functions for compliance with TSs when a degraded or nonconforming condition is identified for a specific SSC described in TSs, 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 continuous process. Functionality assessments of TS support systems are an integral part of operability determinations. Functionality assessments may be required to provide assurance that TS SCCs are operable. Licensees are obligated to ensure the continued operability of SSCs as specified by TS, or to take the remedial actions addressed in the TS.

Functionality assessments are appropriate for risk significant SSCs or SCCs which perform specified functions described in the UFSAR, technical requirements manual, emergency plan, fire protection plan, regulatory commitments, or other elements of the current licensing basis when degraded or nonconforming conditions affecting non TS SSCs are identified. In general, functionality assessments should be integral to the licensee programs and controls used to comply with regulations such as 10 CFR Part 50 Appendix B (quality assurance / corrective action program), 10 CFR 50.65 (maintenance rule), 10 CFR Part 50 Appendix R or 10 CFR 50.48(c) (fire protection), 10 CFR 50.63 (station blackout), and 10 CFR 50.62 (anticipated transients without scram).

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

Where there is a reason to suspect that the licensee's operability or functionality determination is not, or was not correct based on the information reviewed, the inspector should discuss the issue with regional management for resolution. Depending on the complexity and risk significance of the issue, the inspector may need to consult with regional specialists to complete verification of licensee's operability determination or functionality assessment. The regional specialist's time spent on reviewing the issue should be charged to this procedure. The inspectors are not required to spend additional time in reviewing an issue if the discrepancies identified do not change the outcome of the operability determination or functionality assessment.

IMC 0326, "Operability Determinations and Functionality Assessments for Conditions Adverse to Quality or Safety provides guidance to NRC inspectors to assist their review of licensee determinations of operability, assessments of functionality, and resolution of degraded and nonconforming conditions. It establishes NRC staff expectations and generally reflects licensee existing practices in making operability determinations and functionality assessments; however the guidance does not constitute an NRC requirement. Licensees typically implement plant-specific procedures in making operability determinations and functionality assessments.

IMC 0326 defines a degraded condition as one in which the qualification of an SSC or its functional capability is reduced. Examples of degraded conditions are failures, malfunctions, deficiencies, deviations, or defective material and equipment. Examples of conditions that can reduce the capability of a system are aging, erosion, corrosion, improper operation, and maintenance. In the selection of inspection samples, inspectors should consider the licensee's evaluation and resolution of the degraded condition. Such approaches can include: "use-as-is" determinations, revision of engineering or operational acceptance criteria, reductions in design or operational margin, and repetitive work orders.

OWAs. Action(s) taken to compensate for a degraded or non-conforming condition are considered OWAs. OWAs that cannot be implemented effectively can increase the baseline core damage- or large early release frequency. This review shall verify that the licensee is identifying OWA problems at an appropriate threshold, entering them in the corrective action program, and planning or taking appropriate corrective actions. The OWA sample should be evaluated considering all existing plant conditions including the cumulative effects of other OWAs.

The intention is to evaluate OWAs for mitigating systems to determine if the mitigating system function is affected or the operator's ability to implement abnormal and emergency operating procedures is affected. Inspectors should be cognizant of OWAs that (1) have not been effectively evaluated by the licensee, (2) have been formalized or proceduralized as the long-term corrective action for a degraded or nonconforming condition (and therefore may not be tracked by the licensee), and (3) increase the potential for human error, including OWAs that:

- require operations that are not consistent with current training and system knowledge,
- require a change from longstanding operational practices,
- require operation of a system or component in a manner inconsistent with similar systems or components,
- create the potential for the compensatory action to be performed on equipment or under conditions for which it is not appropriate,
- impair access to required indications, increase dependence on oral communications, or impact the timeliness of time-critical event mitigating actions under adverse environmental conditions,
- require the use of equipment and interfaces that had not been designed with consideration of the task being performed,
- require the licensee to assess and manage the increase in risk that may result in accordance with 10 CFR 50.65.a.(4) (See IP 71111.13, Maintenance Risk Assessments and Emergent Work Control), or
- require a license amendment in accordance with 10 CFR 50.59 (See IP 71111.18, Maintenance Risk Assessments and Emergent Work Control) but are implemented without an approved amendment.

See table below for inspection guidance to assist the inspector in selecting inspection activities to achieve each cornerstone objective and to achieve those activities that have a risk priority.

Corner-stone	Inspection Objective	Risk Priority	Example
Mitigating Systems Barrier Integrity	Review operability determinations and functionality assessments affecting mitigating systems and barrier integrity to ensure that operability or functionality is properly justified and the component or system remains capable of performing its design functions, such that no unrecognized increase in risk has occurred. Verify that licensees are identifying and addressing OWAs in a manner that effectively manages OWA-related adverse effects on operators and SSCs.	Operating - Mitigating systems and barrier integrity features as determined by plant-specific risk information such Risk Achievement Worth. Shutdown - Mitigating systems and barrier integrity features that perform key safety functions during shutdown. OWAs that cannot be implemented effectively and adversely impact operators or SSCs.	Improper conclusion on operability of the high-pressure coolant injection (HPCI) system such that the system could not perform its function during a station blackout event concurrent with planned unavailability of the reactor core isolation cooling (RCIC) system. Consider decay heat removal, inventory control, electrical power availability, reactivity control, Core Configuration, Control & FME Controls, containment, AOPs, SOPs, EOPs

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

IMC 0326, "Operability Determinations and Functionality Assessments for Conditions Adverse to Quality or Safety" (Link to external directory containing links to the latest version of this IMC and to other IMCs including the following. Note: This directory also contains links to public versions of Operating Experience Smart Samples [OpESSs] by IMC)

- IMC 0609, "Significance Determination Process"
- IMC 2515, "Light-Water Reactor Inspection Program - Operations Phase"
- IMC 0308, Attachment 2, "Technical Basis For Inspection Program," Figures 15 and 16

NRR Home » Reactor OpE Information » Cross Reference of Generic Communications with Inspection Procedures » 71111.15 - Operability Evaluations (Link to internal directory of the latest revisions of generic communications [e.g. IN's, RG's, RIS's, NEI 96-07, Part 9900 Technical Guidance on 10 CFR 50.59, etc. relevant to IP 71111.15]

Home > NRC Library > Document Collections > Inspection Manual > Inspection Procedures (Link to external directory of the latest revisions of following OpESSs as well as those issued following issuance of this revision to IP 71111.15. Occasionally an OpESS might involve non-public references (e.g. proprietary or otherwise FOIA-exempt materials). Inspectors should consult IOEB to determine if this content is available for selected OpESSs.

- OPERATING EXPERIENCE SMART SAMPLE (OpESS) 2012/02, Revision 1, "Technical Specification Interpretation and Operability Determination"
- OPERATING EXPERIENCE SMART SAMPLE (OpESS) FY 2009-02, "Negative Trend and Recurring Events Involving Feedwater Systems"
- OPERATING EXPERIENCE SMART SAMPLE (OpESS) FY 2008-01, "Negative Trend and Recurring Events Involving Emergency Diesel Generators"
- OPERATING EXPERIENCE SMART SAMPLE (OpESS) FY 2007-02, "Flooding Vulnerabilities due to Inadequate Design and Conduit / Hydrostatic Seal Barrier Concerns"
- OPERATING EXPERIENCE SMART SAMPLE (OpESS) FY2007-01, "PWR Containment Sump Recirculation Pipe Foreign Material Blockage"

Title 10 CFR 50.59, "Changes, tests, and experiments." (External link)

IP 71152, "Problem Identification and Resolution" (Link to external directory with links to the latest version of this IP and to other IPs. Note: This directory also contains links to public versions of OpESSs by IP)

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 and Feedback Resolution Accession Number (Pre-Decisional, Non-Public Information)
	ML003729444 04/03/00 CN 00-003	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 and Feedback Resolution 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