

## TECHNICAL SPECIFICATION INTERPRETATION AND OPERABILITY DETERMINATION

CORNERSTONE:       BARRIER INTEGRITY  
                          MITIGATING SYSTEMS

OpESS 2012/02-01    APPLICABILITY

01.01   This OpESS applies to all licensed operating commercial nuclear reactors.

01.02   Supports informing sample selection for Inspection Procedure (IP) 71111.15, "Operability Determinations and Functionality Assessments."

01.03   Performance of this OpESS is voluntary.

OpESS 2012/02-02    OBJECTIVES

02.01   Provide support to baseline inspection activities in the area of Technical Specification (TS) interpretation.

02.02   Provide examples of licensee non-conservative decision-making and improper application of TS Limiting Condition of Operation (LCO) and Action requirements identified during inspections, reviews of operating experience and licensing actions.

OpESS 2012/02-03    BACKGROUND

03.01   Technical Specification Interpretation.

Since 2007, there has been an increase in the number of inspection findings involving the human performance cross cutting aspects of 'a systematic process for decision making' (H.1(a)), and 'use of conservative assumptions in decision making' (H.1(b)). These are the only two cross-cutting aspects that have shown any kind of upward trend.

A recent review of inspection findings, operating experience, and license amendment requests (LARs) identified numerous instances where licensees have improperly applied their TS. Collectively, this experience along with increased NRR support, suggests that an increasing number of licensees may be taking a non-conservative approach to interpreting their TS requirements or when evaluating degraded or non-conforming conditions. NOTE: Inspectors should not approve a licensee's interpretation of their Technical Specifications.

### 03.02 Operability Determinations.

NRC Inspection Manual [Part 9900: Technical Guidance](#), (TG) “Operability Determinations & Functionality Assessments for Resolution of Degraded or Nonconforming Conditions Adverse to Quality or Safety (ODP)” sets forth NRC staff expectations for licensee operability determinations and functionality assessments.

The Standard Technical Specifications (STS) definition of Operable/Operability is an integral concept to TS compliance and therefore plant-specific immediate operability determinations and prompt operability determinations. The TG references the STS definition of Operable/Operability:

A system, subsystem, train, component, or device shall be **OPERABLE** or have **OPERABILITY** when it is capable of performing its specified safety functions, and when all necessary attendant instrumentation, controls, normal or emergency electrical power, cooling and seal water, lubrication and other auxiliary equipment that are required for the system, subsystem, train, component, or device to perform its function(s) are also capable of performing their related support function(s).

Upon discovery of failure to meet an LCO, the SSC is declared inoperable and licensees must meet the associated Conditions of the Required Actions per LCO 3.0.2.”

It has become apparent that some licensees have taken a non-conservative approach to interpreting their TS requirements when it comes to meeting the Required Actions of associated Conditions required by TSs. For example:

- A licensee may decide to implement compensatory measures as an interim action until final corrective action to resolve an emergent condition is completed; however, they must meet all LCO applicable Required Actions of the associated Conditions.
- A licensee may not intentionally declare a required SSC inoperable when it is capable of performing its specified safety function unless the inoperability declaration is for preventative maintenance, corrective maintenance, or other activities consistent with, but limited to, those identified in LCO 3.0.2. Intentional entry into any action statement shall not be made for operational convenience.
- Whether stated as a Required Action or not, licensees always have the option to restore inoperable equipment to operable status and exit the TS Condition.

Section .5.03, “Examples of Previous Inspection Findings,” of this guidance provides specific inspection experience examples regarding non-conservative decision making.

### OpESS 2012/02-04      INSPECTION GUIDANCE

The following inspection guidance may be applied as appropriate to support baseline inspection activities. Inspector judgment should be used when determining the extent to which this OpESS should be used to inform inspection activities under the applicable baseline IPs.

04.01 Operability Determinations and Functionality Assessments. The recommended inspection activities described below support IP 71111.15, “Operability Determinations and Functionality Assessments.”

- a. Review an instance where a change to plant operations was justified by a corresponding change to the TS Bases or an interpretation of an existing TS Bases statement.  
[Supports IP 71111.15, Section 02.01b]
  - 1. Compare the changes against any licensee procedures or written guidance associated with the decision making process.
  - 2. Evaluate the adequacy of any 10 CFR 50.59 evaluation associated with the change to the TS Bases.
  - 3. Examples of previous issues are provided below in Section 05.03d and 05.03e.
  
- b. Review an operability determination where a licensee credit compensatory measures, which substitute manual operator action for automatic action to perform a specified safety function, to consider/declare equipment operable.  
[Supports IP 71111.15, Sections 02.01c, 02.01d]
  - 1. [Part 9900: Technical Guidance, Appendix C.5](#) contains guidance on the temporary use of manual actions to support operability determinations. Operability determinations are generally not expected to be successful in cases where credit is taken for manual action in place of automatic action(s).
  - 2. Some manual compensatory actions could constitute a temporary facility or procedure change under 10 CFR 50.59 and inadvertently result in the plant operating outside its design basis.
  - 3. Examples of previous issues are provided below in Section 05.03b and 05.03f.
  
- c. Review an instance where the licensee failed to meet or did not perform a surveillance test within its specified frequency.  
[Supports IP 71111.15, Section 02.01e]
  - 1. Per [Part 9900: Technical Guidance](#), if an SSC is clearly inoperable (e.g., loss of motive power or failed TS surveillance), it must be declared inoperable and the operability determination process need not be entered. Licensees shall enter all applicable conditions immediately, per LCO 3.0.2. Time of discovery for a failed surveillance should be determined from the surveillance test unless there is clear evidence showing otherwise.
  - 2. Review any applicable licensee procedure requirements for a surveillance not performed within its specified Frequency to ensure that they are properly implemented and that all applicable TS requirements are identified and implemented within the time allowed by TS . Per SR 3.0.3, compliance with the requirement to declare the LCO not met may be delayed, from the time of discovery, up to 24 hours or up to the limit of the specified Frequency, whichever is greater. This delay period is permitted to allow performance of the Surveillance.
  - 3. Examples of previous issues are provided below in Section 05.03a, 05.03c, and 05.03d.

These references may include pre-decisional information contained on NRC internal websites. Once the agency has formally evaluated an OpE issue and has determined that it meets the criteria for agency action, the NRC communicates the issue to the public and the industry through one or more appropriate methods (e.g. generic communication, rulemaking public comment periods, etc.).

05.01 NRC Inspection Manual

- a. [71111.15](#), “Operability Determinations and Functionality Assessments”
- b. [Part 9900: Technical Guidance](#), “Operability Determinations & Functionality Assessments for Resolution of Degraded or Nonconforming Conditions Adverse to Quality or Safety.” (Included as the attachment to RIS 2005-20, Revision 1)

05.02 NRC Generic Communications

- a. [NRC Regulatory Issue Summary 2005-20, Revision 1, Revision To NRC Inspection Manual Part 9900 Technical Guidance, “Operability Determinations & Functionality Assessments For Resolution Of Degraded Or Nonconforming Conditions Adverse To Quality Or Safety”](#)
- b. [Information Notice 97-78](#), “Crediting of Operator Actions in Place of Automatic Actions and Modification of Operator Actions, including Response Times”

05.03 Examples of previous inspection findings.

- a. [River Bend](#) – The licensee experienced a reactor system flow mismatch due to a reactor recirculation flow control valve malfunction and properly entered the TS Action for failing to meet the TS LCO (3.4.1). However, rather than reduce reactor power (to less than 77.6%) within 1-hour and shutdown the affected loop within two hours as required by TS (Action Conditions A and B respectively), the licensee chose to only enter the Condition (TS LCO 3.4.1.D.1) requiring a plant shutdown with an AOT of 12 hours. The recirculation flow control valve was returned to service about 4.5 hours after the licensee entered the TS LCO Action Statement and reactor power was maintained steady at 100% throughout this period. The licensee’s failure to comply with Condition “A” of TS 3.4.1 constituted a violation of their TS.
- b. [Perry](#) – Due to past experience and concerns of causing a loss of shutdown cooling (SDC) during testing and other maintenance, the licensee voluntarily entered Condition “A” of the primary containment isolation valve TS LCO (3.6.1.3) nine times in a 6-day period. To prevent the potential closure of the SDC primary containment isolation valves, the licensee removed electrical power from the valve actuator with the valve in the open position. This action prevented the SDC isolation valve from remote operation including automatic closure signal from reactor vessel water level – low instrumentation. The “authorization” allowing the voluntary Condition “A” of TS 3.6.1.3 entry was communicated to the operators via the station night orders.

- c. [SONGS](#) – While performing a TS surveillance to verify that the reactor control element assemblies (CEAs) are capable of inserting upon a reactor trip (trippable), one of the CEAs failed to move as required by the surveillance test. The licensee “suspended” the surveillance test and initiated action to determine the cause of the CEA malfunction. After about 5-hours the licensee verified that the cause of the CEA failure was due to a CEA control system failure and was not due to a “stuck” CEA condition (indication on the installed CEA instrumentation does not provide positive determination). Based on prior problems with the CEA control system and never having experienced a stuck CEA, the licensee did not enter the applicable TS LCO 3.1.5 Condition for the surveillance test that was being conducted. TS LCO 3.1.5 Condition “D”, Untrippable CEA, has a 6-hour completion time. Operators used non-conservative decision making to determine Operability in lieu of following surveillance procedures that clearly identified a condition indicating a failed surveillance test.
- d. [Pilgrim](#) - After just completing a surveillance test of the control rods, the control rod position indication system failed, and the locations of the control rods were indeterminate. TS 3.3.8.1 states that all control rods without position indication are required to be declared inoperable and fully inserted into the core within 3 hours. However, the licensee did not enter any Condition within TS 3.3.8.1 at the time of discovery. The licensee erroneously believed that TS 3.3.8.1 entry was not required until the 24 hour periodicity of surveillance 4.3.B.1.5, “Control Rod Operability,” expired. The licensee did not enter TS 3.3.8.1 when faced with a degraded condition affecting control rod position indication. The licensee’s improper interpretation resulted in a TS violation.
- e. [Limerick](#) - The licensee racked out one of the two offsite power supply feeder breakers to a 4kV Class 1E emergency electrical bus for maintenance. Although one of the two offsite power sources was not available to emergency bus, the licensee did not declare the associated offsite power circuit inoperable and enter into the associated technical specification Action per TS LCO 3.8.1.1, “AC Sources – Operating.” With an offsite power supply feeder breaker to a 4kV bus racked out, manual and automatic transfer between the normal and alternate offsite power circuits to the bus was not possible. The licensee had made a prior change to the TS Bases to allow the breaker configuration without submitting a license amendment request (LAR) to make the necessary TS change. The licensee’s non-conservative decision was caused by an inadequate TS Bases change evaluation (10 CFR 50.59) to identify a Bases change requiring a license amendment to change the applicable TS.
- f. A common practice for a number of plants (e.g., McGuire, Harris, [SONGS](#), Robinson, [North Anna](#)) has been to connect the Refueling Water Storage Tank (RWST) to the non-safety/non-seismic spent fuel pool purification system (FPPS), while at power, for filtration and purification of the safety injection system water source contained in the RWST. In these circumstances, these licensees had not evaluated the potential effects of cross-tying the safety and non-safety systems (i.e., potential failures modes of non-safety system). Inspectors should question the licensees whether such similar configurations are within their licensing basis, review any supporting analysis, and make determinations on the adequacy of such analysis. If the configurations cannot be supported by analysis, the inspector should question the licensee whether the affected systems can still meet their design function and the basis for operability. In the examples above, these licensees did not declare the RWST inoperable and did not enter the applicable LCO statement while in this configuration. Some licensees may

have relied on manual operator actions to close the system interface valve between the RWST and the FPPS in the event of a seismic event. Others make procedural changes under 10 CFR 50.59 and conduct independent reviews. Normally, plant operation cannot be sustained indefinitely with the use of manual actions and without any impact on the plant's TS.

#### OpESS 2012/02-06      REPORTING RESULTS/TIME CHARGES/ADDITIONAL ISSUES

If information from this OpESS is used to inform the sample selection for a baseline IP, include the OpESS number and title in the 'List of Documents Reviewed' section of the relevant inspection report.

In addition, if any findings or violations are identified in conjunction with this OpESS, include a statement similar to the following in the description section of the finding write-up:

*This [finding or violation] was identified in connection with a review of Operating Experience Smart Sample [number and title].*

Inspection time for this OpESS is to be charged to the normal baseline procedure under which it is being documented.

#### OpESS 2012/02-07      CONTACTS

For technical support regarding the performance of this OpESS and emergent issues, contact Gerald Waig (NRR/ADRO/DSS/STSB) at 301-415-2260 or [Gerald.Waig@nrc.gov](mailto:Gerald.Waig@nrc.gov), or Shaun Anderson (NRR/ADRO/DSS/STSB) at 301-415-2039 or [Shaun.Anderson@nrc.gov](mailto:Shaun.Anderson@nrc.gov), or John Thompson (NRR/ DIRS/IOEB) at 301-415-1011 or [John.Thompson@nrc.gov](mailto:John.Thompson@nrc.gov).

For administrative, reporting, or documentation questions, contact Jeremy Bowen at 301-415-3471 or [Jeremy.Bowen@nrc.gov](mailto:Jeremy.Bowen@nrc.gov).

Revision History for OpESS 2012/02

| Commitment Tracking Number | Issue Date              | Description of Change                       | Training Needed | Training Completion Date | Comment Resolution Accession Number |
|----------------------------|-------------------------|---|-----------------|--------------------------|-------------------------------------|
| N/A                        | ML11321A229<br>01/06/12 | Initial issuance.                           | N/A             | N/A                      | <a href="#">ML12003A074</a>         |
| N/A                        | ML12139A242<br>05/17/12 | Provided additional clarity and references. | N/A             | N/A                      | N/A                                 |