

## **GL 91-18 Assistance Navigator Guidance**

This draft proposed guidance will not be part of the Inspection Manual Part 9900 Technical Guidance. However, it is intended that this information will be available to inspectors on the NRC website. As such, the staff can add clarifying examples/interpretations as they arise without reissuing the Inspection Manual Part 9900 Technical Guidance document.

**Disclaimer:** The Assistance Navigator is provided as aid to the inspector for performing reviews of operability/functionality and degraded and nonconformance issues. Nothing in the Assistance Navigator supercedes the guidance contained within GL 91-18. If a conflict arises, the Inspection Manual Part 9900 Technical Guidance provided in GL 91-18 takes precedence.

**Guidance:** For each element of the Assistance Navigator, corresponding guidance is offered with the appropriate section of the Inspection Manual Part 9900 Technical Guidance referenced. For additional guidance refer to the body of the generic letter.

The Assistance Navigator is intended as a guidance document. It is not intended to specify the order for performing evaluations of degraded and non-conforming conditions. It may be appropriate to use sections of the Assistance Navigator in an order other than specified. For example the section on corrective actions may be performed to evaluate a condition earlier identified and then the Assistance Navigator entered to assess the effectiveness of the entire process.

Guidance is not offered for sections of Assistance Navigator where the instructions are deemed adequate.

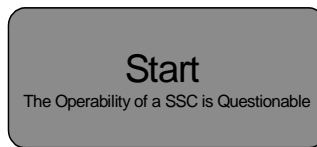
Questions and statements are provided within action boxes contained in the Assistance Navigator. Guidance for some is offered. However, where guidance is not offered these elements are provided to prompt appropriate questions. When answers to the questions are not available or unsatisfactory, the inspector should discuss the issues with management and/or enter the appropriate inspection procedure.

The questions and statements provided within the Assistance Navigator are intended to be a starting point/list of possible questions that are available for the inspector to use.

Notably, for most occurrences the SSC will have to be restored to full compliance with the CLB or the CLB appropriately modified. For restoration to full compliance, the Assistance Navigator is exited. For SSCs that will not be restored to full compliance, the evaluation of these conditions which occurs during the review of corrective actions is the most common way to exit the Assistance Navigator.

This Assistance Navigator is intended to provide the inspector guidance for review of issues covered within the scope of GL 91-18. However, many of the tools contained herein may prove valuable for the review of a multitude of issues.

Upon entry into the Assistance Navigator, Operability, Reportability, and Corrective Actions are assessed in parallel. However most operability determinations will result in a Corrective Action review. The intent of the operability determination is three-fold. First, to evaluate immediate operability determinations made by the licensee. Second, to evaluate the timeliness and content of the prompt operability determination that was performed to support the immediate determination. And third, to evaluate the licensee on-going assessment of the condition with respect to operability and corrective actions.



## **GL 91-18, Rev. 2; IM Part 9900: Technical Guidance, Section 4.0**

The process of reviewing the performance of SSCs and ensuring their operability/functionality is continuous. Guidance is provided in GL 91-18 and the associated Inspection Manual Part 9900 Technical Guidance. Many processes provide for continuous and ongoing review of SSCs, including:

- Day-to-day operation of the facility
- Implementation of programs such as inservice testing and inspection
- Plant walkdowns or tours
- Observations from the control room
- Quality assurance activities such as audits and reviews
- Engineering design reviews including design basis reconstitution.
- Maintenance activities

If the form, fit, or function of the SSC (as designed, and as stated within the CLB) is questioned or there is a potential degraded or non-conforming condition then enter the Assistance Navigator.

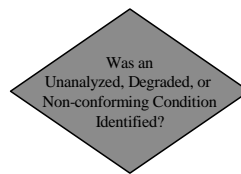
### **Examples:**

- Any aspect of the CLB for the SSC is, or has been, questioned.
- Operating experience or engineering reviews demonstrate a potential inadequacy.
- There was a failure to conform to one or more applicable codes or standards specified in the CLB.
- A SSC or supporting SSC was found to be inoperable or degraded.
- A support system for and SSC was inoperable or degraded.
- A hazard barrier for an SSC was inoperable or degraded.
- A common cause/failure issues was identified that can affect SSC performance.
- A 10 CFR Part 21 issue was identified that can affect SSC performance.



Determine if the SSC is within the Scope of GL 91-18. See **GL 91-18, Rev. 2; IM Part 9900 Technical Guidance, Section 2.0.**

**Examples: no examples needed here.**



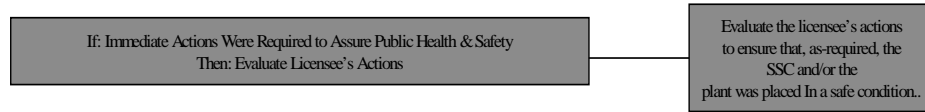
If a system is in full compliance with the current licensing basis and operability is not in question this section of the flowchart may be exited.

**GL 91-18, Rev. 2; IM Part 9900: Technical Guidance, Section 4.1**

In the course of review activities or through normal plant operation, a licensee may become aware of degraded or nonconforming conditions affecting the SSCs defined in Section 2. These activities include, but are not limited to, the following:

- Actual equipment performance (including common mode failures)
- Review of operational events
- Design modifications to facilities
- Examinations of records
- Additions to facilities
- Vendor reviews or inspections
- Plant system walkdowns
- Operational experience reports
- Part 21 notifications

**Examples: no examples needed here.**

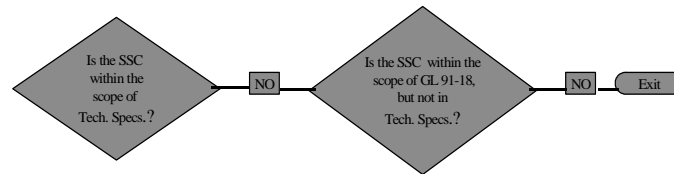


## GL 91-18, Rev. 2; IM Part 9900: Technical Guidance, Section 5.0

Action is required any time an SSC that is required by TS or NRC requirement to be operable is found to be inoperable. If an immediate threat to public health and safety is identified, action to place the plant in a safe condition should be completed expeditiously.

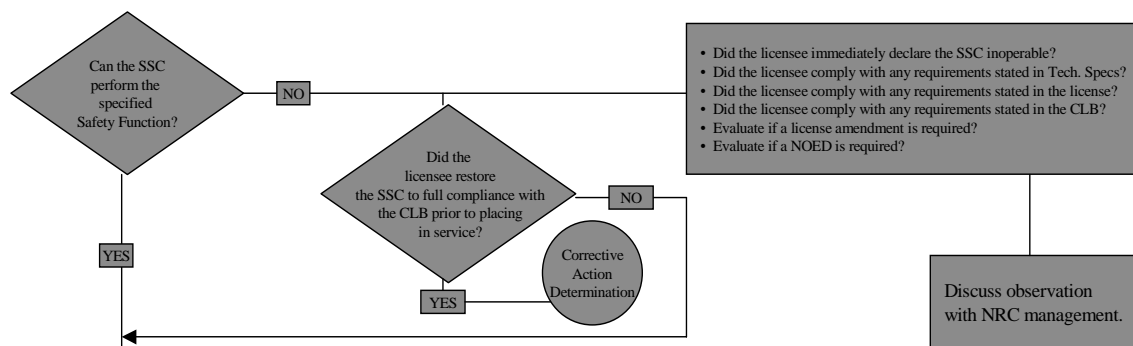
When a TS surveillance or other processes indicate a potential deficiency or loss of quality, licensed operators must make a timely determination of the operability of the affected SSCs, and act on the results of that determination.

**Examples: no examples needed here.**



The scope of SSCs covered by GL 91-18 is much broader than those systems in Technical Specifications. These decision blocks help segregate SSC within Technical Specifications from those not covered by the Technical Specifications.

**Examples: no examples needed here.**



### GL 91-18, Rev. 2; IM Part 9900: Technical Guidance, Section 5.2

An immediate determination of SSC operability should be made by licensed operators at the time a potential deficiency or loss of quality is identified. In most cases, it is expected that the decision can be made immediately (e.g., loss of motive power, etc.) even though complete information may not be available. The immediate determination should be based on the best information available. An immediate determination concluding that the SSC is operable must be predicated on the licensee's reasonable expectation that the SSC is operable, and that the prompt determination will support that expectation. If reasonable expectation of operability does not exist utilizing the best available information at the time, the component shall be declared inoperable. The immediate operability determination should be revised as appropriate, as new or additional information becomes available. (See example.)

### GL 91-18, Rev. 2; IM Part 9900: Technical Guidance, Section 3.3

Performance of the specified safety functions consistent with the CLB acceptance criteria is required for the SSC to be considered TS operable. In addition, an SSC meets its specified function when it can perform as designed, tested, and maintained.

Any degradation of function will result answering the "Start" question as yes and the impact on non-safety functions will be evaluated subsequently. The first set of questions is designed as an aid to the inspector to help identify when further review is required. Any SSCs that can not perform any of the specified safety functions requires evaluation of the licensee's immediate actions. If any of the answers to the questions indicates further review may be warranted, then a discussion with NRC management, the licensee, and follow-up using appropriate inspection may be necessary.

The associated decision diamond is designed to evaluate conditions discovered while a SSC is out-of-service or when a SSC is returned to service in an operable but degraded condition. If a degraded or non-conforming condition was discovered and restoration occurs without returning the SSC to full compliance, an evaluation is required and the process restarted. If the SSC is returned to full compliance corrective action will be reviewed to assess issues such as extent of condition or performance indicator reporting requirements.

### Examples:

1. Two weeks after a refueling outage a chemistry technician notices that a hanger in the ECCS pump room on the residual heat removal system pump suction valve has no bolts. This system has a 12 hour shutdown LCO Completion Time. He reports his observation to the SRO on shift.

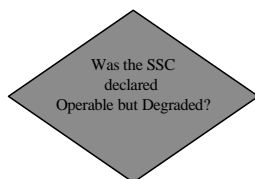
Q. Does the SRO on shift have to declare the SSC inoperable?

A. No, he should **immediately** inspect the observation and assess the condition.

The SRO finds that the technician was correct and controlled drawing indicates the SSC is a seismic restraint.

Q. How long does the SRO have to figure out that the system is inoperable and enter the LCO?

A. If the SRO has no evidence to the contrary, the LCO should be entered immediately.



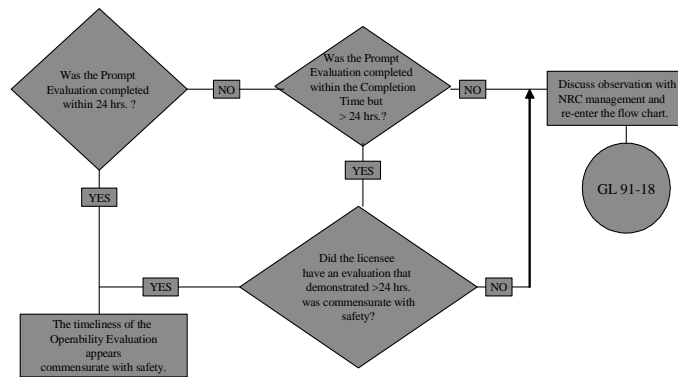
### GL 91-18, Rev. 2; IM Part 9900: Technical Guidance, Section 6.1

If SSCs in TS have been determined to be operable, although a degraded or nonconforming condition is present, the SSCs are considered “operable but degraded.” Similarly, SSCs not in TS that are determined to be functional, although a degraded or nonconforming condition is present, are considered “functional but degraded.”

The declaration of operable but degraded ensures that the condition is entered into the licensee’s corrective action program, and a review will continue (such as appropriate 50.59 evaluations) that will evaluate the impact of the off-normal condition on other aspects of plant operation.

### Examples:

1. A BWR ECCS system is found to have lost the ability to pump down the suppression pool. The safety function for this system is to provide water to the core post accident, and this function has not been lost. However, the ability to pump down the suppression pool is annotated in emergency operating procedures, and may be necessary to maintain containment integrity. Therefore, the BWR ECCS system is operable but degraded. This pump down ability will need to be evaluated using the corrective action process for impact on public health and safety, core damage probability, and any risk related to radioactive release.



The 24 hour guidance is for SSCs in TS and is subsequent to immediately declaring a system operable/inoperable. The 24 hour guidance is not a grace period to be utilized for repair of a degraded or non-conforming condition (i.e. it is not a 24 hour extension of the Completion Time).

### GL 91-18, Rev. 2; IM Part 9900: Technical Guidance, Section 5.3

Subsequent to the immediate operability determination, a prompt operability determination should be made by licensed operators. Other groups, such as Engineering or Licensing, may be required to provide input into the prompt operability determination. For SSCs in TS, 24 hours is usually a reasonable time frame for completion of the prompt operability determination. However, the completion times contained in TS provide reasonable guidelines for safety significance of the SSC and therefore, the safety significance of the SSC may be used as part of a reasonable safety justification to extend the completion time of the prompt determination to the completion time specified in TS. In all cases, a reasonable expectation of operability must exist while the prompt determination is completed. For those SSCs with completion times less than or equal to 24 hours, where a reasonable expectation of operability exists, the prompt determination of operability should be completed within 24 hours.

#### Examples:

Two weeks after a refueling outage a chemistry technician notices that a hanger in the ECCS pump room on the residual heat removal system pump suction valve has no bolts. This system has a 12 hour shutdown LCO Completion Time. He reports his observation to the SRO on shift.

- Q. Does the SRO on shift have to declare the SSC inoperable?  
 A. No, he should **immediately** inspect the observation and assess the condition.

The SRO finds that the technician was correct and controlled drawing indicates the SSC is a seismic restraint.

- Q. How long does the SRO have to figure out that the system is inoperable and enter the LCO?



- A. If the SRO has no evidence to the contrary the LCO should be entered immediately.
- Q. What if the SRO knows a safety evaluation exists for this system, and that it indicates any one seismic support may be out-of-service with no impact on the systems performance?
- A. If the SRO also knows that work was performed on the component, and the cause is not due to some condition such as water-hammer, he may have reasonable assurance that the a decision to declare the system operable will be supported by the prompt operability evaluation. If reasonable assurance exists, the licensee may have up to 24 hours to complete the prompt operability determination.

- Did the scope, as a minimum:
  - Determine what equipment is degraded or potentially nonconforming?
  - Determine the safety functions of the equipment?
  - Determine the circumstances of the potential nonconformance, including the possible failure mechanism?
  - Determine the requirement or commitment established for the equipment, and why the requirement or commitment may not be met?
  - Determine by what means and when the potentially non conforming equipment was first discovered?
  - Determine the safest plant configuration including the effect of transitional action?
  - Determine the basis for declaring the affected system operable, through: analysis, test or partial analysis, operating experience, or engineering judgment?
- Does any item in the CLB impact the operability evaluation?
- Does the prompt evaluation appear to validate operability versus verify conformance to the CLB (Justify operation versus verify design basis or other CLB)?
- Does the prompt evaluation consider mission time for related safety functions?
- Does the prompt evaluation rely on testing to support continued operation?
- Does the prompt evaluation rely on compensatory measures for continued operation and if so was the need for a 10 CFR Part 50.59 review evaluated?
- Does the prompt evaluation consider obvious extent-of-condition issues?
- Did the evaluation consider the relationship between commitments, code requirements, and Tech. Spec. operable; and consider the most restrictive requirement?
- Evaluate any use of test, partial test, or analysis using different methods than initial design.

These questions are design as an aid to the inspector to help identify if further review of the licensee's prompt operability determination is warranted. Any SSCs that cannot perform any of the specified safety functions as described in the CLB requires evaluation of the licensee's immediate actions. If any of the answers to the questions indicates further review may be warranted, then a discussion with NRC management, the licensee, and follow-up using appropriate inspection may be necessary.

### Examples:

A licensee has been entering the LCO for both emergency diesel generators for the last three afternoons when the ultimate heat sink temperature exceeds the maximum allowable for the engines. Before the LCO Completion Time is exceeded, the cooler night air temperatures cause the ultimate heat sink temperature to drop and the LCO can be exited. Weather forecasts indicate that the heat conditions are going to remain the same or worsen.

The prompt operability determination resulted in the declaration of the diesels as inoperable, the LCO entered, and that no further action is required. Additionally, the licensee contends that they are appropriately following their license.

- Q. Is the licensee following their license by entering and existing the LCO as the temperature changes during the day.
- A. No. The CLB would require diesel operation in excess of 24 hours if an accident were to happen. The prompt operability determination should conclude that the diesels would not meet the mission time called out in the CLB. This situation may require a technical specification change or relief.

If engineering judgment was used to support the determination of operable-but-degraded:

- Were sound engineering principals used and documented to support the evaluation?
- If an expert testimony was used, were the credentials adequate to justify expertise, and was the basis for the conclusion documented?

These questions are designed as an aid to the inspector to help identify if further review of the licensee's use of engineering judgement is warranted. Use of engineering judgement should be well supported and properly document the use of expert testimony coupled with evidence from operating experience or appropriate engineering principals.

### **GL 91-18, Rev. 2; IM Part 9900: Technical Guidance, Section 5.8**

If a licensee uses engineering judgement to help determine safety significance, operability, or qualification, the licensee should document the judgement in sufficient detail so that an individual knowledgeable in the technical discipline of the judgement would be able to review and understand its basis. For example, a simple statement of the assumptions would be sufficient for a very obvious judgement, while detailed calculations may be needed to support more complex judgements. An inadequately documented engineering judgement, no matter how sound, cannot be independently scrutinized and so the basis for it could be misunderstood by individuals later working on the affected SSC. In the worst case, the engineering judgement could be inadvertently invalidated by later changes to the equipment or supporting analyses and calculations.

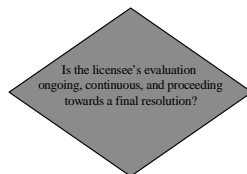
#### **Examples:**

1. After a power uprate, with the plant operating a non-conservative error is discovered in the computerized pump suction head calculation for an ECCS pump which indicates the pump is inoperable. The pump is declared inoperable and enters a 7 day shutdown LCO. The licensee contacts a similarly designed facility and discovers that they found the same condition prior, re-analyzed the condition using a different methodology, and gained significant margin.  
  
Q. Can the licensee use a calculation obtained from a different licensee to demonstrate operability.  
A. No. However the licensee can obtain the calculation, document that the assumptions are and parameters are equivalent or more conservative that required for their SSC, provide evidence that the methodology is acceptable for application to their design, indicate that the calculation (if performed) would not require a license amendment (i.e. a 50.59 would allow the application of the methodology and not require an amendment), and using engineering judgement based upon sound engineering principals conclude in their prompt operability determination that the system is operable but degraded.
2. A small air leak is identified on an air fitting for an accumulator for a safety related air operated valve. The system design assumes no leakage in the fittings or reverse leakage through the associated supply check valve. A pressure drop test is done to determine the rate of leakage. A simple calculation using the ideal gas law indicates that enough margin exists such that the rate of leakage will not impact the safety function of the valve. The licensee declares the valve operable and plant operation continues.

- Q. Is the use of a simple or back-of-the-envelope calculation acceptable for declaration of operability.
- A. No. The leakage is an off normal condition, can further degrade resulting in an inoperable SSC. However, if it is coupled with appropriate compensatory measures to assure that the degraded condition does not worsen and a plan to return the SSC to full compliance, it may be acceptable for declaration of operable but degraded.
3. The licensee has identified that a seismic snubber is damaged on a SSC in Technical Specifications. They have scheduled the replacement of the snubber in 2 weeks and determined the system is operable but degraded because a risk evaluation indicated that the probability of a seismic event during the next two weeks is  $10e-9$ .
- Q. Is the application of the risk evaluation acceptable to determine the system operable but degraded.
- A. No. The use of risk in operability determinations is not acceptable.

**GL 91-18, Rev. 2; IM Part 9900: Technical Guidance, Appendix C.6**

Probabilistic risk assessment (PRA) is a valuable tool for the relative evaluation of accident scenarios while considering, among other things, the probabilities of occurrence of accidents or external events. The definition of operability states, however, that the SSC must be capable of performing its specified function(s). The inherent assumption is that the occurrence conditions or event exists and that the safety function can be performed. The use of PRA or probabilities of the occurrence of accidents or external events is not acceptable for making operability decisions.

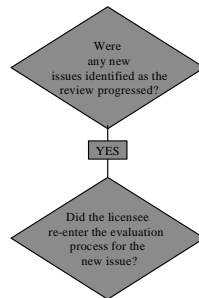


This decision ensures that licensee continues to evaluate operability relative to the CLB after the decision to declare the SSC operable but degraded.

**GL 91-18, Rev. 2; IM Part 9900: Technical Guidance, Section 6.1**

The prompt operability determination for the degraded/nonconforming condition, as documented per Section 5.8, essentially constitutes a basis for continuing operations. This evaluation should continue to be reviewed in an ongoing manner until corrective actions are successfully completed, SSCs are deemed to be operable/functional, or until a preponderance of the evidence no longer supports the prompt determination.

**Examples:** No examples needed here. See subsequent discussion on newly identified issues.

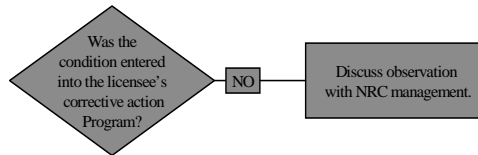


These decision blocks evaluate any new information discovered during the licensee review of the condition. As the licensee continues the evaluation and they proceed toward defining their corrective actions and extending the review of the CLB, any new evidence should be immediately evaluated to ensure that the SSC remains operable. Therefore, new information which may impact the prompt operability determination would require re-entry into the process. If the final evaluation is consistent with the prompt then evaluate the corrective actions.

### Examples:

1. Two weeks after a refueling outage a chemistry technician notices that a hanger in the ECCS pump room on the residual heat removal system pump suction valve has no bolts. This system has a 12 hour shutdown LCO Completion Time. He reports his observation to the SRO on shift. The SRO evaluates the observation and determines that a safety evaluation exists for this system, and that it indicates any one seismic support may be out-of-service with no impact on the systems performance. Additionally, the SRO also knows that work was performed on the component, and the cause is not due to some condition such as water-hammer, therefore he declared the system operable-but-degraded.
  - Q. Assuming the repair has not been completed. What should be done if an engineer performing the extent of condition review discovers that a modifications performed subsequent to the described safety evaluation requires this snubber to be operable at all times?
  - A. The evidence indicates that the system is inoperable. The SRO should be immediately informed of the issue and the appropriate LCO entered.
2. After maintenance, a motor-operated throttle valve is opened partially to establish flow. Subsequently the valve given a demand signal to open further to increase flow and fails. It is determined that the cause was due to a procedural error induced during the last revision for the procedure that allows adjustments to the torque switch setting. The LCO was entered until the error was corrected and valve restored.
  - Q. While reviewing maintenance history to determine other potentially affected components the licensee discovers that an EPRI thrust formula that is required that accounts for the loss of breakaway torque/inertia on all throttle valves has not been included in any thrust calculations and torque settings for all motor-operated throttle valves. What should be done?
  - A, This is a new condition affecting multiple SSCs. A new condition report should be generated, the SRO notified, and LCO's for all affected SSC should be

entered until resolution of the condition (either generically, or on a component by component basis).



This decision block assess if the condition was entered into the corrective action program. Many licensee's use the corrective action program as the tool to document operability, however corrective actions are assessed separately. A failure to complete corrective actions may warrant inspection using appropriate inspection guidance. Additionally, NRC management should be informed of situations where corrective actions do not exist for degraded or non-conforming conditions.

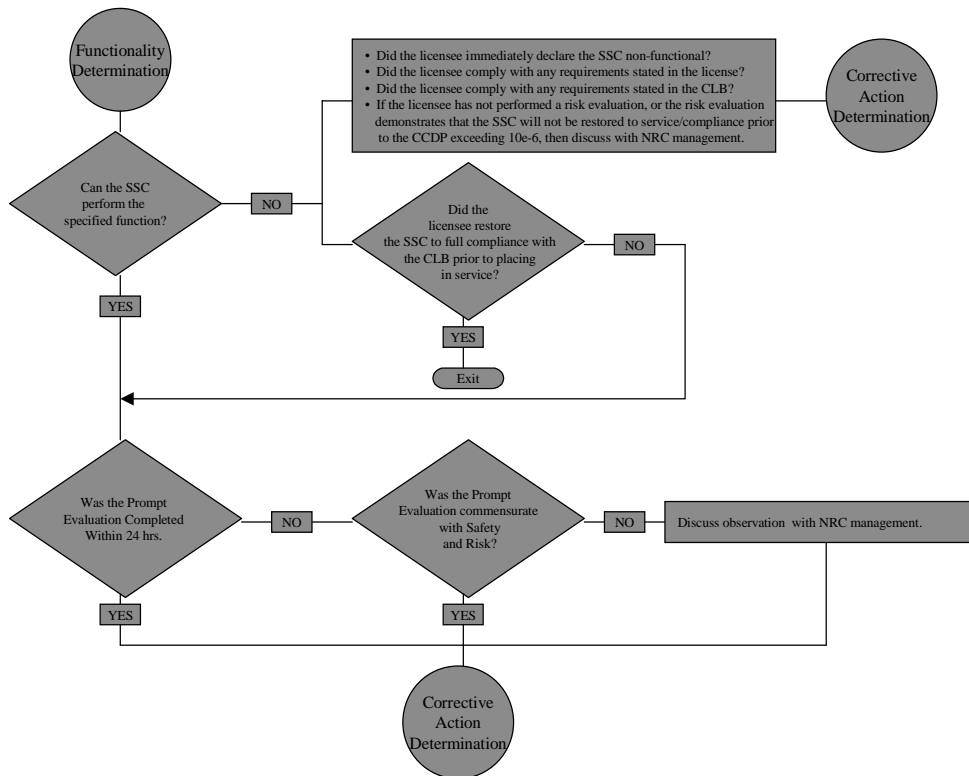
For cases where the licensee elects to apply the corrective action program to only Appendix B systems, or fails to enter a condition on an Appendix B system into the corrective action program, discussions with NRC management is appropriate to determine the best method to assess this condition, in parallel the process is continued to aid the inspector in assessing the elements of the condition. Discussion with management is also necessary because enforcement credit is given to the licensee for having entered a finding into the corrective action program regardless of the Appendix B relevance of the SSC in question.

#### **GL 91-18, Rev. 2; IM Part 9900: Technical Guidance, Section 6.2**

An SSC that is not fully qualified, maybe in an operable but degraded state, provided the SSC can perform its specified safety function when called upon. However, a licensee's corrective action program should restore the SSC to full qualification in a timely manner commensurate with the safety significance. The principle of treating the related concepts of operability/functionality and restoration of qualification separately is to ensure that the operability/functionality determination is focused on safety and is not delayed by decisions or actions necessary to plan or implement the corrective action, i.e., restoring full qualification.

**Examples: no examples needed.**



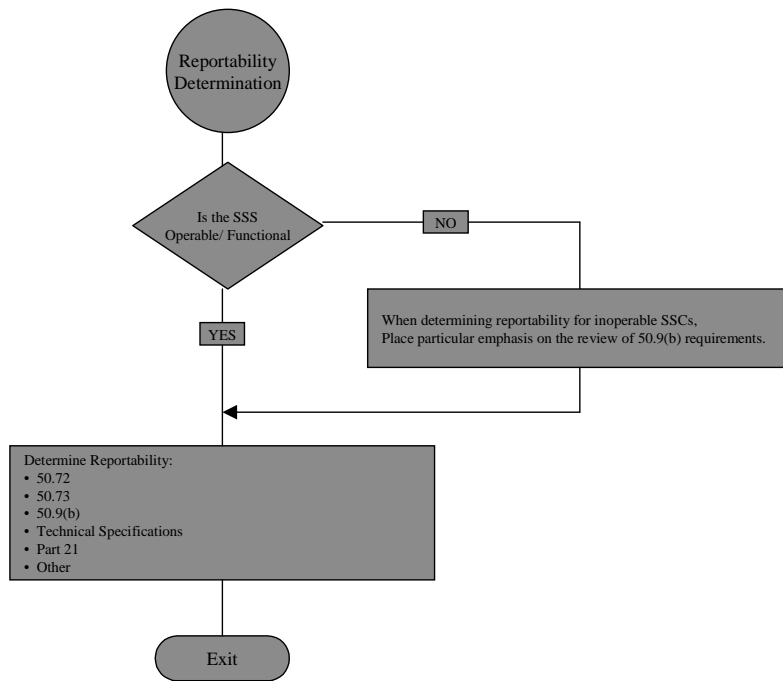


For systems not in technical specifications the prompt determinations of functionality is similar to operability determinations. The operability determination guidance provides sufficient direction for functionality determinations. The exception is that for functionality, engineering judgement coupled with safety significance of the SSC should be used to determine timeliness of prompt determinations and corrective actions.

### Examples:

The licensee has identified that a section of the domestic water system that supplies a cross-connect valve to the fuel pool make-up water line is inoperable due to a valve disk that has separated from the stem. The UFSAR indicates that this function is one of 5 methods to add water to the fuel pool. Additionally, the licensee's emergency operating procedures provide guidance for use of each method described in the UFSAR. The licensee risk group evaluated the loss of this system and determined that the CDF for this function is negligible if they do not repair it until the next outage in 22 months. The corrective action is scheduled to be assessed in 6 months.

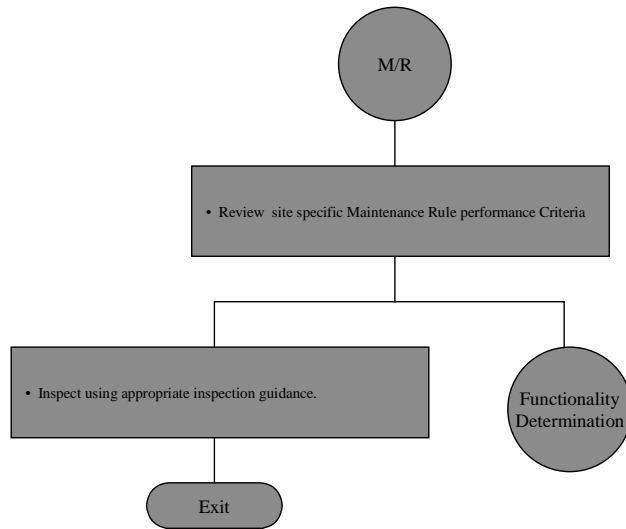
- Q. Is it permissible for the licensee to wait 6 months to complete the final functionality evaluation.
- A. Yes. The evaluation has been scheduled commensurate with safety and appropriately documented.



The discovery of a degraded or non-conforming condition may require reporting under several criteria. Therefore, reporting criteria should be reviewed for applicability.

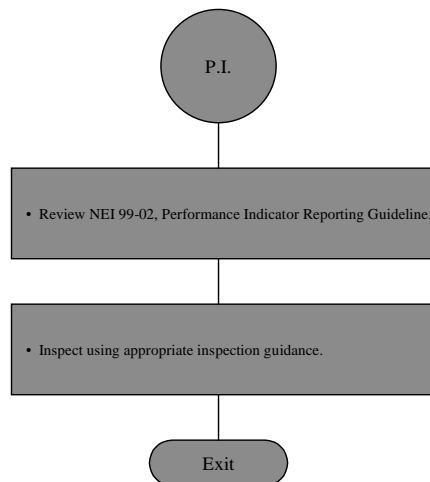
**Examples: see NUREG-1022**





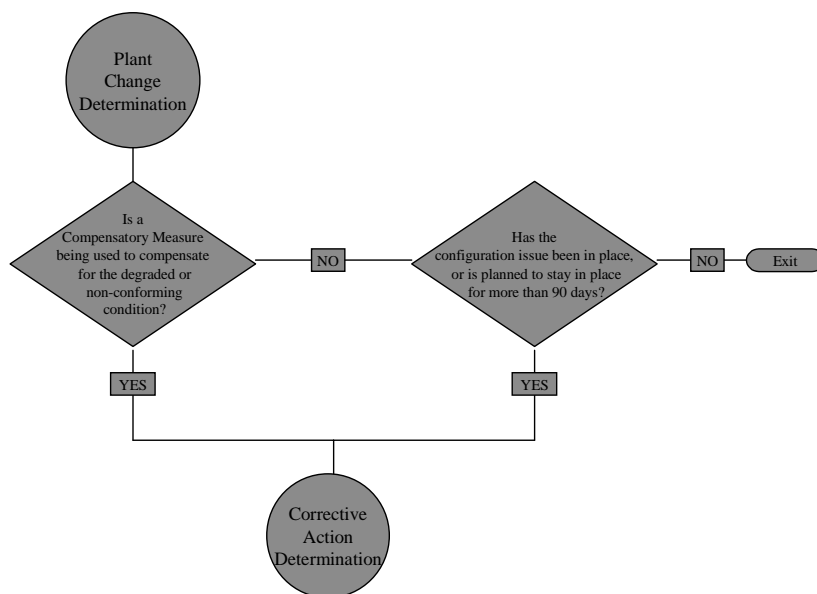
The discovery of a degraded or non-conforming condition may affect maintenance rule requirements. Therefore, a review should be conducted relative to 10CFR 50.65.

**Examples: See applicable MR guidance.**



The discovery of a degraded or non-conforming condition may impact Performance Indicator reporting requirements. Therefore, a review should be conducted relative to NEI 99-02.

**Examples: See applicable PI guidance.**



### **GL 91-18, Rev. 2; IM Part 9900: Technical Guidance, Section 7.2**

With respect to the use of compensatory measures, the approved regulatory guidance (Regulatory Guide 1.187, endorsing NEI 96-07, Revision 1) for implementing the revised 10 CFR 50.59 rule states:

“If an interim compensatory action is taken to address the condition and involves a temporary procedure or facility change, 10 CFR 50.59 should be applied to the temporary change. The intent is to determine whether the temporary change/compensatory action itself (not the degraded condition) impacts other aspects of the facility or procedures described in the UFSAR.”

In considering whether a compensatory measure may affect other aspects of the facility, a licensee should pay particular attention to ancillary aspects of the compensatory measure that may result from actions taken to directly compensate for the degraded condition.

### **GL 91-18, Rev. 2; IM Part 9900: Technical Guidance, Appendix B.1**

These temporary alterations associated with maintenance are to be assessed as part of the 10 CFR 50.65(a)(4) risk assessment and, consistent with NRC regulatory guidance, a separate 10 CFR 50.59 review of the measures is not required unless (1) during power operations, the temporary alteration will remain in effect for more than 90 days, or (2) the temporary alteration is not removed and the plant is fully restored upon completion of the maintenance (see Regulatory Guide 1.187).

**Examples: Provide examples here.**