

NRC INSPECTION MANUAL

OTSB

PART 9900: TECHNICAL GUIDANCE

STS30DEG.TG

RESOLUTION OF DEGRADED AND NONCONFORMING CONDITIONS

RESOLUTION OF
DEGRADED AND NONCONFORMING CONDITIONS

Table of Contents

	<u>Page</u>
1.0 P U R P O S E A N D SCOPE.....	1
2.0 DEFINITIONS.....	1
2.1 C u r r e n t L i c e n s i n g Basis.....	1
2.2 D e s i g n Basis.....	2
2.3 D e g r a d e d Condition.....	2
2.4 N o n c o n f o r m i n g Condition.....	2
2.5 F u l l Qualification.....	2
3.0 BACKGROUND.....	2
4.0 D I S C U S S I O N O F N O T A B L E PROVISIONS.....	4
4.1 P u b l i c H e a l t h a n d Safety.....	4
4.2 O p e r a b i l i t y Determinations.....	4
4.3 The Current Licensing Basis and 1 0 C F R 5 0 A p p e n d i x B.....	4
4.4 Discovery of an Existing But Previously U n a n a l y z e d C o n d i t i o n o r Accident.....	4
4.5 Justification for Continued Operation (JCO).....	4
4.5.1 Background.....	4

4.5.2	J	C	O
	Definition.....		
4		
4.5.3	Items	for	Consideration
	JCO.....		in a
			5
4.5.4	Discussion	of	Industry-Type
	JCOs.....		5
4.6	R e a s o n a b l e	A s s u r a n c e	o f
	Safety.....		5
4.7	E v a l u a t i o n	o f	C o m p e n s a t o r y
	Measures.....		6
4.8	F i n a l	C o r r e c t i v e	e
	Action.....		7
REFERENCE.....			
.....8			

RESOLUTION OF
DEGRADED AND NONCONFORMING CONDITIONS

1.0 PURPOSE AND SCOPE

To provide guidance to NRC inspectors on resolution of degraded and nonconforming conditions affecting the following systems, structures, or components (SSCs):

- (i) Safety-related SSCs, which are those relied upon to remain functional during and following design basis events (A) to ensure the integrity of the reactor coolant pressure boundary, (B) to ensure the capability to shut down the reactor and maintain it in a safe shutdown condition, or (C) to ensure the capability to prevent or mitigate the consequences of accidents that could result in potential offsite consequences comparable to the 10 CFR Part 100 guidelines. Design basis events are defined the same as in 10 CFR 50.49(b)(1).
- (ii) All SSCs whose failure could prevent satisfactory accomplishment of any of the required functions identified in (i) A, B, and C.
- (iii) All SSCs relied on in the safety analyses or plant evaluations that are a part of the plant's current licensing basis. Such analyses and evaluations include those submitted to support license amendment requests, exemption requests, or relief requests, and those submitted to demonstrate compliance with the Commission's regulations such as fire protection (10 CFR 50.48), environmental qualification (10 CFR 50.49), pressurized thermal shock (10 CFR 50.61), anticipated transients without scram (10 CFR 50.62), and station blackout (10 CFR 50.63).
- (iv) Any SSCs subject to 10 CFR Part 50, Appendix B.
- (v) Any SSCs subject to 10 CFR Part 50, Appendix A, Criterion 1.
- (vi) Any SSCs explicitly subject to facility Technical Specifications (TS).
- (vii) Any SSCs subject to facility TS through the definition of operability (i.e., support SSCs outside TS).
- (viii) Any SSCs described in the FSAR.

This guidance is directed toward NRC inspectors that are reviewing actions of licensees that hold an operating license. Although this guidance generally reflects existing staff practices, application on specific plants may constitute a backfit. Consequently, significant differences in licensee practices should be discussed with NRC management to ensure that the guidance is applied in a reasonable and consistent manner for all licensees.

2.0 DEFINITIONS:

2.1 Current Licensing Basis

Current licensing basis (CLB) is the set of NRC requirements applicable to a specific plant, and a licensee's written commitments for assuring compliance with and operation within applicable NRC requirements and the plant-specific design basis (including all modifications and additions to such commitments over the life of the license) that are docketed and in effect. The CLB includes the NRC regulations contained in 10 CFR Parts 2, 19, 20, 21, 30, 40, 50, 51, 55, 72, 73, 100 and appendices thereto; orders; license conditions; exemptions, and Technical Specifications (TS). It also includes the plant-specific design basis information defined in 10 CFR 50.2 as documented in the most recent Final Safety Analysis Report (FSAR) as required by 10 CFR 50.71 and the licensee's commitments remaining in effect that were made in docketed licensing correspondence such as licensee responses to NRC bulletins, generic letters, and enforcement actions, as well as licensee commitments documented in NRC safety evaluations or licensee event reports.

2.2 Design Basis

Design basis is that body of plant-specific design bases information defined by 10 CFR 50.2.

2.3 Degraded Condition

A condition of an SSC in which there has been any loss of quality or functional capability.

2.4 Nonconforming Condition

A condition of an SSC in which there is failure to meet requirements or licensee commitments. Some examples of nonconforming conditions include the following:

1. There is failure to conform to one or more applicable codes or standards specified in the FSAR.
2. As-built equipment, or as-modified equipment, does not meet FSAR descriptions.
3. Operating experience or engineering reviews demonstrate a design inadequacy.
4. Documentation required by NRC requirements such as 10 CFR 50.49 is not available or deficient.

2.5 Full Qualification

Full qualification constitutes conforming to all aspects of the current licensing basis, including codes and standards, design criteria, and commitments.

3.0 BACKGROUND

A nuclear power plant's SSCs are designed to meet NRC requirements, satisfy the current licensing basis, and conform to specified codes and standards. For degraded or nonconforming conditions of these SSCs, the licensee may be required to take actions required by the Technical Specifications (TS). The provisions of Title 10 of the Code of Federal Regulations (10 CFR), Part 50, Appendix B, Criteria XVI, may apply requiring the licensee to identify promptly and correct conditions adverse to safety or quality. Reporting may be required in accordance with Sections 50.72, 50.73, and 50.9(b) of 10 CFR Part 50, 10 CFR Part 21, and the Technical Specifications (TS). Collectively, these requirements may be viewed as a process for licensees to develop a basis to continue operation or to place the plant in a safe condition, and to take prompt corrective action. Changes to the facility in accordance with 10 CFR 50.59 may be made as part of the corrective action required by Appendix B. The process displayed by means of the attached chart titled, "Resolution of Degraded and Nonconforming Conditions," recognizes these and other provisions that a licensee may follow to restore or establish acceptable conditions. These provisions are success paths that enable licensees to continue safe operation of their facilities.

4.0 DISCUSSION OF NOTABLE PROVISIONS

4.1 Public Health and Safety

All success paths, whether specifically stated or not, are first directed to ensuring public health and safety and second to restoring the systems, structures, or components (SSCs) to the current licensing basis of the plant as an acceptable level of safety. Identification of a degraded or nonconforming condition that may pose an immediate threat to the public health and safety requires the plant to be placed in a safe condition.

Technical Specifications (TS) address the safety systems and provide Limiting Conditions for Operation (LCOs) and Allowed Outage Times (AOTs) required to ensure public health and safety.

4.2 Operability Determinations

For guidance on operability see the Inspection Manual, Part 9900, "OPERABLE/OPERABILITY: ENSURING THE FUNCTIONAL CAPABILITY OF A SYSTEM OR COMPONENT," and see the Inspection Manual, Part 9900, "STANDARD TECHNICAL SPECIFICATIONS STS SECTION 1, OPERABILITY."

4.3 The Current Licensing Basis and 10 CFR 50, Appendix B

The design and operation of a nuclear plant is to be consistent with the current licensing basis. Whenever degraded or nonconforming conditions of SSCs subject to Appendix B are identified, Appendix B requires prompt corrective action to correct or resolve the condition. The licensee must establish a time frame for completion of corrective action. The timeliness of this corrective action should be commensurate with the safety significance of the issue.

The time frame governing corrective action begins with the discovery of the condition, not with the time when it is reported to the NRC. In determining whether the licensee is making reasonable efforts to complete corrective action promptly, NRC will consider whether corrective action was taken at the first opportunity, as determined by safety significance (effects on operability, significance of degradation) and by what is necessary to implement the corrective action. Factors that might be included are the amount of time required for design, review, approval, or procurement of the repair/modification; availability of specialized equipment to perform the repair; or the need to be in a hot or cold shutdown to implement the actions. The NRC expects time frames longer than the next refueling outage to be explicitly justified by the licensee as part of the deficiency tracking documentation. If the licensee does not resolve the degraded or nonconforming condition at the first available opportunity or does not appropriately justify a longer completion schedule, the staff would conclude that corrective action has not been timely and would consider taking enforcement action.

4.4 Discovery of an Existing But Previously Unanalyzed Condition or Accident

In the course of its activities, the licensee may discover a previously unanalyzed condition or accident. Upon discovery of an existing but previously unanalyzed condition that significantly compromises plant safety, the licensee shall report that condition in accordance with 10 CFR 50.72 and 50.73, and put the plant in a safe condition.

For a previously unanalyzed condition or accident that is considered a significant safety concern, but is not part of the design basis, the licensee may subsequently be required to take additional action after consideration of backfit issues (see Section 50.109(a)(5)).

4.5 Justification for Continued Operation (JCO)

4.5.1 Background

The license authorizes the licensee to operate the plant in accordance with the regulations, license conditions and the TS. If an SSC is degraded or nonconforming but operable, the license establishes an acceptable basis to continue to operate and the licensee does not need to take any further actions. The licensee must, however, promptly identify and correct the condition adverse to safety or quality in accordance with 10 CFR Part 50, Appendix B, Criterion XVI.

The basis for this authority to continue to operate arises because the TS contain the specific characteristics and conditions of operation necessary to obviate the possibility of an abnormal situation or event giving rise to an immediate threat to public health and safety. Thus, if the TS are satisfied, and required equipment is operable, and the licensee is correcting the degraded

or nonconforming condition in a timely manner, continued plant operation does not pose an undue risk to public health and safety.

Under certain defined and limited circumstances, the licensee may find that strict compliance with the TS would cause an unnecessary plant action not in the best interest of public health and safety. NRC review and action is required prior to the licensee taking actions that are contrary to compliance with the license conditions or TS unless an emergency situation is present such that 10 CFR 50.54(x) and (y) is applied. A JCO, as defined herein for general NRC purposes, is the licensee's technical basis for requesting NRC responses to such action.

4.5.2 JCO Definition

A Justification for Continued Operation¹ (JCO) is the licensee's technical basis for requesting authorization to operate in a manner that is prohibited (e.g., outside TS or license) absent such authorization. The preparation of JCOs does not constitute authorization to continue operation.

4.5.3 Items for Consideration in a JCO

Some items which are appropriate for consideration in a licensee's development of a JCO include:

- o Availability of redundant or backup equipment
- o Compensatory measures including limited administrative controls
- o Safety function and events protected against
- o Conservatism and margins, and
- o Probability of needing the safety function.
- o PRA or Individual Plant Evaluation (IPE) results that determine how operating the facility in the manner proposed in the JCO will impact the core damage frequency.

4.5.4 Discussion of Industry-Type JCOs

Currently, some licensees refer to two other documents or processes as JCOs that are not equivalent to and do not perform the same function as the NRC-recognized JCO (as defined in 4.5.2). This is an acceptable industry practice and to the extent the industry JCO fulfills other NRC requirements, the JCOs will be selectively reviewed and audited accordingly.

¹ Regulations, generic letters, and bulletins may provide direction on specific issue JCOs, which do not require that they be submitted. Licensees may also use the JCO for situations other than for operating in a prohibited manner. The JCO term has been used in Generic Letters 88-07 on Environmental Qualifications of Electrical Equipment and 87-02 on Seismic Adequacy. Licensees should continue to follow earlier guidance regarding the preparation of JCOs on specific issues.

In the first industry-type JCO, the licensee may consider the entire process depicted in the attached chart as a single JCO that includes such things as the basis for operability, PRA, corrective action elements, and alternative operations.

In the second industry-type JCO, the licensee may consider the documentation that is developed to support facility operation after the operability decision has been made as a JCO. This documentation can cover any or all of the items listed under "Interim Operation" on the attached chart.

Although the "JCO" is used differently by some licensees, the NRC concern is that the operability decision is correct, documentation of licensee's actions are appropriate, and submittals to the NRC are complete. The licensee's documentation of the JCO's is normally proceduralized through the existing plant record system, which is auditable.

4.6 Reasonable Assurance of Safety

For SSCs that are not expressly subject to TS and that are determined to be inoperable, the licensee should assess the reasonable assurance of safety. If the assessment is successful, then the facility may continue to operate while prompt corrective action is taken. Items to be considered for such an assessment include the following:

- o Availability of redundant or backup equipment
- o Compensatory measures including limited administrative controls
- o Safety function and events protected against
- o Conservatism and margins, and
- o Probability of needing the safety function.
- o PRA or Individual Plant Evaluation (IPE) results that determine how operating the facility in the manner proposed in the JCO will impact the core damage frequency.

4.7 Evaluation of Compensatory Measures

In its evaluation of the impact of a degraded or nonconforming condition on plant operation and on operability of SSCs, a licensee may decide to implement a compensatory measure as an interim step to restore operability or to otherwise enhance the capability of SSCs until the final corrective action is complete. Reliance on a compensatory measure for operability should be an important consideration in establishing the "reasonable time frame" to complete the corrective action process. NRC would normally expect that conditions that require interim compensatory measures to demonstrate operability would be resolved more promptly than conditions that are not dependent on compensatory measures to show operability, because such reliance suggests a greater degree of degradation. Similarly, if an operability determination is based

upon operator action, NRC would expect the nonconforming condition to be resolved expeditiously.

On July 21, 1997, the Nuclear Energy Institute (NEI) submitted to the NRC a guidance document, NEI 96-07 [Final Draft], "Guidelines for 10 CFR 50.59 Safety Evaluations." Part of this guidance relates to applicability of 10 CFR 50.59 to degraded and nonconforming conditions. With respect to the use of compensatory measures, the guidance states:

- If an interim compensatory action is taken to address the condition and involves a procedure change or temporary modification, a 10 CFR 50.59 review should be conducted and may result in a safety evaluation. The intent is to determine whether the compensatory action itself (not the degraded condition) impacts other aspects of the facility described in the SAR.

The staff concludes that this is an acceptable approach for dealing with compensatory actions within the context of a corrective action process.

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. As an example, suppose a licensee plans to close a valve to isolate a leak. Although that action would temporarily resolve the leak, it has the potential to affect flow distribution to other components or systems, may complicate required operator responses, or could have other effects that should be evaluated before the compensatory measures are implemented. In accordance with 10 CFR 50.59, should the evaluation determine that implementation of the compensatory action itself would involve a TS change or an unreviewed safety question (USQ), NRC approval, in accordance with 10 CFR 50.90 and 50.92, is required prior to implementation of the compensatory action.

4.8 Final Corrective Action

The responsibility for corrective action rests squarely on the licensee. A licensee's range of corrective action could include (1) full restoration to the SAR-described condition, (2) NRC approval for a change to its licensing basis to accept the as-found condition as is, or (3) some modification of the facility other than restoration to the original FSAR condition. If corrective action is taken so that the degraded or nonconforming condition is restored to its original configuration, no 10 CFR 50.59 evaluation is required. The 10 CFR 50.59 process is entered when the final resolution to the degraded or nonconforming condition is to be different than the established FSAR requirement. At this point, the licensee is planning (in a prospective sense) to make a change to

the facility or procedures as described in the SAR. The proposed change is now subject to the evaluation process established by 10 CFR 50.59. A change can be safe, but can still require NRC approval. The proposed final resolution can be under staff review and not affect the continued operation of the plant, because interim operation is being governed by the processes of the operability determination and corrective action of Appendix B.

In two situations, the identification of a final resolution or final corrective action would trigger a 10 CFR 50.59 evaluation, unless another regulation applies (i.e., 10 CFR 50.55a): (1) when a licensee decides to change its facility or procedures to something other than full restoration to the FSAR-described condition, as the final corrective action, or (2) when a licensee decides to change its licensing basis as described in the SAR to accept the degraded or nonconforming condition as its revised licensing basis. This guidance is consistent with the July 21, 1997, revision of NEI 96-07.

Change to Facility or Procedures

The first circumstance is if the licensee plans for its final resolution of the degraded or nonconforming condition to include other change(s) to the facility or procedures in order to cope with the (uncorrected, including only partially corrected) nonconforming condition. Rather than fully correcting the nonconforming condition, the licensee decides to restore capability or margin by another change. In this case, the licensee needs to evaluate the change from the SAR-described condition to the final condition in which the licensee proposes to operate its facility. If the 10 CFR 50.59 evaluation concludes that a change to the TS or a USQ is involved, a license amendment must be requested, and the corrective action process is not complete until the approval is received, or other resolution occurs.

Change to Current Licensing Basis

The other situation is a final resolution in which the licensee proposes to change the current licensing basis to accept the as-found nonconforming condition. In this case, the 10 CFR 50.59 evaluation is of the change from the SAR-described condition to the existing condition in which the licensee plans to remain (i.e., the licensee will exit the corrective action process by revising its licensing basis to document acceptance of the condition). If the 10 CFR 50.59 evaluation concludes that a change to the TS or a USQ is involved, a license amendment must be requested, and the corrective action process is not complete until the approval is received, or other resolution occurs. In order to resolve the degraded or nonconforming condition without restoring the affected equipment to its original design, a licensee may need to obtain an exemption from 10 CFR Part 50 in accordance with 10 CFR 50.12, or relief from a design code in accordance with 10 CFR 50.55a. The use of 10 CFR 50.59, 50.12, or 50.55a in fulfillment of Appendix B corrective action requirements does not relieve the licensee of the responsibility

to determine the root cause, to examine other affected systems, or to report the original condition, as appropriate.

In both of these situations, the need to obtain NRC approval for a change (e.g., because it involves a USQ) does not affect the licensee's authority to operate the plant. The licensee may make mode changes, restart from outages, etc., provided that necessary equipment is operable and the degraded condition is not in conflict with the TS or the license. The basis for this position was previously discussed in Section 4.5.1.

ENFORCEMENT

If the licensee, without good cause, does not correct the nonconformance at the first available opportunity, the staff concludes that the licensee has failed to take prompt corrective action and, thus, is in violation of 10 CFR Part 50 Appendix B (Criterion XVI).² When the NRC concludes that corrective action to implement the final resolution of the degraded or nonconforming condition is not prompt, or that the operability determination is not valid, enforcement action (Notice of Violation, orders) will be taken. Enforcement action may include restrictions on continued operation.

Implementation of complete corrective action within a reasonable time frame does not mitigate the potential for taking enforcement action for the root causes that initially created the degraded or nonconforming condition or for violations of other regulatory requirements. The nonconforming condition may have resulted from (1) earlier changes performed without a 10 CFR 50.59 evaluation or (2) inadequate reviews; or may be a *de facto* change for which the facility never met the SAR description. The staff may determine that the "change" from the FSAR-described condition to the discovered nonconforming condition involved a USQ (or a TS change), and that enforcement action is appropriate for the time frame up to time of discovery.

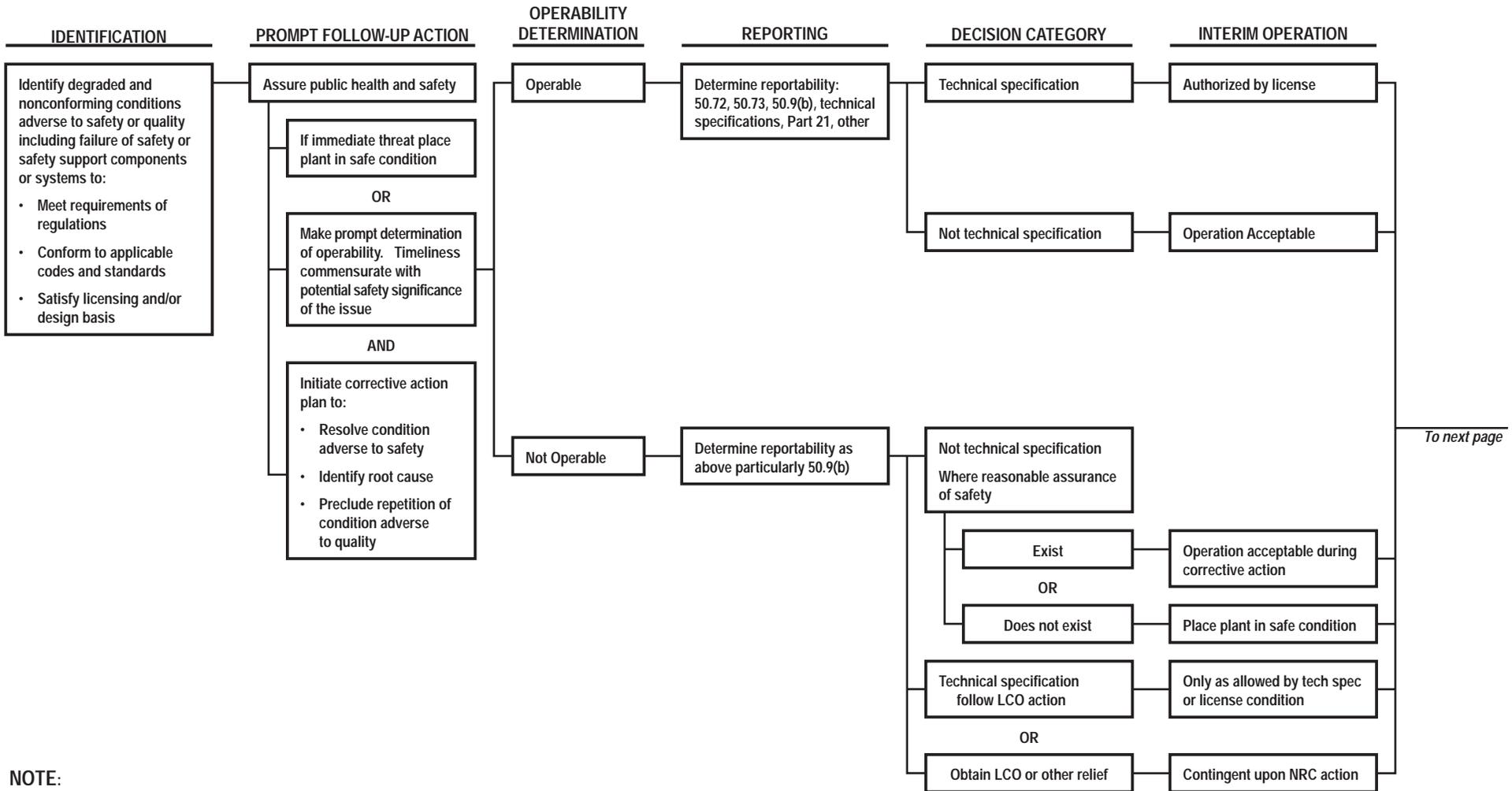
5.0 REFERENCE

See attached charts titled, "Resolution of Degraded and Nonconforming Conditions."

END

² Since Appendix B is only applicable to safety-related SSCs, this approach could not be used if the delay in resolution of a nonconforming condition from the SAR involved only non-safety-related SSCs and did not affect any safety-related SSCs. However, NRC expects licensees to take corrective action for nonconformances with the SAR consistent with Criterion XVI in a time frame commensurate with safety.

RESOLUTION OF DEGRADED AND NONCONFORMING CONDITIONS



To next page

NOTE:

Bulletins and generic letters, among others may provide guidance specific to an issue but counter to the generally accepted approach herein. Examples of deviations from the above approach include generic letter 88-07 on environmental qualification of electrical equipment and generic letter 87-02 on seismic adequacy (See use of JCO)

RESOLUTION OF DEGRADED AND NONCONFORMING CONDITIONS

DEFICIENCY RESOLUTION

Develop plan for corrective action

Will Licensee restore to original condition

YES

Schedule corrective action for first available opportunity

LONG-TERM FOLLOW-UP

Implement corrective action

END

NO

Will Licensee modify design bases to accept "As Found" condition

YES

Perform 50.59 for "As Found" condition vs. FSAR

NO

Licensee will modify design bases from FSAR to a new position different than "As Found" condition

YES

Perform 50.59 for proposed design change vs. FSAR

NRC approval needed?

NO

Implement design changes

Modify FSAR to reflect change

YES

Obtain License Amendment

* See section 4.3

