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TRM1 - TECHNICAL REQUIREMENTS MANUAL UNIT 1

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Manual Title: TECHNICAL REQUIREMENTS MANUAL UNIT 1

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2/19/2015

TRM1 text LOES
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3.0 TECHNICAL REQUIREMENT FOR OPERATION (TRO) APPLICABILITY

TRO 3.0.1 TROs shall be met during the MODES or other specified conditions in the Applicability, except as provided in TRO 3.0.2.

TRO 3.0.2 Upon discovery of a failure to meet an TRO, the Required Actions of the associated Conditions shall be met, except as provided in TRO 3.0.5 and TRO 3.0.6.

If the TRO is met or is no longer applicable prior to expiration of the specified Completion Time(s), completion of the Required Action(s) is not required, unless otherwise stated.

TRO 3.0.3 When a TRO is not met, and the associated ACTIONS are not met, an associated ACTION is not provided, or if directed by the associated ACTIONS, the following actions shall be taken:

1. Take compensatory actions as warranted for exiting TRO 3.0.3 commensurate with the safety significance of the condition. Development and implementation of the compensatory actions and plan for exit of TRO 3.0.3 shall be pursued without delay and in a controlled manner and shall be documented in the TRO 3.0.3 entry Condition Report.

2. Initiate a TRO 3.0.3 entry Condition Report that is coded Level 3 Evaluation to determine possible changes to the TRO that would preclude future entry into TRO 3.0.3.

When corrective measures are completed that permit operation in accordance with the TRO or the TRO actions, completion of the compensatory actions and plan for exiting TRO 3.0.3 is not required.

TRO 3.0.4 When a TRO is not met, entry into a MODE or other specified condition in the Applicability shall only be made:

a. When the associated ACTIONS to be entered permit continued operation in the MODE or other specified condition in the Applicability for an unlimited period of time;

(continued)

3.0 TECHNICAL REQUIREMENT FOR OPERATION (TRO) APPLICABILITY

TRO 3.0.4 (continued)

b. After performance of a risk assessment addressing inoperable systems and components, consideration of the results, determination of the acceptability of entering the MODE or other specified condition in the Applicability, and establishment of risk management actions, if appropriate; exceptions to this Requirement are stated in the individual TROs, or

c. When an allowance is stated in the individual value, parameter, or other Requirement.

This Requirement shall not prevent changes in MODES or other specified conditions in the Applicability that are required to comply with ACTIONS or that are part of a shutdown of the unit.

TRO 3.0.5 Equipment removed from service or declared inoperable to comply with ACTIONS may be returned to service under administrative control solely to perform testing required to demonstrate its OPERABILITY, the OPERABILITY of other equipment or variables to be within limits. This is an exception to TRO 3.0.2 for the system returned to service under administrative control to perform the testing required to demonstrate OPERABILITY.

TRO 3.0.6 When a supported system TRO is not met solely due to a support system TRO or LCO not being met, the Conditions and Required Actions associated with this supported system are not required to be entered. Only the support system TRO or LCO ACTIONS are required to be entered. This is an exception to TRO 3.0.2 for the supported system.

When a support system's Required Action directs a supported system to be declared inoperable or directs entry into Conditions and Required Actions for a supported system, the applicable Conditions and Required Actions shall be entered in accordance with TRO 3.0.2.

3.0 Technical Requirement Surveillance (TRS) Applicability

TRS 3.0.1 TRS shall be met during the MODES or other specified conditions in the Applicability for individual TROs, unless otherwise stated in the TRS. Failure to meet a Surveillance, whether such failure is experienced during the performance of the Surveillance or between performances of the Surveillance, shall be failure to meet the TRO. Failure to perform a Surveillance within the specified Frequency shall be failure to meet the TRO except as provided in TRS 3.0.3. Surveillances do not have to be performed on inoperable equipment or variables outside specified limits.

TRS 3.0.2 The specified Frequency for each TRS is met if the Surveillance is performed within 1.25 times the interval specified in the Frequency, as measured from the previous performance or as measured from the time a specified condition of the Frequency is met.

For Frequencies specified as "once," the above interval extension does not apply.

If a Completion Time requires periodic performance on a "once per . . ." basis, the above Frequency extension applies to each performance after the initial performance.

Exceptions to this Requirement are stated in the individual Requirements.

TRS 3.0.3 If it is discovered that a Surveillance was not performed within its specified Frequency, then compliance with the requirement to declare the TRO 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. In the event it is determined that a Surveillance cannot be performed within its specified Frequency, compliance with the requirement to declare the TRO not met may be delayed, from the expiration of the current Surveillance test interval, 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. A risk evaluation shall be performed for any Surveillance delayed greater than 24 hours and the risk impact shall be managed.

(continued)

3.0 Technical Requirement Surveillance (TRS) Applicability

TRS 3.0.3 (continued)	If the Surveillance is not performed within the delay period, the TRO must immediately be declared not met, and the applicable Condition(s) must be entered. When the Surveillance is performed within the delay period and the Surveillance is not met, the TRO must immediately be declared not met, and the applicable Condition(s) must be entered. Exceptions to this Requirement are stated in the individual Requirements.
TRS 3.0.4	Entry into a MODE or other specified condition in the Applicability of a TRO shall only be made when the TRO's Surveillances have been met within their specified Frequency, except as provided by TRS 3.0.3. When a TRO is not met due to Surveillances not having been met, entry into a MODE or other specified condition in the Applicability shall only be made in accordance with TRO 3.0.4. This provision shall not prevent entry into MODES or other specified conditions in the Applicability that are required to comply with ACTIONS or that are part of a shutdown of the unit.

B 3.0 Technical Requirement for Operation (TRO) Applicability

BASES

TROs

TRO 3.0.1 through TRO 3.0.6 establish the general requirements applicable to all Requirements and apply at all times, unless otherwise stated.

TRO 3.0.1

TRO 3.0.1 establishes the Applicability statement within each individual Requirement as the requirement for when the TRO is required to be met (i.e., when the unit is in the MODES or other specified conditions of the Applicability statement of each Requirement).

TRO 3.0.2

TRO 3.0.2 establishes that upon discovery of a failure to meet a TRO, the associated ACTIONS shall be met. The Completion Time of each Required Action for an ACTIONS Condition is applicable from the point in time that an ACTIONS Condition is entered. The Required Actions establish those remedial measures that must be taken within specified Completion Times when the requirements of a TRO are not met. This Requirement establishes that:

a. Completion of the Required Actions within the specified Completion Times constitutes compliance with a Requirement; and

b. Completion of the Required Actions is not required when a TRO is met within the specified Completion Time, unless otherwise specified.

There are two basic types of Required Actions. The first type of Required Action specifies a time limit in which the TRO must be met. This time limit is the Completion Time to restore an inoperable system or component to OPERABLE status or to restore variables to within specified limits. If this type of Required Action is not completed within the specified Completion Time, a shutdown may be required to place the unit in a MODE or condition in which the Specification is not applicable.

(continued)

B 3.0 Technical Requirement for Operation (TRO) Applicability

BASES

TRO 3.0.2 (continued)

Whether stated as a Required Action or not, correction of the entered Condition is an action that may always be considered upon entering ACTIONS. The second type of Required Action specifies the remedial measures that permit continued operation of the unit that is not further restricted by the Completion Time. In this case, compliance with the Required Actions provides an acceptable level of safety for continued operation.

Completing the Required Actions is not required when a TRO is met or is no longer applicable, unless otherwise stated in the individual Requirements.

The nature of some Required Actions of some Conditions necessitates that, once the Condition is entered, the Required Actions must be completed even though the associated Conditions no longer exist. The individual TRO's Actions specify the Required Actions where this is the case. An example of this is in Technical Requirement TRO 3.4.1, "Chemistry."

The Completion Times of the Required Actions are also applicable when a system or component is removed from service intentionally. The reasons for intentionally relying on the ACTIONS include, but are not limited to, modifications, performance of Surveillances, preventive maintenance, corrective maintenance, or investigation of operational problems. Entering ACTIONS for these or for any other reasons must be done in a manner that does not compromise safety.

(continued)

B 3.0 Technical Requirement for Operation (TRO) Applicability

BASES

TRO 3.0.2 (continued)

Individual Requirements may specify a time limit for performing a TRS when equipment is removed from service or bypassed for testing. In this case, the Completion Times of the Required Actions are applicable when this time limit expires, if the equipment remains removed from service or bypassed.

When a change in MODE or other specified condition is required to comply with Required Actions, the unit may enter a MODE or other specified condition in which another Requirement becomes applicable. In this case, the Completion Times of the associated Required Actions would apply from the point in time that the new Requirement becomes applicable and the ACTIONS Condition(s) are entered.

TRO 3.0.3

TRO 3.0.3 establishes the actions that must be implemented when a TRO is not met and:

a. An associated Required Action and Completion Time is not met and no other Condition applies; or

b. The condition of the unit is not specifically addressed by the associated ACTIONS. This means that no combination of Conditions stated in the ACTIONS can be made that exactly corresponds to the actual condition of the unit. Certain combinations of Conditions may exist such that entering TRO 3.0.3 is warranted; in such cases, the Actions specifically state a Condition corresponding to such combinations and also that TRO 3.0.3 be entered immediately.

(continued)

B 3.0 Technical Requirement for Operation (TRO) Applicability

BASES

TRO 3.0.3 (continued)

Because entry into the 3.0.3 ACTION is an escalation of the system, structure, component, or unit condition, a Condition Report is required. The Condition Report will address plant safety given the nonconformance with the Technical Requirement. TROs which affect OPERABILITY of TS Functions will have an assessment of TS OPERABILITY.

Compensatory actions and a plan for exiting TRO 3.0.3 shall be developed and implemented in a timely manner commensurate with the safety significance of the entry condition. This will allow for an orderly development of actions and plans providing for time to coordinate any actions deemed unwarranted with the station work schedule.

TRO 3.0.3 entries are undesirable and should be avoided whenever possible. Thus, it is important to evaluate the TRO 3.0.3 entry circumstances to determine if changes to the TRO not met can be made that would preclude the need for future TRO 3.0.3 entries. Completion of the evaluation is not required to exit TRO 3.0.3. The evaluation shall be performed even though TRO 3.0.3 has been/will be exited.

TRO 3.0.4

TRO 3.0.4 establishes limitations on changes in MODES or other specified conditions in the Applicability when a TRO is not met. It allows placing the unit in a MODE or other specified condition stated in that Applicability (e.g., the Applicability desired to be entered) when unit conditions are such that the requirements of the TRO would not be met, in accordance with TRO 3.0.4.a, TRO 3.0.4.b, or TRO 3.0.4.c.

TRO 3.0.4.a allows entry into a MODE or other specified condition in the Applicability with the TRO not met when the associated ACTIONS to be entered permit continued operation in the MODE or other specified condition in the Applicability for an unlimited period of time. Compliance with Required Actions that permit continued operation of the unit for an unlimited period of time in a MODE or other specified condition provides an acceptance level of safety for continued operation. This is without regard to the status of the unit before or after the MODE change. Therefore, in such cases, entry into a MODE or other specified condition in the Applicability may be made in accordance with the provisions of the Required Actions.

(continued)

B 3.0 Technical Requirement for Operation (TRO) Applicability

BASES

TRO 3.0.4 (continued)

TRO 3.0.4.b allows entry into a MODE or other specified condition in the Applicability with the TRO not met after performance of a risk assessment addressing inoperable systems and components, consideration of the results, determination of the acceptability of entering the MODE or other specified condition in the Applicability, and establishment of risk management actions, if appropriate.

The risk assessment may use quantitative, qualitative, or blended approaches, and the risk assessment will be conducted using the plant program, procedures, and criteria in place to implement 10 CFR 50.65(a)(4), which requires that risk impacts of maintenance activities to be assessed and managed. The risk assessment, for the purposes of TRO 3.0.4(b), must take into account all inoperable Technical Requirements Manual equipment regardless of whether the equipment is included in the normal 10 CFR 50.65(a)(4) risk assessment scope. The risk assessments will be conducted using the procedures and guidance endorsed by Regulatory Guide 1.182, "Assessing and Managing Risk Before Maintenance Activities at Nuclear Power Plants." Regulatory Guide 1.182 endorses the guidance in Section 11 of NUMARC 93-01, "Industry Guideline for Monitoring the Effectiveness of Maintenance at Nuclear Power Plants." These documents address general guidance for conduct of the risk assessment, quantitative and qualitative guidelines for establishing risk management actions, and example risk management actions. These include actions to plan and conduct other activities in a manner that controls overall risk, increased risk awareness by shift and management personnel, actions to reduce the duration of the condition, actions to minimize the magnitude of risk increases (establishment of backup success paths or compensatory measures), and determination that the proposed MODE change is acceptable. Consideration should also be given to the probability of completing restoration such that the requirements of the TRO would be met prior to the expiration of ACTIONS Completion Times that would require exiting the Applicability.

TRO 3.0.4.b may be used with single, or multiple systems and components unavailable. NUMARC 93-01 provides guidance relative to consideration of simultaneous unavailability of multiple systems and components.

(continued)

B 3.0 Technical Requirement for Operation (TRO) Applicability

BASES

TRO 3.0.4 (continued)

The results of the risk assessment shall be considered in determining the acceptability of entering the MODE or other specified condition in the Applicability, and any corresponding risk management actions. The TRO 3.0.4.b risk assessments do not have to be documented.

The Technical Requirements allow continued operation with equipment unavailable in MODE 1 for the duration of the Completion Time. Since this is allowable, and since in general the risk impact in that particular MODE bounds the risk of transitioning into and through the applicable MODES or other specified conditions in the Applicability of the TRO, the use of the TRO 3.0.4.b allowance should be generally acceptable, as long as the risk is assessed and managed as stated above. However, the Emergency Diesel Generators (TRO 3.8.3) have been determined to be more important to risk and use of the TRO 3.0.4.b allowance is prohibited. A note is included in TRO 3.8.3 stating that TRO 3.0.4.b is not applicable.

TRO 3.0.4.c allows entry into a MODE or other specified condition in the Applicability with the TRO not met based on a Note in the Requirement which states TRO 3.0.4.c is applicable. These specific allowances permit entry into MODES or other specified conditions in the Applicability when the associated ACTIONS to be entered do not provide for continued operation for an unlimited period of time and a risk assessment has not been performed. This allowance may apply to all the ACTIONS or to a specific Required Action of a Requirement. The risk assessments performed to justify the use of TRO 3.0.4.b usually only consider systems and components. For this reason, TRO 3.0.4.c is typically applied to Requirements which describe values and parameters (e.g., Containment Air Temperature, Containment Pressure, MCPR, Moderator Temperature Coefficient), and may be applied to other Requirements based on plant-specific approval.

The provisions of this Requirement should not be interpreted as endorsing the failure to exercise the good practice of restoring systems or components to OPERABLE status before entering an associated MODE or other specified condition in the Applicability.

(continued)

B 3.0 Technical Requirement for Operation (TRO) Applicability

BASES

TRO 3.0.4 (continued)

The provisions of TRO 3.0.4 shall not prevent changes in MODES or other specified conditions in the Applicability that are required to comply with ACTIONS. In addition, the provisions of TRO 3.0.4 shall not prevent changes in MODES or other specified conditions in the Applicability that result from any unit shutdown. In this context, a unit shutdown is defined as a change in MODE or other specified condition in the Applicability associated with transitioning from MODE 1 to MODE 2 or MODE 3, MODE 2 to MODE 3 or MODE 4, and MODE 3 to MODE 4.

Upon entry into a MODE or other specified condition in the Applicability with the TRO not met, TRO 3.0.1 and TRO 3.0.2 require entry into the applicable Conditions and Required Actions until the Condition is resolved, until the TRO is met, or until the unit is not within the Applicability of the Technical Requirement.

TRO 3.0.4 is not applicable to TROs that are identified as APPLICABLE "At all times." This term is considered to constitute one inclusive operating condition that corresponds to and encompasses all MODES as defined in the Technical Specification, as well as all special operating conditions, including when the reactor vessel is defueled. Entry into any MODE or other special condition is done within the context of "all times," and, therefore, is not a change within the Applicability to which TRO 3.0.4 applies.

Surveillances do not have to be performed on the associated inoperable equipment (or on variables outside the specified limits), as permitted by TRS 3.0.1. Therefore, utilizing TRO 3.0.4 is not a violation of TRS 3.0.1 or TRS 3.0.4 for any Surveillances that have not been performed on inoperable equipment. However, TRSs must be met to ensure OPERABILITY prior to declaring the associated equipment OPERABLE (or variable within limits) and restoring compliance with the affected TRO.

B 3.0 Technical Requirement for Operation (TRO) Applicability

BASES

TRO 3.0.5

TRO 3.0.5 establishes the allowance for restoring equipment to service under administrative controls when it has been removed from service or declared inoperable to comply with ACTIONS. The sole purpose of this Requirement is to provide an exception to TRO 3.0.2 (e.g., to not comply with the applicable Required Action(s) to allow the performance of TRSs to demonstrate:

a. The OPERABILITY of the equipment being returned to service; or

b. The OPERABILITY of other equipment; or

c. That variables are within limits

The administrative controls ensure the time the equipment is returned to service in conflict with the requirements of the ACTIONS is limited to the time absolutely necessary to perform the allowed TRSs. This Requirement does not provide time to perform any other preventive or corrective maintenance.

An example of demonstrating the OPERABILITY of the equipment being returned to service is reopening a containment isolation valve that has been closed to comply with Required Actions and must be reopened to perform the TRSs.

An example of demonstrating the OPERABILITY of other equipment is taking an inoperable channel or trip system out of the tripped condition to prevent the trip function from occurring during the performance of a TRS on another channel in the other trip system. A similar example of appropriate response during the performance of an TRS on another channel in the same trip system.

(continued)

B 3.0 Technical Requirement for Operation (TRO) Applicability

BASES

TRO 3.0.6

TRO 3.0.6 establishes an exception to TRO 3.0.2 for support systems that have a TRO or LCO specified in the Technical Requirement Specifications (TRS) or Technical Specification (TS). This exception is provided because TRO 3.0.2 would require that the Conditions and Required Actions of the associated inoperable supported system TRO be entered solely due to the inoperability of the support system. This exception is justified because the actions that are required to ensure the plant is maintained in a safe condition are specified in the support system TRO's or LCO's Required Actions. These Required Actions may include entering the supported system's Conditions and Required Actions or may specify other Required Actions.

When a support system is inoperable and there is a TRO or LCO specified for it in the TRS or TS, the supported system(s) are required to be declared inoperable if determined to be inoperable as a result of the support system inoperability. However, it is not necessary to enter into the supported systems' Conditions and Required Actions unless directed to do so by the support system's Required Actions. The potential confusion and inconsistency of requirements related to the entry into multiple support and supported systems' Conditions and Required Actions are eliminated by providing all the actions that are necessary to ensure the plant is maintained in a safe condition in the support system's Required Actions.

However, there are instances where a support system's Required Action may either direct a supported system to be declared inoperable or direct entry into Conditions and Required Actions for the supported system. This may occur immediately or after some specified delay to perform some other Required Action. Regardless of whether it is immediate or after some delay, when a support system's Required Action directs a supported system to be declared inoperable or directs entry into Conditions and Required Actions for a supported system, the applicable Conditions and Required Actions shall be entered in accordance with TRO 3.0.2.

B 3.0 TECHNICAL REQUIREMENT SURVEILLANCE (TRS) APPLICABILITY

BASES

TRS

TRS 3.0.1 through TRS 3.0.4 establish the general requirements applicable to all Requirements and apply at all times, unless otherwise stated.

TRS 3.0.1

TRS 3.0.1 establishes the requirement that TRSs must be met during the MODES or other specified conditions in the Applicability for which the requirements of the TRO apply, unless otherwise specified in the individual TRSs. This Requirement is to ensure that Surveillances are performed to verify the OPERABILITY of systems and components, and that variables are within specified limits. Failure to meet a Surveillance within the specified Frequency, in accordance with TRS 3.0.2, constitutes a failure to meet a TRO.

Systems and components are assumed to be OPERABLE when the associated TRSs have been met. Nothing in this Requirement, however, is to be construed as implying that systems or components are OPERABLE when:

a. The systems or components are known to be inoperable, although still meeting the TRSs; or

b. The requirements of the Surveillance(s) are known to be not met between required Surveillance performances.

Surveillances do not have to be performed when the unit is in a MODE or other specified condition for which the requirements of the associated TRO are not applicable, unless otherwise specified.

Surveillances, including Surveillances invoked by Required Actions, do not have to be performed on inoperable equipment because the ACTIONS define the remedial measures that apply. Surveillances have to be met and performed in

(continued)

B 3.0 TECHNICAL REQUIREMENT SURVEILLANCE (TRS) APPLICABILITY

BASES

TRS 3.0.1 (continued)

accordance with TRS 3.0.2, prior to returning equipment to OPERABLE status. Upon completion of maintenance, appropriate post maintenance testing is required to declare equipment OPERABLE. This includes ensuring applicable Surveillances are not failed and their most recent performance is in accordance with TRS 3.0.2. Post maintenance testing may not be possible in the current MODE or other specified conditions in the Applicability due to the necessary unit parameters not having been established. In these situations, the equipment may be considered OPERABLE provided testing has been satisfactorily completed to the extent possible and the equipment is not otherwise believed to be incapable of performing its function. This will allow operation to proceed to a MODE or other specified condition where other necessary post maintenance tests can be completed.

TRS 3.0.2

TRS 3.0.2 establishes the requirements for meeting the specified Frequency for Surveillances and any Required Action with a Completion Time that requires the periodic performance of the Required Action on a "once per ..." interval.

TRS 3.0.2 permits a 25% extension of the interval specified in the Frequency. This extension facilitates Surveillance scheduling and considers plant operating conditions that may not be suitable for conducting the Surveillance (e.g., transient conditions or other ongoing Surveillance or maintenance activities).

The 25% extension does not significantly degrade the reliability that results from performing the Surveillance at its specified Frequency. This is based on the recognition that the most probable result of any particular Surveillance being performed is the verification of conformance with the TRSs. The exceptions to TRS 3.0.2 are

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B 3.0 TECHNICAL REQUIREMENT SURVEILLANCE (TRS) APPLICABILITY

BASES

TRO 3.0.2 (continued)

those Surveillances for which the 25% extension of the interval specified in the Frequency does not apply. These exceptions are stated in the individual Requirements. As stated in TRS 3.0.2, the 25% extension also does not apply to the initial portion of a periodic Completion Time that requires performance on a "once per ..." basis. The 25% extension applies to each performance after the initial performance. The initial performance of the Required Action, whether it is a particular Surveillance or some other remedial action, is considered a single action with a single Completion Time. One reason for not allowing the 25% extension to this Completion Time is that such an action usually verifies that no loss of function has occurred by checking the status of redundant or diverse components or accomplishes the function of the inoperable equipment in an alternative manner.

The provisions of TRS 3.0.2 are not intended to be used repeatedly merely as an operational convenience to extend Surveillance intervals (other than those consistent with refueling intervals) or periodic Completion Time intervals beyond those specified.

TRS 3.0.3

TRS 3.0.3 establishes the flexibility to defer declaring affected equipment inoperable or an affected variable outside the specified limits when a Surveillance has not been completed within the specified Frequency. A delay period of up to 24 hours or up to the limit of the specified Frequency, whichever is greater, applies from the point in time that it is discovered that the Surveillance has not been performed in accordance with TRS 3.0.2, and not at the time that the specified Frequency was not met.

If a Surveillance cannot be performed within its specified Frequency due to unusual conditions, such as a structure, system, or component configuration that prevents performance of a test, or performance of the test would have an adverse impact on plant risk, compliance with the requirement to declare the TRO not met may be delayed. This delay period starts at the expiration of the current Surveillance test interval. The delay can be up to 24 hours or up to the limit of the specified Frequency, whichever is greater.

This delay period provides adequate time to complete Surveillances that have been missed. This delay period permits the completion of a Surveillance before complying with Required Actions or other remedial measures that might preclude completion of the Surveillance.

(continued)

B 3.0 TECHNICAL REQUIREMENT SURVEILLANCE (TRS) APPLICABILITY

BASES

TRS 3.0.3 (continued)

The basis for this delay period includes consideration of unit conditions, adequate planning, availability of personnel, the time required to perform the Surveillance, the safety significance of the delay in completing the required Surveillance, and the recognition that the most probable result of any particular Surveillance being performed is the verification of conformance with the requirements.

When a Surveillance with a Frequency based not on time intervals, but upon specified unit conditions, operating situations, or requirements of regulations (e.g., prior to entering MODE 1 after each fuel loading, or in accordance with 10 CFR 50, Appendix J, as modified by approved exemptions, etc.) is discovered to not have been performed when specified, TRS 3.0.3 allows for the full delay period of up to the specified Frequency to perform the Surveillance. However, since there is not a time interval specified, the missed Surveillance should be performed at the first reasonable opportunity.

TRS 3.0.3 provides a time limit for, and allowances for the performance of, Surveillances that become applicable as a consequence of MODE changes imposed by Required Actions.

Failure to comply with specified Frequencies for TRSs is expected to be an infrequent occurrence. Use of the delay period established by TRS 3.0.3 is a flexibility which is not intended to be used as an operational convenience to extend Surveillance intervals. While up to 24 hours or the limit of the specified Frequency is provided to perform the missed Surveillance, it is expected that the missed Surveillance will be performed at the first reasonable opportunity. The determination of the first reasonable opportunity should include consideration of the impact on plant risk (from delaying the Surveillance as well as any plant configuration changes required or shutting the plant down to perform the Surveillance) and impact on any analysis assumptions, in addition to unit conditions, planning, availability of

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B 3.0 TECHNICAL REQUIREMENT SURVEILLANCE (TRS) APPLICABILITY

BASES

TRS 3.0.3 (continued)

personnel, and the time required to perform the Surveillance. This risk impact should be managed through the program in place to implement 10 CFR 50.65(a)(4) and its implementation guidance, NRC Regulatory Guide 1.182, "Assessing and Managing Risk Before Maintenance Activities at Nuclear Power Plants." This Regulatory Guide addresses consideration of temporary and aggregate risk impacts, determination of risk management action thresholds, and risk management action up to and including plant shutdown. The missed Surveillance should be treated as an emergent condition as discussed in the Regulatory Guide. The risk evaluation may use quantitative, qualitative, or blended methods. The degree of depth and rigor of the evaluation should be commensurate with the importance of the component. Missed Surveillances for important components should be analyzed quantitatively. If the results of the risk evaluation determine the risk increase is significant, this evaluation should be used to determine the safest course of action. All Surveillances who's Frequency has been extended in accordance with TRS 3.0.3 will be placed in the Corrective Action Program.

If a Surveillance is not completed within the allowed delay period, then the equipment is considered inoperable or the variable is considered outside the specified limits and the Completion Times of the Required Actions for the applicable TRO Conditions begin immediately upon expiration of the delay period. If a Surveillance is failed within the delay period, then the equipment is inoperable, or the variable is outside the specified limits and the Completion Times of the Required Actions for the applicable TRO Conditions begin immediately upon the failure of the Surveillance.

Completion of the Surveillance within the delay period allowed by this Requirement, or within the Completion Time of the ACTIONS, restores compliance with TRS 3.0.1.

Exceptions to TRS 3.0.3 are provided in instances where requiring equipment to be considered inoperable, in accordance with TRS 3.0.3, would not provide appropriate remedial measures for the associated condition. An example of this is in TRO 3.11.4.1, "Radiological Environmental Monitoring." TRO 3.11.4.1 has surveillances that implement required environmental sampling and analysis. If a portion of the sampling or analysis is not completed as required, the programmatic response is to report the condition to the Nuclear Regulatory Commission and in most instances describe the corrective actions taken to correct the condition. There are no result

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B 3.0 TECHNICAL REQUIREMENT SURVEILLANCE (TRS) APPLICABILITY

BASES

TRS 3.0.3 (continued)

thresholds built into the monitoring and analysis program that would result in declaring equipment inoperable or in a plant shutdown. Therefore, it is appropriate that the provisions of TRO 3.0.3 be waived for this TRO. These exceptions are addressed in the individual Requirements.

TRS 3.0.4

TRS 3.0.4 establishes the requirement that all applicable TRSs must be met before entry into a MODE or other specified condition in the Applicability. This Requirement ensures that system and component OPERABILITY requirements and variable limits are met before entry into MODES or other specified conditions in the Applicability for which these systems and components ensure safe operation of the unit.

The provisions of this Requirement should not be interpreted as endorsing the failure to exercise the good practice of restoring systems or components to OPERABLE status before entering an associated MODE or other specified condition in the Applicability.

A provision is included to allow entry into a MODE or other specified condition in the Applicability when a TRO is not met due to Surveillance not being met in accordance with TRO 3.0.4.

However, in certain circumstances, failing to meet a TRS will not result in TRS 3.0.4 restricting a MODE change or other specified condition change. When a system, subsystem, division, component, device, or variable is inoperable or outside its specified limits, the associated TRS(s) are not required to be performed per TRS 3.0.1, which states that Surveillances do not have to be performed on inoperable equipment. When equipment is inoperable, TRS 3.0.4 does not apply to the associated TRS(s) since the requirement for the TRS(s) to be performed is removed.

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B 3.0 TECHNICAL REQUIREMENT SURVEILLANCE (TRS) APPLICABILITY

BASES

TRS 3.0.4 (continued)

Therefore, failing to perform the Surveillance(s) within the specified Frequency does not result in an TRS 3.0.4 restriction to changing MODES or other specified conditions of the Applicability. However, since the TRO is not met in this instance, TRO 3.0.4 will govern any restrictions that may (or may not) apply to MODE or other specified condition changes. TRS 3.0.4 does not restrict changing MODES or other specified conditions of the Applicability when a Surveillance has not been performed within the specified Frequency, provided the requirement to declare the TRO not met has been delayed in accordance with TRS 3.0.3.

The provisions of TRS 3.0.4 shall not prevent changes in MODES or other specified conditions in the Applicability that are required to comply with ACTIONS. In addition, the provisions of TRO 3.0.4 shall not prevent changes in MODES or other specified conditions in the Applicability that result from any unit shutdown. In this context, a unit shutdown is defined as a change in MODE or other specified condition in the Applicability associated with transitioning from MODE 1 to MODE 2 or MODE 3, MODE 2 to MODE 3 or MODE 4, and MODE 3 to MODE 4.

The precise requirements for performance of TRSs are specified such that exceptions to TRS 3.0.4 are not necessary. The specific time frames and conditions necessary for meeting the TRSs are specified in the Frequency, in the Surveillance, or both.

(continued)

B 3.0 TECHNICAL REQUIREMENT SURVEILLANCE (TRS) APPLICABILITY

BASES

TRS 3.0.4 (continued)

This allows performance of Surveillances when the prerequisite condition(s) specified in a Surveillance procedure require entry into the MODE or other specified condition in the Applicability of the associated TRO prior to the performance or completion of a Surveillance. A Surveillance that could not be performed until after entering the TRO Applicability would have its Frequency specified such that it is not "due" until the specific conditions needed are met. Alternately, the Surveillance may be stated in the form of a Note as not required (to be met or performed) until a particular event, condition, or time has been reached. Further discussion of the specific formats of TRS's annotation is found in Section 1.4, Frequency.

3.3 Instrumentation

3.3.4 TRM Post-Accident Monitoring Instrumentation

TRO 3.3.4 The TRM post-accident monitoring instrumentation channels shown in Table 3.3.4-1 shall be OPERABLE.

APPLICABILITY: According to Table 3.3.4-1

ACTIONS

----------NOTES----------

1. Separate condition entry is allowed for each Function.
2. The provisions of TRO 3.0.6 are not applicable.

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. One or more required channel inoperable.	A.1 Enter the Condition referenced in Table 3.3.4-1 for the channel.	Immediately
B. As required by Required Action A.1 and referenced in Table 3.3.4-1.	B.1 Initiate the preplanned alternate method of monitoring the appropriate parameter(s). AND B.2 Restore the required channel to OPERABLE status.	72 hours 7 days
C. As required by Required Action A.1 and referenced in Table 3.3.4-1	C.1 Restore the required channel(s) to OPERABLE status.	30 days
D. As required by Required Action A.1 and referenced in Table 3.3.4-1	D.1 Verify a minimum 14 of the associated acoustic monitor channels and 5 of the ADS SRV acoustic monitor channels are operable.	Immediately AND Once per 24 hours thereafter

ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
	OR	
	D.2 Verify SRV tailpipe temperature indication and alarm are available for the tailpipe associated with the inoperable acoustic monitor.	Immediately AND Once per 24 hours thereafter
	OR	
	D.3 Verify that the following alternate monitoring methods in TS Table 3.3.3.1-1 are OPERABLE: • Function 1 • Function 2 • Function 3 • Function 10	Immediately AND Once per 24 hours thereafter
	AND	
	D.4 Restore the required channel(s) to OPERABLE status.	30 days OR At next outage with containment entry, not to exceed the next refueling outage for in-accessible containment components.

TECHNICAL REQUIREMENT SURVEILLANCE

---------- NOTES ----------

1. Refer to Table 3.3.4-1 to determine which TRSs apply for each Post Accident Monitoring Function.

2. When a channel is placed in an inoperable status solely for performance of required Surveillances, entry into associated Conditions and Required Actions may be delayed for up to 6 hours provided an alternate means of monitoring the parameter or an associated function is available.

	SURVEILLANCE	FREQUENCY
TRS 3.3.4.1	Perform CHANNEL CHECK	31 days
TRS 3.3.4.2	Perform CHANNEL FUNCTIONAL TEST	92 days
TRS 3.3.4.3	Perform a CHANNEL CALIBRATION. The Trip Setpoint shall be less than or equal to 0.25 of the full open noise level.	24 months
TRS 3.3.4.4	Perform CHANNEL CALIBRATION	24 months
TRS 3.3.4.5	Perform CHANNEL CALIBRATION of the Primary Containment H_2 and O_2 Analyzers.	92 days

TABLE 3.3.4-1
TRM POST-ACCIDENT MONITORING INSTRUMENTATION

FUNCTION	APPLICABLE MODES OR OTHER SPECIFIED CONDITIONS	REQUIRED CHANNELS	CONDITIONS REFERENCED FROM REQUIRED ACTION A.1	REQUIRED SURVEILLANCE
1. Suppression Chamber Air Temperature	1,2	2	C	TRS 3.3.4.1 TRS 3.3.4.4
2. Main Steam Safety/Relief Valve Position Indicator (Acoustic Monitor)	1,2	1/valve	D	TRS 3.3.4.1 TRS 3.3.4.2 TRS 3.3.4.3
3. Reactor Building Vent Noble Gas Monitor				
a. Mid Range[(b)]	1,2, (a)	1	B	TRS 3.3.4.1 TRS 3.3.4.4
b. High Range[(b)]	1,2, (a)	1	B	TRS 3.3.4.1 TRS 3.3.4.4
4. Standby Gas Treatment System Vent Noble Gas Monitor				
a. Mid Range[(b)]	1,2, (a)	2	B (Both Ch. Inop) C (One Ch. Inop)	TRS 3.3.4.1 TRS 3.3.4.4
b. High Range[(b)]	1,2, (a)	2	B (Both Ch. Inop) C (One Ch. Inop)	TRS 3.3.4.1 TRS 3.3.4.4
5. Turbine Building Vent Noble Gas Monitor				
a. Mid Range[(b)]	1,2	2	B (Both Ch. Inop) C (One Ch. Inop)	TRS 3.3.4.1 TRS 3.3.4.4
b. High Range[(b)]	1,2	2	B (Both Ch. Inop) C (One Ch. Inop)	TRS 3.3.4.1 TRS 3.3.4.4

(continued)

TABLE 3.3.4-1 (continued)
TRM POST-ACCIDENT MONITORING INSTRUMENTATION

	FUNCTION	APPLICABLE MODES OR OTHER SPECIFIED CONDITIONS	REQUIRED CHANNELS	CONDITIONS REFERENCED FROM REQUIRED ACTION A.1	REQUIRED SURVEILLANCE
6.	Standby Gas Treatment System Post Accident Vent Stack Sampling System (PAVSSS)				
	a. Effluent System flow rate monitor[(b)]	1,2, (a)	1	C	TRS 3.3.4.1 TRS 3.3.4.4
	b. Sampler flow rate monitor[(b)]	1,2, (a)	1	C	TRS 3.3.4.1 TRS 3.3.4.4
7.	Turbine Building Post Accident Vent Stack Sampling System (PAVSSS)				
	a. Effluent System flow rate monitor[(b)]	1,2	1	C	TRS 3.3.4.1 TRS 3.3.4.4
	b. Sampler flow rate monitor[(b)]	1,2	1	C	TRS 3.3.4.1 TRS 3.3.4.4
8.	Containment H_2 and O_2 Analyzer[(b)]	1,2	2	C	TRS 3.3.4.1 TRS 3.3.4.5

(a) When moving irradiated fuel in the secondary containment.
(b) TRO 3.0.4.c is applicable.

3.3 Instrumentation

3.3.12 Water Monitoring Instrumentation

TRO 3.3.12 The water monitoring instrumentation channels shown in Table 3.3.12-1 shall be OPERABLE.

APPLICABILITY: Whenever flow is established

ACTIONS

---------- NOTES ----------
1. Separate condition entry is allowed for each function.
2. TRO 3.0.4.c is applicable.

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. One or more water monitoring Instrument(s) inoperable.	A.1 Notify the Susquehanna River Basin Commission AND	5 days
	A.2 Restore water monitoring instrumentation to OPERABLE status.	30 days

TECHNICAL REQUIREMENT SURVEILLANCE

---------- NOTES ----------
1. The following surveillance requirements apply to all instruments listed in Table 3.3.12-1.
2. When a channel is placed in an inoperable status solely for performance of required surveillances, entry into associated conditions and required actions may be delayed for up to 6 hours.

SURVEILLANCE		FREQUENCY
TRS 3.3.12.1	Perform CHANNEL CHECK	24 hours
TRS 3.3.12.2	Perform CHANNEL CALIBRATION	60 months

TABLE 3.3.12-1
WATER MONITORING INSTRUMENTATION

FUNCTION	REQUIRED CHANNELS	SURVEILLANCE REQUIREMENTS
1. Well Water Flow	1	TRS 3.3.12.1 TRS 3.3.12.2
2. Unit 1 Cooling Tower Blowdown Flow	1	TRS 3.3.12.1 TRS 3.3.12.2

3.7.5 Explosive Gas and Storage Tank Radioactivity Monitoring Program

3.7.5.1 Main Condenser Offgas Hydrogen Monitor

TRO 3.7.5.1 One channel of Main Condenser Offgas Hydrogen monitoring instrumentation channels shall be OPERABLE per operating recombiner of the main condenser offgas treatment system.

APPLICABILITY: During operation of the main condenser air ejector and offgas treatment system

ACTIONS

---------- NOTE ----------
TRO 3.0.4.c is applicable

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. The required Hydrogen Monitor for any operating recombiner of the Main Condenser Offgas Treatment System inoperable	A.1 Take Grab samples. AND A.2 Analyze samples AND A.3 Restore the required Hydrogen Monitor to OPERABLE status	Once per 4 hours Within the following 4 hours 30 days

TECHNICAL REQUIREMENT SURVEILLANCE

SURVEILLANCE		FREQUENCY
TRS 3.7.5.1.1	Perform CHANNEL CHECK	24 hours
TRS 3.7.5.1.2	Perform CHANNEL CALIBRATION	92 days
TRS 3.7.5.1.3	Perform CHANNEL FUNCTIONAL TEST	92 days

3.7 Plant Systems

3.7.8 Snubbers

TRO 3.7.8 All snubbers shall be OPERABLE

APPLICABILITY: When associated supported system(s) are required to be OPERABLE

ACTIONS

---------- NOTE ----------

1. Separate condition entry is allowed for each snubber.
2. TRO 3.0.4.c is applicable.

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. One or more snubbers associated with only one subsystem of a multiple subsystem supported system or associated with a single subsystem supported system confirmed to be inoperable	A.1.1 Determine the location and the design function of the inoperable snubber(s) (mitigation of seismic or seismic and non-seismic loads). AND	Immediately
	A.1.2 Determine that an OPERABLE subsystem(s) involving equipment not associated with the inoperable snubber(s) exists to provide makeup and core cooling needed to mitigate a LOOP event. AND	Immediately
	A.1.3 Determine that the subsystem supported by the inoperable snubber would remain capable of performing its required safety or support functions for postulated design loads other than seismic loads. AND	Immediately

(continued)

ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
	----------NOTE---------- REQUIRED ACTIONS A.1.1 through A.1.3 must be completed prior to completing REQUIRED ACTION A.1.4. ----------	
	A.1.4 Enter LCO 3.0.8 AND	Immediately
	A.1.5 Replace or restore the inoperable snubber(s) to OPERABLE status	72 hours
B. One or more snubbers associated with more than one subsystem of a multiple subsystem supported system confirmed inoperable.	B.1.1 Determine the location and the design function of the inoperable snubber(s) (mitigation of seismic or seismic and non-seismic loads). AND	Immediately
	B.1.2 Determine that an OPERABLE subsystem(s), involving equipment not associated with the inoperable snubber(s) exists to provide makeup and core cooling needed to mitigate a LOOP event. AND	Immediately

(continued)

ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
	B.1.3 Determine that the subsystem supported by the inoperable snubber would remain capable of performing its required safety or support functions for postulated design loads other than seismic loads. AND ----------NOTE---------- REQUIRED ACTIONS B.1.1 through B.1.3 must be completed prior to completing REQUIRED ACTION B.1.4. ----------	Immediately
	B.1.4 Enter LCO 3.0.8 AND	Immediately
	B.1.5 Replace or restore the inoperable snubber(s) to OPERABLE status	12 hours
C. Required Action and associated Completion Time of Condition A or B not met	C.1 Declare the supported system inoperable	Immediately

(continued)

ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
D. Any snubber selected for functional testing either fails to activate or fails to move due to manufacturer or design deficiency.	D. ----------NOTE---------- This action shall be independent of the Testing Requirement for snubbers not meeting the functional test acceptance criteria per TRS 3.7.8.2 ---------- All snubbers of the same design subject to the same defect shall be functionally tested	Within the current inspection interval.
E. The snubber service life will be exceeded prior to the next scheduled snubber service life review	E.1 Reevaluate the snubber service life OR E.2 Replace or recondition the snubber so as to extend its service life beyond the date of the next scheduled service life review	Prior to exceeding snubber service life Prior to exceeding snubber service life

TECHNICAL REQUIREMENT SURVEILLANCE

SURVEILLANCE		FREQUENCY
TRS 3.7.8.1	Demonstrate each snubber OPERABLE by performance of visual inspection	As directed by the ISI Program Plan
TRS 3.7.8.2	Perform functional test of a representative sampling of all snubbers per the ISI Program Plan.	24 months

(continued)

TECHNICAL REQUIREMENT SURVEILLANCE (continued)

	SURVEILLANCE	FREQUENCY
TRS 3.7.8.3	----------NOTE---------- Documentation of critical parts replaced so that the maximum service life is not exceeded shall be retained as required by FSAR 17.2-17 --- Monitor the installation and maintenance records for each snubber to ensure that the service life has not been exceeded and will not be exceeded prior to the next snubber surveillance inspection.	24 months
TRS 3.7.8.4	----------NOTE---------- Snubber tested per this surveillance are in addition to snubbers selected for the sample plan per TRS 3.7.8.2 --- Test snubbers in locations of snubbers that failed the functional test during the previous test period and test repaired failed snubbers placed in new locations.	At the time of the next functional test
TRS 3.7.8.5	An inspection shall be performed of all snubbers attached to sections of systems that have experienced unexpected, potentially damaging transients as determined from a review of operational data and a visual inspection of the systems.	Within 6 months of transient

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3.8 Electrical Power

3.8.3 Diesel Generator (DG) Maintenance Activities

TRO 3.8.3 The Technical Requirements Surveillances specified in this TRO shall be performed at the Frequency specified for each DG.

APPLICABILITY: When the associated DG is required to be OPERABLE

ACTIONS

---------- NOTE ----------
1. Separate condition entry is allowed for each Diesel Generator.
2. TRO 3.0.4.b is not applicable to DGs

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. TRO requirements not met.	A.1 Declare affected DG inoperable.	Immediately

TECHNICAL REQUIREMENT SURVEILLANCE

SURVEILLANCE		FREQUENCY
TRS 3.8.3.1	Inspect diesel in accordance with procedures prepared in conjunction with its manufacturer's recommendations for this class of standby service.	5 years
TRS 3.8.3.2	Verify that the auto-connected loads to each diesel generator do not exceed the 2000-hour rating of 4700 kW.	24 months

(continued)

TECHNICAL REQUIREMENT SURVEILLANCE (continued)

	SURVEILLANCE	FREQUENCY
TRS 3.8.3.3	Verify that the following diesel generator lockout features do not prevent diesel generator starting and/or operation when not required: a. Engine overspeed. b. Generator differential. c. Engine low lube oil pressure.	24 months
TRS 3.8.3.4	For each fuel oil storage tank a. Drain the fuel oil; b. Remove the sediment, and c. Clean the tank	10 years
TRS 3.8.3.5	Perform a pressure test of those portions of the fuel oil system designed to Section III, Subsection ND of the ASME Code in accordance with ASME Code Section XI Article IWD-5000.	10 years

3.11 Radioactive Effluents

3.11.1 Liquid Effluents

3.11.1.5 Radioactive Liquid Process Monitoring Instrumentation

TRO 3.11.1.5 The Radioactive Liquid Process Monitoring Instrumentation channels shown in Table 3.11.1.5-1 shall be OPERABLE with their setpoints established in accordance with the ODCM to ensure the alarm will occur prior to exceeding the limits of TRO 3.11.1.1.

APPLICABILITY: As specified in Table 3.11.1.5-1.

ACTIONS

---------- NOTE ----------

1. Separate condition entry is allowed for each channel.

2. TRO 3.0.4.c is applicable.

3. The provisions of TRO 3.0.6 are not applicable.

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. One or more Radioactive Liquid Process Monitoring Instrumentation alarm/trip channels setpoint less conservative than the limits allowed by TRO 3.11.1.1.	A.1 Suspend the release of liquid effluents monitored by the affected channel OR A.2 Declare the channel inoperable	Immediately Immediately

(continued)

ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
B. Radioactive Liquid Process Monitoring Instrumentation otherwise inoperable.	B.1.1 Suspend the release of liquid effluents monitored by the affected channel. OR B.1.2 Analyze grab samples for isotopic activity to the required LLDs for liquid effluents (Table 3.11.1.1-1). AND B.2 Restore monitoring instrumentation	Immediately Once per 8 hours when the associated pathway is in service 30 days
C. Required Action and Associated Completion Time of Conditions B not met.	C.1 Explain why the inoperability was not corrected in a timely manner	In the next Radioactive Effluent Release Report per TS Section 5.6
D. RHR Heat Exchanger to be drained to the spray pond.	D.1 Analyze grab samples from the RHR Heat Exchanger for isotopic activity to the required LLDs for liquid effluents (Table 3.11.1.1-1).	Prior to draining RHR Heat Exchanger to the spray pond.

TECHNICAL REQUIREMENT SURVEILLANCE

---------- NOTE ----------
Refer to Table 3.11.1.5-1 to determine which TRSs apply for each Monitoring Function.

SURVEILLANCE		FREQUENCY
TRS 3.11.1.5.1	Perform CHANNEL CHECK.	24 hours
TRS 3.11.1.5.2	Perform a Source Check	31 days
TRS 3.11.1.5.3	Perform CHANNEL FUNCTIONAL TEST	92 days
TRS 3.11.1.5.4	Perform CHANNEL CALIBRATION	24 months

TABLE 3.11.1.5-1
RADIOACTIVE LIQUID PROCESS MONITORING INSTRUMENTATION

FUNCTION	REQUIRED CHANNELS	APPLICABILITY	SURVEILLANCE REQUIREMENTS
GROSS RADIOACTIVITY MONITORS NOT PROVIDING AUTOMATIC TERMINATION OF RELEASE			
1. Service Water System Effluent Line	1	(a)	TRS 3.11.1.5.1 TRS 3.11.1.5.2 TRS 3.11.1.5.3 TRS 3.11.1.5.4
2. Supplemental Decay Heat Removal Service Water	1	(a)	TRS 3.11.1.5.1 TRS 3.11.1.5.2 TRS 3.11.1.5.3 TRS 3.11.1.5.4
3. RHR Service Water System Effluent Line.	1/Loop	(b)	TRS 3.11.1.5.1 TRS 3.11.1.5.2 TRS 3.11.1.5.3 TRS 3.11.1.5.4

(a) System aligned through Fuel Pool Cooling Heat Exchanger. Alignment change between Service Water System Effluent Line and Supplemental Decay Heat Removal Service Water is not considered to be a change in the applicable condition.

(b) At all times

3.11 Radioactive Effluents

3.11.4 Radiological Environmental Monitoring

3.11.4.1 Monitoring Program

TRO 3.11.4.1 The radiological environmental monitoring program shall be conducted as specified in Table 3.11.4.1-1.

APPLICABILITY: At all times

ACTIONS

---------- NOTE ----------

1. The provisions of TRO 3.0.4 are not applicable.

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. Radiological Environmental monitoring program not being conducted as specified in Table 3.11.4.1-1	A.1 Generate a Condition Report to describe the deficiency and any actions taken to prevent their recurrence in the applicable Annual Radiological Environmental Operating Report	72 hours
B. The average level of radioactivity over any calendar quarter as the result of an individual radionuclide in plant effluents in a particular environmental exposure pathway in a particular environmental sampling medium, at a specified location exceeds the applicable reporting level of Table 3.11.4.1-2	B.1 Generate a Condition Report to prepare and submit a Special Report to the Commission within 30 days of identification of the Condition.	72 hours

(continued)

ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
C. More than one of the radionuclides in Table 3.11.4.1-2 are detected in a particular environmental exposure pathway at a specified monitoring location and are the result of plant effluents AND The sum of the ratios of the quarterly average activity levels to their corresponding reporting levels of each detected radionuclide, from Table 3.11.4.1-2, is ≥ 1.0	C.1 Generate a Condition Report to prepare and submit a Special Report to the Commission within 30 days of identification of the Condition.	72 hours

(continued)

ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
D. One or more Radionuclide(s) other than those in Table 3.11.4.1-2 are detected in a particular environmental exposure pathway at a specified location and are the result of plant effluents AND The potential annual dose to a MEMBER OF THE PUBLIC from all detected radionuclides that are the result of plant effluents is greater than or equal to the calendar year limits of TROs 3.11.1.2, 3.11.2.2 and 3.11.2.3	D.1 Generate a Condition Report to prepare and submit a Special Report to the Commission within 30 days of identification of the Condition.	72 hours
E. All requirements for a Special Report per either Condition B, C, or D are met except that the radionuclides detected are not the result of plant effluents	E.1 Generate a Condition Report to describe the reasons for not attributing identified radionuclides to plant effluents in the applicable Annual Radiological Environmental Operating Report.	72 hours

(continued)

ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
F. Milk or fresh leafy vegetable samples are unavailable from one or more of the sample locations required by Table 3.11.4.1-1	---------- NOTE ---------- The specific locations from which samples were unavailable may then be deleted from the monitoring program. ---------- F.1 Generate a Condition Report to identify locations for obtaining replacement samples and to add them to the radiological environmental monitoring program within 30 days of identification of the Condition AND F.2 Generate a Condition Report to identify the cause of the unavailability of samples and to identify the new location(s) for obtaining replacement samples in the applicable Radioactive Effluent Release Report	 72 hours 72 hours

NOTE: The provisions of TRS 3.0.3 are not applicable to the below surveillances.

TECHNICAL REQUIREMENT SURVEILLANCE

SURVEILLANCE		FREQUENCY
TRS 3.11.4.1.1	Collect the radiological environmental monitoring samples pursuant to Table 3.11.4.1-1	As required by Table 3.11.4.1-1
TRS 3.11.4.1.2	Analyze samples pursuant to the requirements of Table 3.11.4.1-1 with equipment meeting the detection capabilities required by Table 3.11.4.1-3	As required by Table 3.11.4.1-1
TRS 3.11.4.1.3	Determine annual cumulative potential dose contributions from radionuclides detected in environmental samples in accordance with the methodology and parameters in the ODCM.	Annually

TABLE 3.11.4.1-1 (Page 1 of 3)
RADIOLOGICAL ENVIRONMENTAL MONITORING PROGRAM

EXPOSURE PATHWAY AND/OR SAMPLE	NUMBER OF REPRESENTATIVE SAMPLES AND SAMPLE LOCATIONS	SAMPLING AND COLLECTION FREQUENCY	TYPE AND FREQUENCY OF ANALYSIS
1. DIRECT RADIATION	40 routine monitoring stations with two or more dosimeters or with one instrument for measuring and recording dose rate continuously placed as follows: 1. An inner ring of stations, one in each meteorological sector, in the general area of the SITE BOUNDARY 2 An outer ring of stations, one in each meteorological sector, in the 3 to 9 mile range from the site 3. The balance of the stations placed in special interest areas such as population centers, nearby residences, schools, and in 1 or 2 areas to serve as control stations	Quarterly	Gamma dose quarterly
2. AIRBORNE			
Radioiodine and Particulates	Samples from 5 locations a. 1 sample from close to each of the 3 SITE BOUNDARY locations (in different sectors) with the highest calculated annual average groundlevel D/Q b. 1 sample from the vicinity of the community having one of the highest calculated annual ground level D/Q c. 1 sample from a control location, between 15 and 30 km distant and in the least prevalent wind direction of wind blowing from the plant	Continual sampler operation with sample collection weekly, or more frequently if required by dust loading	Radioiodine Canister: I-131 Analysis weekly Particulate Sampler: Gross Beta radio activity analysis following filter change[(a)] Gamma isotopic analysis of composite (by location) quarterly

(continued)

(a) Airborne particulate sample filters shall be analyzed for gross beta radioactivity 24 hours or more after sampling to allow for radon and thorn daughter decay. If gross beta activity in air particulate samples is greater than ten times the yearly mean of control samples, gamma isotopic analysis shall be performed on the individual samples.

TABLE 3.11.4.1-1 (Page 2 of 3)
RADIOLOGICAL ENVIRONMENTAL MONITORING PROGRAM

EXPOSURE PATHWAY AND/OR SAMPLE	NUMBER OF REPRESENTATIVE SAMPLES AND SAMPLE LOCATIONS	SAMPLING AND COLLECTION FREQUENCY	TYPE AND FREQUENCY OF ANALYSIS
3. WATERBORNE			
a. Surface	1 sample upstream 1 sample downstream	Composite sample over one-month period	Gamma isotopic analysis monthly. Composite for tritium analyses quarterly
b. Ground	Samples from 1 or 2 sources only if likely to be affected	Quarterly	Gamma isotopic and tritium analyses quarterly
c. Drinking	1 sample from each of 1 to 3 of the nearest water supplies that could be affected by its discharge 1 sample from a control location	Composite sample over 2-week period when I-131 analysis is performed, monthly composite otherwise	I-131 analysis on each composite when the dose calculated for the consumption of the water is greater than 1 mrem per year. Composite for gross beta and gamma isotopic analyses monthly. Composite for tritium analyses quarterly
d. Sediment from shoreline	1 sample from downstream area with existing or potential recreational value	Semiannually	Gamma isotopic analyses semiannually

(continued)

TABLE 3.11.4.1-1 (Page 3 of 3)
RADIOLOGICAL ENVIRONMENTAL MONITORING PROGRAM

EXPOSURE PATHWAY AND/OR SAMPLE	NUMBER OF REPRESENTATIVE SAMPLES AND SAMPLE LOCATIONS	SAMPLING AND COLLECTION FREQUENCY	TYPE AND FREQUENCY OF ANALYSIS
4. INGESTION			
a. Milk	a. Samples from milking animals in 3 locations within 5km from the plant having the highest dose potential. If there are none, then, 1 sample from milking animals in each of 3 areas between 5 and 8km distant where doses are calculated to be greater than 1 mrem per year.	Semimonthly when animals are on pasture, monthly at other times.	Gamma isotopic and I-131 analysis semimonthly when animals are on pasture; monthly at other times.
	1 sample from milking animals at a control location (between 15 and 30km from the plant preferably in the least prevalent direction for wind blowing from the plant).		
b. Fish and/or Invertebrates	b. 1 sample of each of two recreationally important species in vicinity of plant discharge area.	Sample in season, or semiannually if they are not seasonal.	Gamma isotopic analysis on edible portions.
	1 sample of same species in areas not influenced by plant discharge.		
c. Food Products	c. 1 sample of each principal class of food products from any area, which is irrigated by water in which liquid plant wastes have been discharged.	At time of harvest	Gamma isotopic analysis on edible portions.
	Samples of 3 different kinds of broad leaf vegetation grown nearest each of two different offsite locations of highest predicted annual average ground level D/Q if milk sampling is not performed.	Monthly when available	Gamma isotopic and I-131 analysis.
	1 sample of each of the similar broad leaf vegetation grown between 15 to 30km from the plant, preferably, in the least prevalent direction for wind blowing from the plant if milk sampling is not performed.	Monthly when available	Gamma isotopic and I-131 analysis.

TABLE 3.11.4.1-2
REPORTING LEVELS FOR RADIOACTIVITY CONCENTRATIONS IN ENVIRONMENTAL SAMPLES
Reporting Levels

Analysis	Water (pCi/l)	Airborne Particulate or Gases (pCi/m^3)	Fish (pCi/kg, wet)	Milk (pCi/l)	Food Products (pCi/kg, wet)
H-3	20,000[(a)]				
Mn-54	1,000		30,000		
Fe-59	400		10,000		
Co-58	1,000		30,000		
Co-60	300		10,000		
Zn-65	300		20,000		
Zr-Nb-95	400[(b)]				
I-131	2	0.9		3	100
Cs-134	30	10	1,000	60	1,000
Cs-137	50	20	2,000	70	2,000
Ba-La-140	200[(b)]			300	

(a) For drinking water samples. This is 40 CFR Part 141 value. If no drinking water pathway exists, a value of 30,000 pCi/l may be used.

(b) Total for parent and daughter.

TABLE 3.11.4.1-3
DETECTION CAPABILITIES FOR ENVIRONMENTAL SAMPLE ANALYSIS
LOWER LIMIT OF DETECTION (LLD)

Analysis	Water (pCi/l)	Airborne Particulate Or Gases (pCi/m^3)	Fish (pCi/kg, wet)	Milk (pCi/l)	Food Products (pCi/kg, wet)	Sediments (pCi/kg, dry)
Gross Beta	4	0.01				
H-3	2000					
Mn-54	15		130			
Fe-59	30		260			
Co-58, 60	15		130			
Zn-65	30		260			
Zr-95	30					
Nb-95	15					
I-131	1[(a)]	0.07		1	60	
Cs-134	15	0.05	130	15	60	150
Cs-137	18	0.06	150	18	80	180
Ba-140	60			60		
La-140	15			15		

(a) LLD drinking water samples

B 3.11.4.1 Monitoring Program

BASES

TRO

The radiological environmental monitoring program required by this Requirement provides representative measurements of radiation and of radioactive materials in those environmental exposure pathways and for those radionuclides that lead to the highest potential radiation exposures of MEMBERS OF THE PUBLIC resulting from the station operation. This monitoring program thereby supplements the radiological effluent monitoring program by verifying that the measurable concentrations of radioactive materials and levels of radiation are not higher than expected on the basis of the effluent measurements and modeling of the environmental exposure pathways. Changes to the radiological environmental monitoring program specified in Table 3.11.4.1-1 may be made based on expected SSES operation and the results of radiological environmental monitoring during SSES operation.

The required detection capabilities for environmental sample analyses are tabulated in terms of the lower limits of detection (LLDs). The LLDs required by Table 3.11.4.1-3 are considered optimum for routine environmental measurements in industrial laboratories. It should be recognized that the LLD is defined as an *a priori* (before the fact) limit representing the capability of a measurement system and not as an *a posteriori* (after the fact) limit for a particular measurement.

Detailed discussion of the LLD, and other detection limits, can be found in HASL Procedures Manual, HASL-300 (revised annually); Currie, L. A., "Limits for Qualitative Detection and Quantitative Determination - Application to Radiochemistry" Anal. Chem. 40, 586-93 (1968); and Hartwell, J. K., "Detection Limits for Radioanalytical Counting Techniques," Atlantic Richfield Hanford Company Report ARH-SA-215 (June 1975). (Reference 1)

This section of the TRM is also part of the ODCM (Reference 2).

ACTIONS

The Actions are defined to ensure proper corrective measures are taken when requirements are not met. Once a Condition Report is generated (per the applicable Action), the TRO may be exited because at that time, the Condition that caused the TRO is no longer out of compliance with the program.

(continued)

B 3.11.4.1 Monitoring Program

BASES

ACTIONS (continued)

Per Action A.1, the Annual Radiological Environmental Operating Report shall provide a description of the reasons for not conducting the program as required and the plans for preventing a recurrence.

The Special Report submitted per Action B.1 shall identify the cause(s) for exceeding the limit(s) and define the corrective actions to be taken to reduce radioactive effluents so that the potential annual dose to a MEMBER OF THE PUBLIC is less than the calendar year limits of Requirements 3.11.1.2, 3.11.2.2 and 3.11.2.3.

Include revised figure(s) and table for the ODCM reflecting the new locations for obtaining samples per Action F.1 in the next Radioactive Effluent Release Report.

TRS

The TRSs are defined to be performed at the specified frequency to ensure that the requirements are implemented. Monitoring samples collected per TRS 3.11.4.1.1 shall be from the specific locations given in the table and figure in the ODCM. (Reference 2)

The TRSs are modified by a Note to take exception to TRS 3.0.3.

Table 3.11.4.1-1

Sample Locations Specific parameters of distance and direction sector from the centerline of one reactor, and additional description where pertinent, shall be provided for each and every sample location in this Table and in a table and figure(s) in the ODCM. Refer to NUREG-0133, "Preparation of Radiological Effluent Technical Specifications for Nuclear Power Plants," October 1978, and to Radiological Assessment Branch Technical Position, Revision 1, November 1979. (Reference 3) and NUREG-1302, Offsite Dose Calculation Manual Guidance: "Standard Radiological Effluent Controls for Boiling Water Reactors," April 1991. (Reference 5). Deviations are permitted from the required sampling schedule if specimens are unobtainable due to hazardous conditions, seasonal unavailability, malfunction of automatic sampling equipment and other legitimate reasons. If specimens are unobtainable due to sampling equipment malfunction, every effort shall be made to complete corrective action prior to the end of the next sampling

(continued)

B 3.11.4.1 Monitoring Program

BASES

TRS (continued)

period. All deviations from the sampling schedule shall be documented in the Annual Radiological Environmental Operating Report. It is recognized that, at times, it may not be possible or practicable to continue to obtain samples of the media of choice at the most desired location or time.

In these instances suitable alternative media and locations may be chosen for the particular pathway in question and appropriate substitutions made within 30 days in the radiological environmental monitoring program. Identify the cause of the unavailability of samples for that pathway and identify the new location(s) for obtaining replacement samples in the next Radioactive Effluent Release Report and also include in the report a revised figure(s) and table for the ODCM reflecting the new location(s).

Direct Radiation One or more instruments, such as a pressurized ion chamber, for measuring and recording dose rate continuously may be used in place of, or in addition to, integrating dosimeters. Film badges shall not be used as dosimeters for measuring direct radiation.

Radioiodine and Particulates - Sampling and Collection Frequency
The charcoal cartridges used in the airborne radioiodine sampling conducted as part of the radiological environmental monitoring program are designed and tested by the manufacturer to assure a high efficiency in the capture of radioiodine. Certificates from the manufacturer of the cartridges are provided with each batch of cartridges certifying the percent retention of the radiodine for stated air flows.

Radioiodine and Particulates - Particulate Sample; Waterborne - Surface, Ground, Sediment; Food Products Gamma isotopic analysis means the identification and quantification of gamma-emitting radionuclides that may be attributable to the effluents from the facility.

Waterborne - Surface The "upstream sample" shall be taken at a distance beyond significant influence of the discharge. The "downstream" sample shall be taken within the discharge line or just downstream of the discharge line near the mixing zone.

(continued)

B 3.11.4.1 Monitoring Program

BASES

TRS (continued)

Waterborne - Drinking - Sampling and Collection Frequency A composite sample is one in which the quantity (aliquot) of liquid sampled is proportional to the quantity of flowing liquid and in which the method of sampling employed results in a specimen that is representative of the liquid flow. In this program composite samples shall be collected at time intervals that are very short (e.g., hourly) relative to the compositing period (e.g., monthly) in order to assure obtaining a representative sample.

Waterborne - Ground - Samples and Sample Locations Groundwater samples shall be taken when this source is tapped for drinking or irrigation purposes in areas where the hydraulic gradient or recharge properties are suitable for contamination.

Drinking Water - I-131 Analyses Calculation of the dose projected from I-131 in drinking water to determine if I-131 analyses of the water are required shall be performed for the maximum organ and age group using the methodology and parameters of the ODCM.

Food Products - Sampling and Collection Frequency If harvest occurs more than once a year, sampling shall be performed during each discrete harvest. If harvest occurs continuously, sampling shall be monthly. Attention shall be paid to including samples of tuborous and root food products.

Table 3.11.4.1-3

This list does not mean that only these nuclides are to be considered. Other peaks that are identifiable at 95% confidence level together with those of the above nuclides, shall also be analyzed and reported in the Annual Radiological Environmental Operating report.

Required detection capabilities for dosimeters used for environmental measurements are given in Regulatory Guide 4.13. (Reference 4)

(continued)

B 3.11.4.1 Monitoring Program

BASES

TRS (continued)

The LLD is defined, for purpose of these Requirements, as the smallest concentration of radioactive material in a sample that will yield a net count (above system background) that will be detected with 95% probability with only 5% probability of falsely concluding that a blank observation represents a "real" signal.

For a particular measurement system (which may include radiochemical separation):

$$LLD = \frac{4.66 s_b}{E \bullet V \bullet 2.22 \bullet Y \bullet \exp(-\lambda \Delta t)}$$

Where:

LLD is the *a priori* lower limit of detection as defined above (as picrocuries per unit mass or volume),

s_b is the standard deviation of the background counting rate or of the countingrate of a blank sample as appropriate (as counts per minute),

E is the counting efficiency, as counts per disintegration,

V is the sample size, in units of mass or volume,

2.22 is the number of disintegrations per minute per picrocurie,

Y is the fractional radiochemical yield, when applicable,

λ is the radioactive decay constant for the particular radionuclide, and

Δt for environmental samples is the elapsed time between sample collection (or end of the sample collection period) and time of counting.

Typical values of E, V, Y, and Δt should be used in the calculation.

(continued)

B 3.11.4.1 Monitoring Program

BASES

TRS (continued)

It should be recognized that the LLD is defined as *a priori* (before the fact) limit representing the capability of a measurement system and not as an *a posteriori* (after the fact) limit for a particular measurement. Analyses shall be performed in such a manner that the stated LLDs will be achieved under routine conditions. Occasionally background fluctuations, unavoidably small sample sizes, the presence of interfering nuclides, or other uncontrollable circumstances may render these LLDS unachievable. In such cases, the contributing factors shall be identified and described in the Annual Radiological Environmental Operating Report.

REFERENCES

1. HASL Procedures Manual, HASL-300 (revised annually); Curie, L.A., "Limits for Qualitative Detection and Quantitative Determination - Application to Radiochemistry" Anal. Chem. 40, 586-93 (1968); and Hartwell, J. K., "Detection Limits for Radioanalytical Counting Techniques," Atlantic Richfield Hanford Company Report ARH-SA-215 (June 1975) Offsite Dose Calculation Manual

2. Technical Specification 5.5.1 - Offsite Dose Calculation Manual

3. NUREG-0133, "Preparation of Radiological Effluent Technical Specifications for Nuclear Power Plants," October 1978, and to Radiological Assessment Branch Technical Position, Revision 1, November 1979

4. Regulatory Guide 4.13

5. NUREG-1302, Offsite Dose Calculation Manual Guidance: "Standard Radiological Effluent Controls for Boiling Water Reactors," April 1991