

Reportable Action Levels for Loss of Emergency Preparedness Capabilities

TBD 2013



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NEI 13-01 [Revision D]

Nuclear Energy Institute

**Reportable Action Levels
for Loss of Emergency
Preparedness Capabilities**

TBD 2013

ACKNOWLEDGMENTS

This document was prepared by the Nuclear Energy Institute (NEI) Reportable Action Level (RAL) Task Force.

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EXECUTIVE SUMMARY

Title 10 of the Code of Federal Regulations (10 CFR) 50.72, “Immediate Notification Requirements for Operating Nuclear Power Reactors,” requires a licensee to report the occurrence of certain events to the US Nuclear Regulatory Commission (NRC). In particular, § 50.72(b)(3)(xiii) requires that a licensee report any event that results in a major loss of emergency assessment capability, offsite response capability, or offsite communications capability as soon as practical and in all cases within eight hours of the occurrence, **unless already reported under 10 CFR 50.72(a), (b)(1), or (b)(2)**. The regulatory guidance concerning this requirement is contained in NUREG-1022, *Event Reporting Guidelines 10 CFR 50.72 and 50.73*. NUREG-1022 collectively refers to the above three event types as a “Loss of Emergency Preparedness Capabilities.”

The purpose of this technical report is to provide a recommended and uniform approach that will promote consistent application of the event reporting guidance associated with a loss of emergency preparedness capabilities. To that end, this document provides a set of generic event reporting criteria referred to as Reportable Action Levels or RALs. An event described by one of these RALs constitutes a major loss of emergency assessment capability, offsite response capability, or offsite communications capability, and thus must be reported to the NRC as required by § 50.72(b)(3)(xiii).

A licensee may use the information from this document to create site-specific RALs for assessing an event that potentially involves a reportable loss of emergency preparedness capabilities. When doing so, the licensee encouraged to maintain as much fidelity as possible to the generic material contained herein. This approach will help ensure that the resulting RALs are consistent with the guidance in NUREG-1022 and minimize the potential for regulatory compliance issues associated with subsequent event reporting decisions.

The guidance presented in this document is applicable only to the reporting of a loss of emergency preparedness capabilities. It should not be utilized for other reporting purposes.

Finally, NEI 13-01 does not address the requirements of 10 CFR 50.73, “Licensee Event Report System,” because these requirements are not applicable to the loss of an emergency preparedness capability.

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REPORTABLE ACTION LEVELS FOR LOSS OF EMERGENCY PREPAREDNESS CAPABILITIES

1 DEFINITIONS USED IN NEI 13-01

To promote clarity and understanding of the event reporting criteria for a loss of emergency preparedness capabilities, the Reportable Action Level (RAL) methodology employs several defined terms, i.e., words that have specific meanings as used in this document. The development of these term definitions considered related material already in use in regulations, and NRC and NEI guidance documents. Defined terms appear in all capital letters (i.e., ALL CAPS) and, along with their definitions, are listed below. These definitions have been developed specifically for use in the RAL methodology described in this document and should not be used for other purposes without evaluation/validation of suitability.

ALERT AND NOTIFICATION SYSTEM (ANS): The system that demonstrates compliance with the public alerting and notification planning standard described in 10 CFR 50.47(b)(5) and the associated requirements of section IV.D of 10 CFR 50, Appendix E.

ALTERNATE METHOD: A means that would be employed to perform an emergency response function in the event that the primary method is lost, as described in the site emergency plan or associated implementing procedures. *[If the primary method to perform a function is lost and an ALTERNATE METHOD is available, then the ability to perform the function has not been lost]*

Comment [SFL1]: We think this should be deleted. Also, does this encompasses procedures written for the EPRI "important to EP initiative?"

and a COMPENSATORY MEASURE would not be required.])

Comment [SFL2]: Does the use of brackets signify anything?

COMPENSATORY MEASURE: An interim action taken to compensate for the inability to perform an emergency response function using the primary method and all ALTERNATE METHODS (i.e., the normal methods) such that, when implemented, there is a reasonable expectation that the function would be accomplished, albeit in a possibly degraded manner, during an actual radiological emergency. *[A compensatory measure is implemented as part of a planned activity, and need not meet the same design or operating requirements as the normal methods but must be sufficient to support effective implementation of the site emergency plan.]*

EMERGENCY ACTION LEVEL (EAL): A pre-determined, site-specific, observable threshold for an INITIATING CONDITION that, when met or exceeded, places the plant in a given emergency classification level, as described in the site emergency plan and associated implementing procedures.

EMERGENCY ASSESSMENT: The evaluation of plant information to determine the consequences of an accident or other emergency-related event, and the appropriate measures for event mitigation and protection of the public. EMERGENCY ASSESSMENT includes RADIOLOGICAL ASSESSMENT as a sub-function.

Comment [SFL3]: I feel this may be inappropriately limiting. This would have the effect of eliminating consideration of offsite data that could be useful in assessing the plant status, for example, a hurricane warning, a flood warning, report from an offsite monitoring team, etc.

EMERGENCY NOTIFICATION SYSTEM (ENS): A telephonic communications system designed to allow a licensee to provide timely notifications to the NRC Operations Center of off-normal incidents affecting a facility, and information concerning the operation and status of the plant.

EMERGENCY RESPONSE DATA SYSTEM (ERDS): The direct near real-time electronic data link between a licensee's onsite computer system and the NRC Operations Center that provides for the automated transmission of a limited data set of selected parameters as required by section VI of 10 CFR 50, Appendix E.

EMERGENCY RESPONSE FACILITY (ERF): A licensee facility that demonstrates compliance with planning standard 10 CFR 50.47(b)(8) and staffed by members of the licensee's EMERGENCY RESPONSE ORGANIZATION during a radiological emergency.

EMERGENCY RESPONSE ORGANIZATION (ERO): The organization of qualified licensee personnel that demonstrates compliance with planning standard 10 CFR 50.47(b)(2).

HEALTH PHYSICS NETWORK (HPN): A telephonic communications system designed to allow a licensee to provide health physics (radiological) and environmental monitoring information to the NRC Operations Center during an emergency.

INITIATING CONDITION (IC): An event or condition that aligns with the definition of one of the four emergency classification levels by virtue of the potential or actual effects or consequences, as described in the site emergency plan and associated implementing procedures. An INITIATING CONDITION will provide one or more EMERGENCY ACTION LEVELs, any of which will result in an emergency declaration for that INITIATING CONDITION. Some of these alternate EMERGENCY ACTION LEVELs, (e.g., those involving sampling and analysis) may incur a delay in classification, a degraded rather than lost classification capability.

OFFSITE RESPONSE ORGANIZATION (ORO): Those state, local and tribal agencies with primary responsibility for coordinating and implementing offsite emergency measures.

RADIOLOGICAL ASSESSMENT: An evaluation of plant parameters and radioactive releases performed to determine potential **and actual** offsite doses during an emergency. [*This function is sometimes referred to as “dose assessment”.*]

PLANNED OUTAGE: An outage of an EP capability that is initiated by the licensee as a pre-planned action for maintenance, test, or other purpose. That is addressed in maintenance packages, work clearance, test procedures, etc.

REACTOR COOLANT SYSTEM (RCS): The system used to remove energy from the reactor core.

REPORTABLE ACTION LEVEL (RAL): A predetermined, site-specific, observable threshold that, when met or exceeded, requires notification of the associated event to the NRC in accordance with § 50.72(b)(3)(xiii).

VIABLE: A COMPENSATORY MEASURE that (1) can restore a required function in a reasonably comparable manner and (2) is proceduralized prior to an event. [*Proceduralized means that the necessary instructions to perform a function exist in a document (e.g., a procedure, a user aid, a night or standing order, etc.) that will be followed by response personnel should an emergency occur. Persons expected to implement the measure must be aware of the measure. For example, members of the ERO must know in advance to report to an alternative ERF should an accident occur. In particular, it should be noted that a VIABLE COMPENSATORY MEASURE does not include reliance upon “skill-of-the-craft” or an ad hoc approach.*]

Comment [SFL4]: We think there is a need for this definition to ensure the reporting of an unplanned failure when warranted. That no action the licensee takes following an unplanned loss is interpreted as a planned outage. For example, if the INPO equipment important to safety procedure lists an alternate capability, this should remain an unplanned loss.

We reference the last paragraph in 3.2.6 of NUREG-1022 for

2 DEVELOPMENT OF SITE-SPECIFIC MATERIAL

2.1 INTEGRATION OF MATERIAL INTO EXISTING PROGRAMS/PROCEDURES:

Enhanced event reporting guidance developed using this document may be incorporated into existing programs and procedures in whatever manner is deemed appropriate by a licensee. The selected approach should maintain alignment with current practices, and minimize organizational impacts and necessary document changes. It is not intended that a separate (stand-alone) program or procedure be created to address new or revised reporting guidance.

In order to ensure that Reportable Action Levels (RALs) are properly aligned with the guidance contained in NUREG-1022, developers are urged to adhere closely the development guidance presented in the Developer Notes. These notes provide information on how to adjust the generic RAL thresholds to properly reflect site-specific design considerations and emergency plan requirements. It is recognized that some differences from the generic guidance may be necessary to address unique site characteristics; in these cases, it is recommended that a rationale for the difference be developed and incorporated within the RAL basis.

It is important that the event evaluation criteria contained in this document be implemented as an integrated package. Using selected portions of the guidance is strongly discouraged as it could lead to potentially inaccurate or inadequate event reporting.

A failure to adhere to the above development guidance may result in RALs that are not consistent with the guidance in NUREG-1022 and increases the potential for regulatory compliance issues associated with subsequent event reporting decisions.

2.2 DEVELOPER USE OF GENERIC MATERIAL:

The RAL scheme developer will use the generic guidance in NEI 13-01 to prepare a set of site-specific RALs. This individual is reminded to review all applicable NRC requirements and guidance before beginning their efforts. Consistent with the structure and format of the existing fleet or site reporting guidance document(s), incorporation of RALs should include the following elements:

- Reportable Event: The summary description of the 3 events involving a loss of Emergency Preparedness (EP) capabilities - emergency assessment capability, offsite response capability, or offsite communications capability.
- REPORTABLE ACTION LEVELS (RALs): The predetermined, site-specific, observable thresholds that, when met or exceeded, will require notification of the associated event to the NRC in accordance with § 50.72(b)(3)(xiii). The RAL alpha-numeric designations and Table identifiers may be changed as necessary to align with the format of the existing fleet or site reporting guidance document(s).
- Basis: Material that supports proper decision-making for event reporting by providing background information.

- Definitions: The definitions from Section 1 should be included somewhere within the fleet or site reporting guidance document(s) to ensure consistent and proper application of the RALs.

Finally, the reporting guidance document(s) should contain clear instructions to the user that a report to the NRC is required if an RAL is met.

Questions or comments concerning the material in this document may be directed to the NEI Emergency Preparedness staff, NEI RAL task force members or submitted to the Emergency Preparedness Frequently Asked Questions (EPFAQ) process.

3 REPORTABLE ACTION LEVELS

3.1 REPORTABLE EVENT: A MAJOR LOSS OF EMERGENCY ASSESSMENT CAPABILITY

Example Reportable Action Levels: (1 or 2 or 3 or 4 or 5)

Note: Review ~~all of both~~ the RALs and the Basis section information before making a report.

- (1) ~~Unplanned or planned~~ loss of structures or equipment; including indications, display systems and annunciators; that ~~are relied upon in an EMERGENCY ACTION LEVEL would prevent the capability to evaluate an emergency~~ INITIATING CONDITION.

AND

There are no ALTERNATIVE METHODS (EMERGENCY ACTION LEVELs) that would result in an emergency declaration for the affected EMERGENCY INITIATING CONDITION.

Note: Some approved EMERGENCY ACTION LEVELs require sampling and analysis, which generally cannot be completed in 15 minutes. However, the emergency declaration function can still be accomplished.

- ~~(2) Unplanned or planned loss of structures or equipment; including indications, display systems and annunciators; that would prevent the capability to perform the EMERGENCY ASSESSMENT function in the Control Room.~~

- (32) a. Unplanned loss of structures or equipment listed in Table X ~~that would prevent the capability to perform the EMERGENCY ASSESSMENT function at ANY of the following ERFs if an actual radiological emergency was to occur.~~

- Control Room
- Primary Technical Support Center
- Primary Emergency Operations Facility

AND

Table X	
ERF	Equipment
Control Room	Site specific list
Primary Technical Support Center	Site specific list
Primary Emergency Operations	Site specific list

Comment [SFL5]: Based upon review of ENs between 2007-ans 2013, some discussion of SPDS is warranted.

Comment [SFL6]: Need to address planned outages

Comment [SFL7]: Not appropriate as the RAI doesn't impose the conditions associated with a planned outage.

Comment [SFL8]: There doesn't seem to be any reason to treat the control room separately

- b. There are no ALTERNATIVE METHODS that could be used to perform the EMERGENCY ASSESSMENT function.

AND

- bc. The capability to perform the EMERGENCY ASSESSMENT function is not restored within the duration shown in the Loss Timeframe column of Table A for the affected ERF.

Table A	
ERF	Loss Timeframe
Primary Technical Support Center	(site-specific time #1)
Primary Emergency Operations Facility	(site-specific time #2)

- (43) a. Planned loss of structures or equipment; listed in Table X ~~that would prevent the capability to perform the EMERGENCY ASSESSMENT function at ANY of the following ERFs if an actual radiological emergency was to occur.~~

- Control Room
- Primary Technical Support Center
- Primary Emergency Operations Facility

AND

- b. ANY of the following:

1. (a) The capability (primary or alternate) to perform the EMERGENCY ASSESSMENT function is not restored within the duration shown in the Loss Timeframe column of Table B for the affected ERF.

AND

- (b) No VIABLE COMPENSATORY MEASURE is in place.

Table B	
ERF	Loss Timeframe
Primary Technical Support Center	(site-specific time #1)
Primary Emergency Operations Facility	(site-specific time #2)
Control Room	No restoration time

allowed

OR

2. The capability (primary or alternate) to perform the EMERGENCY ASSESSMENT function is not expected to be restored within 72 hours.

OR

3. The capability (primary or alternate) to perform the EMERGENCY ASSESSMENT function is not restored within 72 hours.

- (S4) a. Unplanned or planned loss of structures or equipment that would prevent the capability to perform the RADIOLOGICAL ASSESSMENT function for ANY of the following assessment options/types.

(site-specific list #1)

Basis:

This Reportable Event addresses a major loss of EMERGENCY ASSESSMENT capability that would significantly impair the ability to evaluate plant information in order to determine the consequences of an accident or other emergency-related event if an emergency were to occur. The loss of an individual structure or piece of equipment that supports performance of the EMERGENCY ASSESSMENT capability is reportable only to the extent that the loss meets this threshold; a degraded capability caused by a failure or planned activity is not reportable. A report would be required for an ongoing condition meeting one the above RALs as well as a condition that occurred within 3 years of the date of discovery.

Each RAL above concerns a major loss of an EMERGENCY ASSESSMENT capability. To warrant consideration, an event should involve the loss of all methods normally employed to perform the function of interest, as described in the site emergency plan and associated implementing procedures. Two examples are provided for clarification.

1. An ERO ERF has a primary power source and a backup power generator capable of powering all loads needed for performance of the EMERGENCY ASSESSMENT function. An event involving a loss of power to the ERF would be reportable only if both the primary source and the backup source are simultaneously unavailable. The unavailability of the primary source alone, or the backup source alone, would not require a report.

Comment [SFL9]: Since radiological assessment is a subset of emergency assessment, why can't this section be merged with those above? If not, reformat as was done for RAL 3.1.2 and 3.1.3

Comment [SFL10]: "emergency" or "radiological emergency" Be consistent throughout

Comment [SFL11]: Consider a clearer exposition on "loss" versus "degraded."

Comment [SFL12]: This is a good phrase, why can't this be worked into the RALs?

2. Procedures describe the primary method of providing plant data to ERFs as the **Safety Parameter Display System (SPDS)**¹ and an ALTERNATE METHOD that relies on manual actions (e.g., use of a communicator). An event involving a loss of the SPDS would be reportable only if the ALTERNATE METHOD was simultaneously unavailable. The unavailability of the SPDS alone, or the ALTERNATE METHOD alone, would not require a report.

Comment [SFL13]: Good discussion, but the RALs do not explicitly identify SPDS

RAL #1 addresses a loss of the structures or equipment that provide the parameter values or information necessary for evaluation of the EMERGENCY ACTION LEVEL (EAL) thresholds for a given emergency INITIATING CONDITION (IC). To be reportable, the event must involve the loss of all normal methods - both the primary method and all the ALTERNATE METHODS – used to obtain EAL-related data or information such that evaluation of the IC cannot be performed. Two examples are provided for clarification.

1. An IC with multiple EALs that assess the same condition: A site has an IC for high RCS radioactivity with two EALs – one based on a letdown monitor reading and one based on a sample analysis. The monitor is removed from service for maintenance. This event represents a degraded condition but is not reportable because the IC can still be evaluated using RCS sample analysis method. If a concurrent failure were to occur that prevented the collection or analysis of an RCS sample, then both EALs could not be evaluated and, thus, the IC could not be evaluated. This event would be reportable.
2. An IC with multiple EALs that assess different conditions: A site has an IC for natural or manmade hazards with 4 EALs – one for high wind speed, one for a seismic event, one for an explosion and one for flooding. The seismic monitoring system suffers a failure such that the one seismic-related EAL cannot be evaluated. This event would be reportable because the remaining EALs under the IC assess conditions that are unrelated to a seismic event.

ALTERNATE METHODS for assessing an EAL should be adequately proceduralized, i.e., the necessary instructions for evaluating the EAL exist in a document that will be followed by response personnel should an off-normal or emergency condition occur. In particular, the criteria necessary for initiating an assessment of the EAL should be proceduralized and not dependent upon “skill-of-the-craft” or individual judgment. For example, should the plant vent radiation monitor be out-of-service and the ALTERNATE METHOD relies upon a manual sample collection and analysis, the criteria for requiring initiation of the sampling process should be defined in a document described in the site emergency plan or an associated implementing procedure.

RALs #3 and #4 address the unplanned or planned loss of structures or equipment that prevents the performance of the EMERGENCY ASSESSMENT function at an ERF. These RALs should

¹ For purposes of this example, the name of the site-specific computer system that provides accident-related information to the ERO ERFs may be substituted. Some common names include the Main Plant Computer System, Plant Process Computer or the Emergency Response Facility Information System.

be evaluated following reported or planned degradations of any of the following items to determine if a loss of **EMERGENCY ASSESSMENT capability** has occurred:

- Structural integrity
- Lighting
- Power sources
- Data acquisition, computation and display systems; including those used for RADIOLOGICAL ASSESSMENT (dose projection) purposes
- Heating, Ventilation and Air Conditioning (HVAC) systems and components
- Habitability systems and components (e.g., HEPA or charcoal filters)
- Unique design features necessary for facility operation (e.g., flooding protection)
- **Other items that could render EMERGENCY ASSESSMENT function unavailable.**

As used in these RALs, an inability to perform the EMERGENCY ASSESSMENT function should not be assumed to have occurred simply because a structure or equipment design parameter is exceeded or feature inoperable. Rather, the decision should be based on whether or not ERO personnel could effectively perform their EMERGENCY ASSESSMENT-related duties within the facility and using the equipment **and data** available. This decision should consider both the ability to activate the facility as well as the capability for protracted operation under emergency conditions.

When evaluating RAL #4, it should be kept in mind that a COMPENSATORY MEASURE is implemented as part of a planned activity; it need not meet the same design or operating requirements as the normal (primary and ALTERNATE) methods but must be sufficient to support effective implementation of the site emergency plan. A VIABLE COMPENSATORY MEASURE must be proceduralized, i.e., the necessary instructions to perform a function must exist in a document that will be followed by response personnel should an emergency occur. A VIABLE COMPENSATORY MEASURE cannot rely upon “skill-of-the-craft” or an ad hoc approach.

Provided that the capability to perform EMERGENCY ASSESSMENT functions is maintained, the temporary use of an alternate or backup ERF may provide a VIABLE COMPENSATORY MEASURE for the loss of a primary ERF. In particular, the alternate or backup ERF must meet the applicable requirements of 10 CFR 50 Appendix E, section IV.E.8.a and 8.c. A report is not required if the lost capability affects only an alternate or backup ERF **and the primary ERF remains available.**

RAL #5 addresses a loss of the structures or equipment that provide the parameter values or other information necessary for performing a RADIOLOGICAL ASSESSMENT for a given assessment option/type described in the site emergency plan and/or associated implementing procedures². To be reportable, the event must involve the loss of all normal methods - both the primary method and all the ALTERNATE METHODS – used to obtain data or information such that a RADIOLOGICAL ASSESSMENT for a given release option/type cannot be performed.

² These options/types are sometimes referred to as the assessment “release paths”.

In cases where a radiation monitor has multiple detectors and associated channels which may be used as inputs to the dose assessment process, all detectors/channels must be lost for the monitor to be considered lost. The following examples are provided for clarification.

Comment [SFL14]: This needs to be clarified. If the channels are completely redundant, then yes. However, having an operable low range channel doesn't help when the release needs a high range channel.

A site has an offsite dose assessment process that employs three options/types that do not rely upon field monitoring results – plant vent, main steam line or containment source term. Each option/type has a primary method and one ALTERNATE METHOD described in the site emergency plan and/or an associated implementing procedure. Likewise, the site possesses a described primary method and an ALTERNATE METHOD for obtaining the meteorological data necessary to perform a RADIOLOGICAL ASSESSMENT for any release option/type.

- Case 1: The plant vent monitor has two detectors and associated channels, a low-range and a high-range. Either the low-range or the high-range reading from this monitor may be used as an input for a RADIOLOGICAL ASSESSMENT using the plant vent assessment option/type. The high-range detector becomes inoperable while the low-range detector remains in service. This event represents a degraded capability and would not be reportable.
- Case 2: Continued from Case 1 – The plant vent low-range detector becomes inoperable; however, an ALTERNATE METHOD that relies upon a “grab”/manual effluent sample process remains available. This event represents a degraded capability and would not be reportable.
- Case 3: Continued from Case 2 – The ALTERNATE METHOD that relies upon a “grab”/manual effluent sample process becomes unavailable due to the failure of the required analysis equipment; all described methods for obtaining radiological data necessary for performing a RADIOLOGICAL ASSESSMENT using the plant vent assessment option/type are now unavailable. This condition represents a lost EMERGENCY ASSESSMENT capability and would be reportable.
- Case 4: The plant vent assessment option/type relies upon 3 meteorological data inputs – upper wind speed, upper wind direction and upper ΔT . The upper wind speed instrument on the primary meteorological tower (the primary method) becomes inoperable while the similar instrument on the backup tower remains in service (the ALTERNATE METHOD). This event represents a degraded capability and would not be reportable.
- Case 5: Continued from Case 4 – The upper wind speed instrument on the backup meteorological tower becomes inoperable; the ALTERNATE METHOD for obtaining this data is now also lost. All described methods for obtaining meteorological data necessary for performing a RADIOLOGICAL ASSESSMENT using the plant vent assessment option/type are now unavailable. This condition represents a lost EMERGENCY ASSESSMENT capability and would be reportable.

ALTERNATE METHODS for performing a RADIOLOGICAL ASSESSMENT should be adequately proceduralized, i.e., the necessary instructions exist in a document that will be followed by response personnel should an off-normal or emergency condition occur. In particular, the criteria necessary for initiating a RADIOLOGICAL ASSESSMENT using an ALTERNATE METHOD should be proceduralized and not dependent upon “skill-of-the-craft” or individual judgment. For example, should the plant vent radiation monitor be out-of-service and the ALTERNATE METHOD relies upon a manual sample collection and analysis, the criteria for requiring initiation of the sampling process should be defined in a document described in the site emergency plan or an associated implementing procedure.

All elapsed times specified in the above RALs begin with:

- the time that the structure or equipment was intentionally removed from service (e.g., for planned maintenance or upgrading), or
- the time of structure or equipment failure, if known, or
- the time of discovery if neither of the above conditions apply.

For RAL #4, 72 hours was included to reflect guidance from NUREG-0696, *Functional Criteria for Emergency Response Facilities*. This guidance suggests an equipment unavailability factor of no more than approximately 1% per year, or about 87 hours per year. This was rounded down to 72 hours to align with other NRC reporting criteria.

Developer Notes:

The EMERGENCY ASSESSMENT function subsumes the capabilities to classify an emergency and perform RADIOLOGICAL ASSESSMENTS; however, separate RALs were included to better address the unique aspects of these capabilities and related industry operating experience. Refer to RALs #1 and #5, respectively.

The RALs in this section address a loss of the EMERGENCY ASSESSMENT function. RALs #3 and #4 specify the ERFs staffed by augmented ERO personnel ~~and~~ typically responsible for performance of the EMERGENCY ASSESSMENT function (consistent with the guidance provided in NUREG-0696). Other ERO ERFs should not be included in this RAL unless they perform an EMERGENCY ASSESSMENT function similar to that done in the TSC or EOF. For example, the OSC and Joint Information Center would typically not be included because personnel in these facilities do not perform the EMERGENCY ASSESSMENT function.

(site-specific time #1) – Enter the elapsed time goal for activation of the TSC as described in the site emergency plan or implementing procedures ~~(e.g., 60, 75 or 90 minutes from some specified start time such as emergency declaration).~~

(site-specific time #2) – Enter the elapsed time goal for activation of the EOF as described in the site emergency plan or implementing procedures ~~(e.g., 60, 75 or 90 minutes from some specified start time such as emergency declaration).~~

Comment [SFL15]: The developers should be reading the approved plan for this information. An example is not needed.

(site-specific list #1) – list the RADIOLOGICAL ASSESSMENT options /types described in the site emergency plan and associated implementing procedures³; however, do NOT include options/types that rely upon onsite or offsite field monitoring activities (i.e., out-of-plant or environmental monitoring). For example, a list may include:

- Plant Vent
- Fuel Storage Building Vent
- Main Steam Line A
- Main Steam Line B
- Containment

~~If desired, d~~ Developers ~~may~~ should include lists of site-specific systems, structures and components within the RALs or in referenced tables.

Developers should incorporate site-specific terminology where appropriate.

Comment [SFL16]: We need to understand what is being said here.

Comment [SFL17]: This list is significantly incomplete as it only addressed radiation monitors. Needs to include any other data needed by the radiological assessment. For example, meteorological data, release point flow rate, data needed for core damage assessment, in-place telemetered environmental monitors (if available), etc.

³ These options/types are sometimes referred to as the assessment “release paths”.

3.2 REPORTABLE EVENT: A MAJOR LOSS OF OFFSITE RESPONSE CAPABILITY

Example Reportable Action Levels: (1 or 2)

Note: Review both the RALs and the Basis section information before making a report.

- (1) a. The occurrence of a significant natural hazard (e.g., earthquake, hurricane, tornado, flood, major winter storms, etc.) or other event of similar scope and impact.

AND

- b. The hazard or event results in **ANY** of the following:
1. An ORO agency has provided information indicating that they are unable to implement protective measures for the public as described in their emergency plan if an actual radiological emergency was to occur (e.g., key evacuation routes are impassable, loss of response infrastructure, etc.).

OR

2. ERO personnel coming from offsite locations could not report to their on-site response locations within (site-specific time #1) if an actual radiological emergency was to occur.

OR

3. **ANY** of the ERFs listed in Table A could not be activated within the specified Timeframes if an actual radiological emergency was to occur.

Table A	
ERFs	Timeframe
Primary Technical Support Center	(site-specific time #2)
Primary Operational Support Center	(site-specific time #2)
Primary Emergency Operations Facility	(site-specific time #2)

OR

4. **ANY** of the local offsite support agencies listed in Table B would be unable to access the site if their assistance **was requested**.

Comment [SFL18]: Not sure of intent. We don't want to imply that it isn't an issue until the resource is needed.

Table B
Local Offsite Support Agency
(site-specific list #1)

- (2) a. Unplanned or planned loss of **ANY** of the following primary ANS equipment for greater than 1 hour:

(site-specific list #2)

Developers note: Use this block if the FEMA-approved backup method meets the primary ANS performance objective in 10 CFR Part 50, Appendix E, §IV.D.3

AND

- b. The FEMA approved backup alerting method cannot be implemented for the area affected by the lost primary system capability..

Developers note: Use this block if the FEMA-approved backup method does not meet the primary ANS performance objective in 10 CFR Part 50, Appendix E, §IV.D.3

- b. **ANY** of the following:

1. ~~There is a~~The FEMA-approved backup alerting method(s) ~~that~~ cannot be implemented for the area affected by the lost primary system capability.

OR

2. The ~~affected-primary~~ ANS equipment is not expected to be returned to service within 24 hours.

OR

3. The ~~affected-primary~~ ANS equipment was not returned to service within 24 hours.

Basis:

This Reportable Event addresses a major loss of offsite response capability that could prevent the on-shift staff from obtaining needed response assistance or offsite officials from implementing key functions needed for protection of the public if an emergency were to occur. The loss of an individual structure or piece of equipment that supports performance of the offsite response capability is reportable only to the extent that the loss meets this threshold; a degraded capability caused by a failure or planned activity is not reportable. A report would be required for an ongoing condition meeting one the above RALs as well as a condition that occurred within 3 years of the date of discovery.

For RAL #1, impediments to evacuation such as fog, snow, and ice, should generally not be reported if they are within the respective capabilities of the licensee, state, or local officials to resolve or mitigate. Rather, the reporting requirement is intended to apply to more significant events such as the conditions around the Turkey Point Nuclear Plant after Hurricane Andrew struck in 1992 or the conditions around the Cooper Nuclear Station during the Midwest floods of 1993. During this type of event, a licensee should periodically gather and assess information available from OFFSITE RESPONSE ORGANIZATIONS (OROs) and other sources to determine if a loss offsite response capability has occurred.

For RAL #1, because a significant natural hazard will always be an unplanned event, there are no durations or restoration periods. NUREG-1022 refers to these events as occurrences. The 8-hour reporting period begins with the licensee's initial identification and confirmation that the event or condition has met the applicable reporting criteria.

An ORO agency referred to in RAL #1 should be one with primary responsibility for coordinating and implementing offsite emergency measures.

For RAL #2, the elapsed time specified in the above RALs begins with:

- the time that the ~~structure or~~ANS equipment was intentionally removed from service (e.g., for planned maintenance or upgrading), or
- the time of ~~structure or~~ANS equipment failure, if known, or
- the time of discovery if neither of the above conditions apply.

Developer note: If the backup alerting means does not meet the design objective for a primary ANS use this paragraph:

For RAL #2, the unplanned and planned loss cases have been combined. The 1-hour and 24-hour threshold values reflect guidance provided in NUREG-1022. Although the RAL allows credit for an available FEMA-approved backup alerting means in determining whether the loss of the Primary ANS longer than 1-hour is reportable, this credit is limited to 24-hours. This report allows the NRC to discuss the situation with FEMA and to determine what additional action, if any, may be warranted.

Developer note: If the backup alerting means meets the design objective for a primary ANS use this paragraph:

For RAL #2, the unplanned and planned loss cases have been combined. Since the FEMA-approved backup alerting means meets same design objective as the primary alerting means, the loss of the primary system is not reportable if the backup alerting means are available.

Developer Notes:

(site-specific time #1) - Enter the elapsed time goal for the arrival of augmenting ERO personnel to the site as described in the emergency plan (e.g., 30 or 60 minutes from some specified start time such as emergency declaration). If different time values are specified, use the lowest value.

(site-specific time #2) – Enter the elapsed time goal for activation of the TSC, OSC and EOF as described in the site emergency plan or implementing procedures (e.g., 60 or 75 minutes from some specified start time such as emergency declaration).

(site-specific list #1) – List the local offsite support agencies that may be requested to respond to the site, as described in the site emergency plan. These should include the “first responder” agencies that support the on-shift ERO with the initial response to an event and may include a fire department, an ambulance service or local law enforcement. It is not the intent to include organizations that support the augmented ERO (e.g., a reactor vendor specialist who reports to the TSC) or that otherwise are not expected to report to the site during the initial response to an event.

(site-specific list #2) – There are two alternate wordings for this RAL depending on whether the FEMA-approved backup alerting means meets the design objective of 10 CFR Part 50, Appendix E, Section IV.D.3. If the backup alerting means is identified in FEMA-approved design report as meeting this objective then the backup is fully capable of replacing the primary alerting means such that no loss of alerting capability has occurred.

The primary ANS system for a site may employ one or more technologies for public alerting – examples include sirens, tone alert radios, “reverse 911” notification systems, etc. The list for this RAL should specify the primary ANS components, or combinations of components, that, in the event of their failure, would result in the loss of the capability to alert a large segment of the population in the EPZ. For purposes of developing this list, “a large segment of the population in the EPZ” should be taken to mean approximately 25% of the total EPZ population.

Variations in population density/distribution should be considered when identifying potential combinations of lost components (e.g., sirens) that could cause the 25% threshold to be exceeded. For example, depending upon the site-specific ANS design and EPZ population distribution characteristics, the criterion “approximately 25% of the total EPZ population” may or may not correlate to 25% of the sirens. As an example, a loss of 10% of the sirens in an area with high population density would likely be more significant than a loss of 25% of the sirens in a low population area. Averaging the number of EPZ sirens over the EPZ total population will generally be unacceptable. There needs to be a documented rationale for the thresholds used. Developers should also consider the need to list siren or other alerting system control equipment

Comment [SFL19]: Having an ambulance service available doesn't help much when you need a fire truck. This discussion needs to be clarified.

Comment [SFL20]: We are not sure that this discussion will lead to desired end point. Can it be made clearer? The NRC will insist on the criteria being directly traceable back to population of people rather than sirens.

Comment [SFL21]: The staff feels strongly about this.

described in emergency plans, and that may be used during an emergency in accordance with implementing procedures.

Developers should incorporate site-specific terminology where appropriate.

3.3 REPORTABLE EVENT: A MAJOR LOSS OF OFFSITE COMMUNICATIONS CAPABILITY

Example Reportable Action Level:

Note: Review both the RALs and the Basis section information before making a report.

- (1) Loss of an offsite communications capability meeting the Unplanned or Planned Event criteria in Tables A, B, C, D, E or F.

Table A – Loss of the Emergency Notification System (ENS)			
ENS Method	Control Room	Primary TSC	Primary EOF
ENS Line	✓	✓	✓
(site-specific ALTERNATE METHOD #1)	(enter ✓ if appropriate)	(enter ✓ if appropriate)	(enter ✓ if appropriate)
Planned Loss-Restoration Timeframe	0	(site-specific time #1)	(site-specific time #1)
<p><u>Unplanned Event</u></p> <p>a. ALL the ENS methods checked above for a given facility are lost.</p> <p><u>Planned Event</u></p> <p>a. ALL the ENS methods checked above for a given facility are lost.</p> <p>AND</p> <p>b. ANY of the following:</p> <p>1. (a) At least one method cannot be restored to service within the Loss Timeframe specified for the affected ERF(s).</p> <p>AND</p> <p>(b) No VIABLE COMPENSATORY MEASURE is in place.</p> <p>OR</p> <p>2. At least one method is not expected to be restored within 72 hours.</p> <p>OR</p> <p>3. At least one method is not restored within 72 hours.</p>			

Comment [SFL22]: The staff likes this approach. As makes a clear distinction between unplanned and planned

Table B – Loss of the Health Physics Network (HPN)		
HPN Method	Primary TSC	Primary EOF
HPN Line	✓	✓
(site-specific ALTERNATE METHOD #2)	(enter ✓ if appropriate)	(enter ✓ if appropriate)
Loss Timeframe	(site-specific time #1)	(site-specific time #1)
<p><u>Unplanned Event</u></p> <p>a. ALL the HPN methods checked above for a given facility are lost.</p> <p><u>Planned Event</u></p> <p>a. ALL the HPN methods checked above for a given facility are lost.</p> <p>AND</p> <p>b. ANY of the following:</p> <ol style="list-style-type: none"> 1. (a) At least one method cannot be restored to service within the Loss Timeframe specified for the affected ERF(s). AND (b) No VIABLE COMPENSATORY MEASURE is in place. OR 2. At least one method is not expected to be restored within 72 hours. OR 3. At least one method is not restored within 72 hours. 		

Table C – Loss of ORO Communications			
Communications Method	Control Room	Primary TSC	Primary EOF
(site-specific primary method #1)	✓	✓	✓
(site-specific ALTERNATE METHOD #3)	(enter ✓ if appropriate)	(enter ✓ if appropriate)	(enter ✓ if appropriate)
<p><u>Unplanned Event</u></p> <p>a. ALL the ORO communications methods checked above for a given facility are lost.</p> <p><u>Planned Event</u></p> <p>a. ALL the ORO communications methods checked above for a given facility are lost.</p> <p>AND</p> <p>b. ANY of the following:</p> <p>1. (a) At least one method cannot be restored to service within 15 minutes. AND (b) No VIABLE COMPENSATORY MEASURE is in place.</p> <p>OR</p> <p>2. At least one method is not expected to be restored within 72 hours.</p> <p>OR</p> <p>3. At least one method is not restored within 72 hours.</p>			

Comment [SFL23]: What's the rhyme or reason for these numbers (all of the tables)?

Table D – Loss of ERO Notifications	
ERO Notification Methods	
(site-specific primary method #2)	
(site-specific ALTERNATE METHOD #4)	
<p><u>Unplanned Event</u></p> <p>a. ALL the ERO notification methods listed above are lost.</p> <p><u>Planned Event</u></p> <p>a. ALL the ERO notification methods listed above are lost.</p> <p>AND</p> <p>b. ANY of the following:</p> <ol style="list-style-type: none"> 1. (a) At least one method cannot be restored to service within 15 minutes. AND (b) No VIABLE COMPENSATORY MEASURE is in place. OR 2. At least one method is not expected to be restored within 72 hours. OR 3. At least one method is not restored within 72 hours. 	

Table E – Loss of ERO ERF Communications			
Communications Method	Control Room	Primary TSC	Primary EOF
(site-specific primary method #3)	✓	✓	✓
(site-specific ALTERNATE METHOD #5)	(enter ✓ if appropriate)	(enter ✓ if appropriate)	(enter ✓ if appropriate)
Loss Timeframe	0	(site-specific time #1)	(site-specific time #1)

Unplanned Event

a. **ALL** the ERF communications methods checked above for a given facility are lost.

Planned Event

a. **ALL** the ERF communications methods checked above for a given facility are lost.

AND

b. **ANY** of the following:

- (a) At least one method cannot be restored to service within the Loss Timeframe specified for the affected ERF(s).

AND

(b) No VIABLE COMPENSATORY MEASURE is in place.

OR
- At least one method is not expected to be restored within 72 hours.

OR

- At least one method is not restored within 72 hours.

Table F – Loss of ERO Offsite Monitoring Team Communications	
ERO Offsite Monitoring Team Communications Methods	
(site-specific primary method #4)	
(site-specific ALTERNATE METHOD #6)	
<p><u>Unplanned Event</u></p> <p>a. ALL the offsite monitoring team communications methods listed above are lost.</p> <p><u>Planned Event</u></p> <p>a. ALL the offsite monitoring team communications methods listed above are lost.</p> <p>AND</p> <p>b. ANY of the following:</p> <ol style="list-style-type: none"> 1. (a) At least one method cannot be restored to service within (site-specific time #2). AND (b) No VIABLE COMPENSATORY MEASURE is in place. OR 2. At least one method is not expected to be restored within 72 hours. OR 3. At least one method is not restored within 72 hours. 	

Basis:

This Reportable Event addresses a major loss of communication capabilities that could prevent a licensee from performing required communications with federal, state, and local officials; or between the site and EMERGENCY RESPONSE ORGANIZATION (ERO) personnel at offsite locations. This reporting requirement is intended to apply to serious conditions during which telecommunications systems can no longer fulfill the communications requirements of the site emergency plan; a degraded capability caused by a failure or planned activity is not reportable. A report would be required for an ongoing condition meeting one the above RALs as well as a condition that occurred within 3 years of the date of discovery.

The **RAL** above is concerned with a major loss of an offsite communications capability. To warrant consideration, an event should involve the loss of all methods normally employed to perform the function of interest, as described in the site emergency plan and associated implementing procedures. For example, if an EMERGENCY RESPONSE FACILITY (ERF) has both a primary method and an ALTERNATE METHOD for maintaining communications

Comment [SFL24]: Which RAL?

with an OFFSITE RESPONSE ORGANIZATION (ORO), an event involving a loss of offsite communications capabilities may be reportable only if both the primary method and the ALTERNATE METHOD are simultaneously unavailable. The loss of the primary method alone, or the ALTERNATE METHOD alone, would not require a report.

When evaluating these RALs, it should be kept in mind that a COMPENSATORY MEASURE is implemented as part of a planned activity; it need not meet the same design or operating requirements as the normal (primary and ALTERNATE) methods but must be sufficient to support effective implementation of the site emergency plan. A VIABLE COMPENSATORY MEASURE must be proceduralized, i.e., the necessary instructions to perform a function must exist in a document that will be followed by response personnel should an emergency occur. A VIABLE COMPENSATORY MEASURE cannot rely upon “skill-of-the-craft” or an ad hoc approach.

All elapsed times specified in the **above RALs** begin with:

- the time that the structure or equipment was intentionally removed from service (e.g., for planned maintenance or upgrading), or
- the time of structure or equipment failure, if known, or
- the time of discovery if neither of the above conditions apply.

Comment [SFL25]: Which?

The 72-hour value reflects guidance from NUREG-0696, *Functional Criteria for Emergency Response Facilities*. This guidance suggests an equipment unavailability factor of no more than approximately 1% per year, or about 87 hours per year. This was rounded down to 72 hours to align with other NRC reporting criteria.

Although a notification may not be required under 10 CFR 50.72(b)(3)(xiii) in the event of a loss of the ENS, HPN, or ERDS because of the availability of viable alternative communication means, the NRC Operations Center should be informed of any failure of NRC-supplied communications equipment so that the NRC may arrange for repair. The commercial telephone number 301-816-5100 may be used to inform the NRC Operations Center of a failed piece of equipment. At the time the failure is reported, the licensee should be prepared to supply the following information to expedite repair: (1) name of contact at location of failure, (2) commercial phone number of contact, (3) location of contact (i.e., street address, building number, room number, etc., and (4) any other information that would expedite repair.

If the NRC Operations Center provides the initial notification that an ENS line is out-of-service, then there is no need to make a report provided that one or more of the alternate communications methods listed in Table A are available.

A report is not required if a lost capability affects only an alternate or backup ERF.

Developer Notes:

Because the ERDS was implemented as a supplement to the ENS in Appendix E of 10 CFR

50 to provide the NRC with information deemed necessary for performing its oversight function, the loss of the ERDS cannot impair the licensee's emergency response during an emergency. Accordingly, ~~is identified as a supplement to the ENS in Appendix E of 10 CFR 50,~~ the failure of the ERDS does not constitute a major loss of offsite communication capability ~~provided that the ENS is available~~; therefore, no report is required. ~~Since the loss of ENS capability is, by itself, a reportable event, a subsequent loss of the ERDS also need not be reported.~~ As noted in the Basis section, the NRC Operations Center should be informed of any failure of NRC-supplied communications equipment so that the NRC may arrange for repair.

To avoid multiple failures that could result in a reportable event, developers should avoid communication links that would have a common mode failure (e.g., several communication links routed through a multiplexed fiber optic link when identifying ALTERNATIVE METHODS..

(site-specific ALTERNATE METHOD #1) – Enter the ALTERNATE METHOD(S) that may be used by each facility to maintain ENS communications in the event that the ENS line is not available, as described in the site emergency plan or implementing procedures. Add as many table rows as necessary to include all ALTERNATE METHODS and place checkmarks where appropriate.

(site-specific time #1) – Enter the elapsed time goal for activation of the primary TSC and EOF as described in the site emergency plan or implementing procedures (e.g., 60 or 75 minutes from some specified start time such as emergency declaration).

(site-specific ALTERNATE METHOD #2) – Enter the ALTERNATE METHOD(S) that may be used by each facility to maintain HPN communications in the event that the HPN line is not available, as described in the site emergency plan or implementing procedures. Add as many table rows as necessary to include all ALTERNATE METHODS and place checkmarks where appropriate.

(site-specific primary method #1) – Enter the primary method used to communicate with the ORO agency(ies) that receives notification of an emergency, for each facility, as described in the site emergency plan or implementing procedures.

(site-specific ALTERNATE METHOD #3) – Enter the ALTERNATE METHOD(S) that may be used by each facility to communicate with the ORO agency(ies) that receives notification of an emergency, as described in the site emergency plan or implementing procedures. Add as many table rows as necessary to include all ALTERNATE METHODS and place checkmarks where appropriate.

(site-specific primary method #2) – Enter the primary method used to notify the ERO of an emergency during off-hours, as described in the site emergency plan or implementing procedures.

(site-specific ALTERNATE METHOD #4) – Enter the ALTERNATE METHOD(S) that may be used to notify the ERO of an emergency during off-hours, as described in the site emergency

plan or implementing procedures. Add as many table rows as necessary to include all ALTERNATE METHODS.

(site-specific primary method #3) – Enter the primary method that a given ERO ERF uses to communicate with other ERO ERFs, as described in the site emergency plan or implementing procedures.

(site-specific ALTERNATE METHOD #5) – Enter the ALTERNATE METHOD(S) that a given ERO ERF may use to communicate with other ERO ERFs, as described in the site emergency plan or implementing procedures. Add as many table rows as necessary to include all ALTERNATE METHODS and place checkmarks where appropriate.

(site-specific primary method #4) – Enter the primary method used by ERO offsite field monitoring team personnel to communicate with their controlling ERF, as described in the site emergency plan or implementing procedures.

(site-specific ALTERNATE METHOD #6) – Enter the ALTERNATE METHOD(S) that may be used by ERO offsite field monitoring team personnel to communicate with their controlling ERF, as described in the site emergency plan or implementing procedures. Add as many table rows as necessary to include all ALTERNATE METHODS.

(site-specific time #2) – Enter the elapsed time goal for activation of the ERO ERF that controls ERO offsite field monitoring team personnel as described in the site emergency plan or implementing procedures (e.g., 60 or 75 minutes from some specified start time such as emergency declaration). If more than one ERF could perform this function and different time values are specified for each, use the lowest value.

Developers should incorporate site-specific terminology where appropriate.