

NEI 13-01 [Revision 0]

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

July 2014

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Nuclear Energy Institute

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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 (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, 10 CFR 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 refers to the above three event types collectively 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 should be reported to the NRC in accordance with 10 CFR 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 is 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 should only be used to identify a loss of emergency preparedness capabilities. It should not be utilized for other reporting purposes or to address unrelated regulatory requirements.

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.

Where warranted, information intended to aid in the understanding of a defined term was added in italicized text and bracketed (i.e., [*example text*]).

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 FACILITY: A temporary location that may serve as a Technical Support Center (TSC) or Emergency Operations Facility (EOF) in support of a planned work activity. [*An acceptable ALTERNATE FACILITY must have sufficient capability to support effective direction and control of an emergency response; however, it need not meet the same design or operating requirements applied to a normally used ERF (e.g., it may not possess a protected ventilation system.)*]

BACKUP EMERGENCY RESPONSE FACILITY (ERF): A facility that may serve as the TSC or EOF in the event that the primary facility is unavailable, as described in the site emergency plan or a procedure described in the emergency plan. [*An acceptable BACKUP ERF must meet the requirements of 10 CFR 50, Appendix E, sections IV.E.8.a and 8.c, and be functionally equivalent to the primary facility.*]

COMPENSATORY MEASURE: A temporary means, established as part of a planned activity, to perform a given emergency response function during a period when the normally used METHODS are unavailable such that, when implemented, there is a reasonable expectation that the function would be accomplished during an actual emergency, albeit in a possibly degraded manner. [*A COMPENSATORY MEASURE need not meet the same design or operating requirements as the normally used METHODS but must be sufficient to support effective implementation of the site emergency plan. Also refer to the related term "VIABLE."*]

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 or an implementing procedure described in the emergency plan.

EMERGENCY ASSESSMENT: The evaluation of plant information such as operational and radiological indications and data, and reports from onsite and offsite sources, to determine the consequences of an accident or other emergency-related event, and the appropriate measures for mitigation and protection of the public. [*RADIOLOGICAL ASSESSMENT is a sub-function of EMERGENCY ASSESSMENT.*]

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 is staffed by members of the licensee's EMERGENCY RESPONSE ORGANIZATION during an emergency.

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

FEDERAL EMERGENCY MANAGEMENT AGENCY (FEMA): The federal government agency with responsibility for reviewing and assessing offsite emergency plans and preparedness for adequacy, and making findings and determinations as to whether offsite emergency plans are adequate and can be implemented.

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 or an implementing procedure described in the emergency plan. [*An IC provides one or more EALs which, when met, will require an emergency declaration.*]

METHOD: A means that could be employed to perform an emergency response function as described in the site emergency plan or an implementing procedure described in the emergency plan. [*Site emergency plans and implementing procedures typically describe primary and one or more alternate METHODS for performing a given function. Provided that at least one METHOD is available, then the ability to perform the associated function has not been lost.*]

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 radiological data performed to determine potential or actual offsite doses during an emergency. [*This function is sometimes referred to as “dose assessment” and supports the performance of EMERGENCY ASSESSMENT.*]

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 10 CFR 50.72(b)(3)(xiii).

RESTORATION TIME: The time available for restoring a lost structure or piece of equipment to service. [*Where allowed, RESTORATION TIMES are specified in the RALs.*]

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. Further, individuals expected to implement the COMPENSATORY MEASURE must be aware of the measure, in advance of its potential or actual implementation. A VIABLE COMPENSATORY MEASURE does not include reliance upon “skill-of-the-craft” or individual judgment.*]

2. DEVELOPMENT OF SITE-SPECIFIC MATERIAL

2.1 INTEGRATION OF MATERIAL INTO EXISTING PROGRAMS/PROCEDURES

The site-specific event reporting guidance developed in accordance with this document should be incorporated into existing programs and procedures in the manner deemed most appropriate by the 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 the site-specific RALs are properly aligned with the guidance contained in NUREG-1022, developers are urged to closely adhere to the material presented in the Developer Notes included in Section 3. These notes provide information for adjusting the generic RAL thresholds to properly reflect site-specific 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. A review of all applicable NRC requirements and guidance should be performed prior to beginning this work. Consistent with the structure and format of the existing fleet or site reporting guidance document(s), incorporation of RAL-related information 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.
- 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 10 CFR 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: Background information that supports proper decision-making for event reporting.
- 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. Where warranted, information intended to aid in the understanding of a defined term was added in italicized text and bracketed (i.e., [*example text*]); this text should be kept with the definitions when incorporated into the licensee's document.

In cases where fleet-wide/corporate-level RAL guidance will be developed, the RAL scheme developer should ensure that the resulting RALs are consistent with each site's EP licensing basis (e.g., reflects site-specific commitments, capabilities and equipment for each facility).

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:

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

- 1) Loss of EMERGENCY ASSESSMENT capability meeting the Unplanned or Planned Event criteria in Tables A, B1, B2 or C.

Table A – Loss of Emergency Classification Capability

Unplanned Event

- a. Loss of a structure or equipment, including indications, display systems and annunciators, that prevents the evaluation of **ALL** EALs for an emergency INITIATING CONDITION.

Planned Event

- a. Loss of a structure or equipment, including indications, display systems and annunciators, that prevents the evaluation of **ALL** EALs for an emergency INITIATING CONDITION for greater than 24 hours.

AND

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

1. No **VIABLE COMPENSATORY MEASURE** is in place.

OR

2. Lost structures or equipment necessary to evaluate at least one EAL are not expected to be restored within 72 hours from the start of the outage.

OR

3. Lost structures or equipment necessary to evaluate at least one EAL are not restored within 72 hours from the start of the outage.

Table B1 – UNPLANNED Loss of Emergency Response Facilities and Equipment

- a. Loss of a structure or equipment that would prevent the performance of EMERGENCY ASSESSMENT in ANY of the following ERFs if an emergency were to occur.
- Control Room
 - Primary Technical Support Center
 - Primary Emergency Operations Facility

AND

- b. The capability to perform EMERGENCY ASSESSMENT was not restored within the RESTORATION TIME specified in Table B1-1.

Table B1-1	
ERF	RESTORATION TIME
Control Room	None
Primary Technical Support Center	(site-specific time #1) from the time of the unplanned loss, if known, OR absent that knowledge, the time-of-discovery.
Primary Emergency Operations Facility	(site-specific time #2) from the time of the unplanned loss, if known, OR absent that knowledge, the time-of-discovery.

AND

- c. The lost EMERGENCY ASSESSMENT capability cannot be performed at a BACKUP EMERGENCY RESPONSE FACILITY.

Table B2 – PLANNED Loss of Emergency Response Facilities and Equipment

a. Loss of a structure or equipment, for greater than 24 hours, which would prevent the performance of EMERGENCY ASSESSMENT in ANY of the following ERFs if an emergency were to occur.

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

AND

b. ANY of the following:

1. (a) The capability to perform EMERGENCY ASSESSMENT cannot be restored within the RESTORATION TIME specified in Table B2-1.

Table B2-1	
ERF	RESTORATION TIME
Control Room	None
Primary Technical Support Center	(site-specific time #1) following an emergency declaration, should one occur.
Primary Emergency Operations Facility	(site-specific time #2) following an emergency declaration, should one occur.

AND

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

AND

- (c) The lost EMERGENCY ASSESSMENT capability cannot be performed at an ALTERNATE FACILITY.

OR

2. The lost structure or equipment is not expected to be restored within 72 hours from the start of the outage.

OR

3. The lost structure or equipment is not restored within 72 hours from the start of the outage.

AND

- c. The lost EMERGENCY ASSESSMENT capability cannot be performed at a BACKUP EMERGENCY RESPONSE FACILITY.

Table C – Loss of Radiological Assessment Capability

Unplanned Event

- a. Loss of a structure or equipment that would prevent the performance of RADIOLOGICAL ASSESSMENT for ANY of the following assessment options/types.

(site-specific list #1)

Planned Event

- a. Loss of a structure or equipment that would prevent the performance of RADIOLOGICAL ASSESSMENT for ANY of the following assessment options/types for greater than 24 hours.

(site-specific list #1)

AND

- b. ANY of the following:

1. No VIABLE COMPENSATORY MEASURE is in place.

OR

2. The lost structure or equipment is not expected to be restored within 72 hours from the start of the outage.

OR

3. The lost structure or equipment is not restored within 72 hours from the start of the outage.

Basis:

This Reportable Event addresses a major loss of EMERGENCY ASSESSMENT capability such that a response function necessary for determining accident or event consequences, and appropriate measures for mitigation and protection of the public, would be significantly impaired if an emergency were to occur. A report would be required for an ongoing condition that meets the criteria in one of the RAL Tables above, as well as such a condition that occurred within 3 years of the date of discovery.

A degraded capability will exist when a METHOD(S) used to perform an EMERGENCY ASSESSMENT function is unavailable but the reporting criteria contained in the applicable RAL Table above are not met. A degraded EMERGENCY ASSESSMENT capability should not be reported. Examples of a degraded condition are provided below.

EMERGENCY ASSESSMENT capability subsumes the functions to classify an emergency and perform RADIOLOGICAL ASSESSMENTS; however, separate RALs were included to better address the unique aspects of these functions and related industry operating experience. Refer to Tables A and C, respectively. This approach to the presentation of information notwithstanding, users should evaluate a structure or equipment loss against the criteria in all Tables.

The criteria in the RAL Tables distinguish between losses which are planned and unplanned. A planned loss is one that results from a scheduled work activity such as component maintenance, testing, modification or replacement. An unplanned loss would typically involve the failure of a structure or piece of equipment.

A VIABLE COMPENSATORY MEASURE is implemented as part of a planned activity. It need not meet the same design or operating requirements as the normally used METHODS; however, its effectiveness should be sufficient to ensure that the supported emergency response function would be accomplished during an actual emergency, albeit in a possibly degraded manner. 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 individual judgment.

It is recognized that the performance of a VIABLE COMPENSATORY MEASURE may require more time to complete than a normally used METHOD(S) (e.g., performance of a sample analysis vs. a radiation monitor reading). The fact that a VIABLE COMPENSATORY MEASURE requires more time to implement than a normally used METHOD(S) does not automatically mean that the associated EMERGENCY ASSESSMENT capability has been lost. The time necessary to implement a VIABLE COMPENSATORY MEASURE should not be unreasonably long and minimized to the degree practical.

Discussion of Table A – Loss of Emergency Classification Capability

Table A addresses a loss of the capability to obtain parameter values or information necessary for the evaluation of EAL thresholds for a given IC, such that an emergency could not be declared per that IC. In cases where multiple EALs are provided for the IC, the loss of the capability to evaluate one or more of them constitutes a degraded capability so long as one or more of them can still be evaluated, and an emergency could be declared per that IC. In addition, given that the readings from certain radiation monitors may be used to perform a RADIOLOGICAL ASSESSMENT, the loss of a radiation monitor should also be assessed using the criteria in Table C.

Each IC in the Fission Product Barrier Table has multiple fission product barrier thresholds¹. Each of these threshold should be treated as an EAL for reporting evaluation purposes.

Events that should be assessed using the Table A criteria include those involving a loss of data acquisition, computation and display systems at the Technical Support Center (TSC) or Emergency Operations Facility (EOF) where such systems support emergency classification. Such events should also be assessed against the appropriate Table B1 (unplanned) or B2 (planned) criteria, and related Basis information.

It is recognized that the assessment of some EALs may require more time than others to complete (e.g., performance of a sample analysis vs. a radiation monitor reading). The time necessary to perform an EAL assessment is not a factor in determining whether a loss is reportable.

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 because the IC can still be evaluated using the sample analysis data; it is not reportable. 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 (i.e., only one EAL for assessing each condition). 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.

The criterion(ia) for initiating a METHOD to assess an EAL using indications available from sources outside the Control Room should be proceduralized; initiation of the METHOD should not be dependent upon “skill-of-the-craft” or individual judgment. For example, consider a site with two EALs related to the plant vent – one using a radiation monitor reading and the other using the results of an effluent sample analysis. The criteria for requiring initiation of the plant vent sampling process should be defined in a procedure.

¹ [Developer note: For users of NUMARC-007, and NEI 99-01 revisions 4 and 5, these ICs are FU1, FA1, FS1 and FG1. For NEI 99-01 revision 6 users, the ICs are FA1, FS1 and FG1.]

Discussion of Tables B1 and B2 for Loss of Emergency Response Facilities and Equipment

Table B1 and B2 address an unplanned or planned loss of a structure or equipment that results in the inability to perform EMERGENCY ASSESSMENT at an ERF. These RALs should be evaluated following a reported or planned degradation 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)
- Any other item that could render an EMERGENCY ASSESSMENT function unavailable.

As used in these Tables, an inability to perform EMERGENCY ASSESSMENT should not be assumed to have occurred simply because a structure or equipment design parameter is exceeded or feature nonfunctional. Rather, the decision should be based on whether or not ERO personnel could effectively perform EMERGENCY ASSESSMENT functions within the facility, 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.

The following two examples are provided for clarification.

1. An ERF has two METHODS for supplying electrical power - an offsite power source and a backup generator capable of powering all loads needed for the performance of EMERGENCY ASSESSMENT functions. An unplanned event involving a loss of power to the ERF would be reportable only if both the offsite power source and the backup power generator are simultaneously unavailable, and the other criteria in Table B1 are met. The unavailability of the offsite power source alone, or the backup power generator alone, represents a degraded condition and would not require a report.
2. Procedures describe one METHOD for providing plant data to ERFs as the Safety Parameter Display System (SPDS)² and another METHOD that relies upon manual

² For purposes of this example, the name of the site-specific computer system that provides accident-related information to the ERFs may be substituted. Some common names include the Main Plant Computer System, Plant Process Computer or the Emergency Response Facility Information System.

actions (e.g., use of a communicator). An unplanned event involving a loss of the SPDS would be reportable only if the ability to perform the manual METHOD was simultaneously unavailable, and the other criteria in Table B1 are met. The unavailability of the SPDS alone, or the manual METHOD alone, represents a degraded condition and would not require a report.

If a licensee has an ALTERNATE FACILITY or a BACKUP ERF that is capable of performing the functions of the primary facility, consistent with the Table B1 and B2 criteria, then EMERGENCY ASSESSMENT is not significantly impaired during the period that the primary facility is not available. As a result, NRC action or awareness is not likely warranted in such scenarios, and therefore a report would not be needed.

A report is not required if the lost capability affects only an ALTERNATE FACILITY or a BACKUP ERF, and the primary ERF remains available.

Since the Control Room is always activated, a RESTORATION TIME does not apply to this facility.

Discussion of Table C – Loss of Radiological Assessment Capability

Table C addresses the loss of a structure or equipment that provides the parameter values or information necessary for performing a RADIOLOGICAL ASSESSMENT for a given assessment option/type during an emergency³. In cases where multiple METHODS for obtaining data or information are provided for given assessment option/type, the loss of one or more METHODS constitutes a degraded capability so long as one or more of them can still be performed. In addition, given that certain radiation monitor readings are specified in EALs, the loss of a radiation monitor should also be assessed using the criteria in Table A.

It is recognized that some backup/alternate METHODS used to provide data and information for a RADIOLOGICAL ASSESSMENT may require more time than others to complete (e.g., performance of a sample analysis vs. a radiation monitor reading). The time necessary to implement a backup/alternate METHOD is not a factor in determining whether a loss is reportable.

The inability to perform RADIOLOGICAL ASSESSMENT at an ERF is evaluated in accordance with Tables B1 and B2, since it is a sub-function of EMERGENCY ASSESSMENT. Table C primarily addresses the loss of structures and equipment that provide inputs to a RADIOLOGICAL ASSESSMENT (e.g., those used to ascertain radiation levels, radiological release rates or meteorological parameters).

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

The following examples are provided for clarification.

A site has an offsite dose assessment process that employs three options/types – plant vent, main steam line and containment source term. Each option/type has two performance METHODS described in the site emergency plan and/or an implementing procedure described in the emergency plan. Likewise, the site possesses two METHODS for obtaining the meteorological data necessary to perform a RADIOLOGICAL ASSESSMENT for any release option/type. The plant vent monitor has two detectors and associated channels, a low-range and a high-range; the low-range can provide data supporting emergency classifications up to Alert level, and the high-range from the Site Area Emergency through the General Emergency level.

- Case 1: The high-range channel fails (becomes nonfunctional) while the low-range channel remains in service. The low-range channel is NOT an acceptable METHOD to compensate for the loss of the high-range channel because it cannot provide data throughout the range necessary to evaluate all emergency classification levels. The site’s backup METHOD, which uses a “grab”/manual effluent sample process, is available to provide the data normally provided by the high-range channel. This event represents a degraded capability and would not be reportable because the plant vent assessment option/type can still be evaluated for all emergency classification levels.⁴
- Case 2: Continued from Case 1 – The plant vent low-range channel also fails (becomes nonfunctional); however, the “grab”/manual effluent sample process is available to provide this data as well. This event represents a degraded capability and would not be reportable because the plant vent assessment option/type can still be evaluated for all emergency classification levels.
- Case 3: Continued from Case 2 – The backup METHOD that relies upon a “grab”/manual effluent sample process becomes unavailable due to the failure of the required analysis equipment; both 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 loss of 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 nonfunctional while the corresponding instrument on the backup tower (the backup METHOD) remains in service. This event represents a degraded capability and would not be reportable.

⁴ Absent the availability of a backup METHOD, the event as described to this point would be reportable.

- Case 5: Continued from Case 4 – The upper wind speed instrument on the backup meteorological tower becomes nonfunctional; the backup METHOD for obtaining this data is now also lost. All described METHODS for obtaining upper wind speed, which is meteorological data necessary for performing a RADIOLOGICAL ASSESSMENT using the plant vent assessment option/type, are now unavailable. This condition represents a loss of EMERGENCY ASSESSMENT capability and would be reportable.

In cases where a radiation monitor has multiple detectors and related channels that provide input data for performing a RADIOLOGICAL ASSESSMENT, and an unplanned failure occurs that removes a detector or channel from service, a loss of RADIOLOGICAL ASSESSMENT capability is considered to have occurred only if the data range of the remaining available detectors and channels is not sufficient to support the evaluation of all EALs associated with that release assessment option/type (e.g., a low-range channel that cannot read a General Emergency-related release rate or concentration from the plant vent), and there is no other data collection METHOD available.

The criterion(ia) for initiating a RADIOLOGICAL ASSESSMENT METHOD using indications available from sources outside the Control Room should be proceduralized; initiation of the METHOD should not be dependent upon “skill-of-the-craft” or individual judgment. For example, consider a site with two METHODS to obtain a plant vent effluent release concentration – one using a radiation monitor reading and the other using the results of an effluent sample analysis. The criteria for requiring initiation of the plant vent sampling process should be defined in a procedure.

Other Information

A time limit of 24-hours has been applied to planned events. If this threshold and the other related RAL criteria are met, the subsequent report will allow the NRC to be aware of the situation and determine if additional actions are necessary.

72 hours was included to the RAL Tables 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:

Tables B1 and B2 specify the ERFs staffed by augmented ERO personnel typically responsible for performance of EMERGENCY ASSESSMENT functions (consistent with the guidance provided in NUREG-0696). Other 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 EMERGENCY ASSESSMENT functions.

(site-specific time #1) – Enter the maximum elapsed time allowed for activation of the TSC as described in the site emergency plan or an implementing procedure described in the emergency plan.

(site-specific time #2) – Enter the maximum elapsed time allowed for activation of the EOF as described in the site emergency plan or an implementing procedure described in the emergency plan.

(site-specific list #1) – list the RADIOLOGICAL ASSESSMENT options /types that could be evaluated during an emergency as described in the site emergency plan or an implementing procedure described in the emergency plan⁵. For example, a site-specific list of RADIOLOGICAL ASSESSMENT options /types for a hypothetical 2-loop pressurized water reactor might include:

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

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

Developers should incorporate site-specific terminology where appropriate.

⁵ These assessment options/types are sometimes referred to as the “release pathways”.

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 emergency were 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 onsite response locations within (site-specific time #1) if an actual emergency were to occur.

OR

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

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

[Developer Note – for sites with a FEMA-approved backup alerting METHOD(S) that does not meet the primary ANS design objective stated in 10 CFR Part 50, Appendix E, IV.D.3, use the RAL wording below.]

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

(site-specific list #2)

AND

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

1. The FEMA-approved backup alerting METHOD(S) cannot be implemented for the area affected by the lost primary ANS equipment.

OR

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

OR

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

[Developer Note – for sites with a FEMA-approved backup alerting METHOD(S) that does meet the primary ANS design objective stated in 10 CFR Part 50, Appendix E, IV.D.3, use the RAL wording below.]

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

(site-specific list #2)

AND

- b. The FEMA-approved backup alerting METHOD(S) cannot be implemented for the area affected by the lost primary ANS equipment.

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 it meets an RAL threshold; a degraded capability caused by a failure or planned activity should not be reported. A report would be required for an ongoing condition that meets one the RALs above, as well as such a condition that occurred within 3 years of the date of discovery.

RAL #1 is met when the licensee has confirmed that an event has caused conditions which meet any of the RAL criteria. Because a significant natural hazard is an unplanned event, no allowed outage duration or RESTORATION TIMES are specified.

As used in RAL #1, an ORO agency should be one with primary responsibility for coordinating and implementing offsite emergency measures.

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 OROs and other sources to determine if a loss offsite response capability has occurred.

For RAL #2 – an unplanned ANS outage - An unplanned outage would typically be initiated by the failure of a structure or piece of equipment. The specified durations begin when the failure occurred, if firm evidence of the failure time exists. This includes instances where a failure time is logged by an automated diagnostics and reporting technology for subsequent and periodic review by personnel (e.g., a data logger that captures routine siren feedback results). Absent firm evidence of a failure time, the specified durations begin with the time-of-discovery.

For RAL #2 – a planned ANS outage - A planned outage is one that results from a scheduled work activity such as component maintenance, testing, modification or replacement. The specified durations begin when the ANS component(s) are removed from service.

[Developer Note – for sites with a FEMA-approved backup alerting METHOD(S) that does not meet the primary ANS design objective stated in 10 CFR Part 50, Appendix E, IV.D.3, insert the RAL basis wording below.]

For RAL #2, the unplanned and planned loss cases have been combined. The one-hour condition duration reflects guidance provided in NUREG-1022. Because the FEMA-approved backup alerting METHOD(S) does not meet the performance criteria of 10 CFR 50, Appendix E, Section IV.D.3, a time limit of 24-hours has been applied. If this threshold is met, the subsequent report

will allow the NRC to discuss the situation with FEMA and determine if additional actions are necessary.

[Developer Note – for sites with a FEMA-approved backup alerting METHOD(S) that does meet the primary ANS design objective stated in 10 CFR Part 50, Appendix E, IV.D.3, insert the RAL basis wording below.]

For RAL #2, the unplanned and planned loss cases have been combined. The loss of the primary system is not reportable since the available FEMA-approved backup alerting METHOD(S) meets the same design objective as the primary alerting METHOD(S).

Developer Notes:

(site-specific time #1) - Enter the maximum elapsed time allowed for the arrival of augmenting ERO personnel to the site as described in the site emergency plan or an implementing procedure described in the emergency plan. If different time values are specified, use the lowest value.

(site-specific time #2) – Enter the maximum elapsed time allowed for activation of the TSC, OSC and EOF as described in the site emergency plan or an implementing procedure described in the emergency plan.

(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) – 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 equipment, or combinations of equipment, 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 equipment (e.g., sirens) that could cause the “25% of the total EPZ population” threshold to be exceeded. For example, depending upon the site-specific ANS design and EPZ characteristics (e.g., topography, population density/distribution, etc.), the criterion “approximately 25% of the total EPZ population” may or may not correlate to 25% of the sirens⁶. Developers should also consider the need to list siren or other alerting system

⁶ To further illustrate this point, consider that a loss of 10% of the sirens in high population density area could be more significant than a loss of 25% of the sirens in a low population density area. Simply averaging the number of EPZ sirens over the EPZ total population will generally be unacceptable.

activation and control equipment that may be used during an emergency as described in a FEMA-approved offsite emergency plan⁷ or a FEMA-approved ANS design report.

The process used to develop the equipment list for this RAL should be documented and be available for subsequent review; it need not be incorporated into a reporting procedure.

Developers should incorporate site-specific terminology where appropriate.

⁷ Approved in accordance with 44 CFR 350 and related guidance.

3.3 REPORTABLE EVENT: A MAJOR LOSS OF OFFSITE COMMUNICATIONS CAPABILITY

Example Reportable Action Level:

Note: Review both the RAL Tables 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	✓	✓	✓
(other site-specific ENS METHODS)	(enter ✓ where appropriate)	(enter ✓ where appropriate)	(enter ✓ where appropriate)
RESTORATION TIME	None	(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 style="text-align: center;">AND</p> <p>b. ANY of the following:</p> <ol style="list-style-type: none"> 1. (a) At least one METHOD could not be restored to service within the specified RESTORATION TIME following an emergency declaration, should one occur. <p style="text-align: center;">AND</p> <p>(b) No VIABLE COMPENSATORY MEASURE is in place.</p>			

OR

2. At least one METHOD is not expected to be restored within 72 hours from the start of the outage.

OR

3. At least one METHOD is not restored within 72 hours from the start of the outage.

Table B – Loss of the Health Physics Network (HPN)		
HPN METHOD	Primary TSC	Primary EOF
HPN Line	✓	✓
(other site-specific HPN METHODS)	(enter ✓ where appropriate)	(enter ✓ where appropriate)
RESTORATION TIME	(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 style="text-align: center;">AND</p> <p>b. ANY of the following:</p> <p>1. (a) At least one METHOD could not be restored to service within the specified RESTORATION TIME following an emergency declaration, should one occur.</p> <p style="text-align: center;">AND</p> <p>(b) No VIABLE COMPENSATORY MEASURE is in place.</p> <p style="text-align: center;">OR</p> <p>2. At least one METHOD is not expected to be restored within 72 hours from the start of the outage.</p> <p style="text-align: center;">OR</p> <p>3. At least one METHOD is not restored within 72 hours from the start of the outage.</p>		

Table C – Loss of ORO Communications			
Communications METHOD	Control Room	Primary TSC	Primary EOF
(site-specific ORO Communications METHODS)	(enter ✓ where appropriate)	(enter ✓ where appropriate)	(enter ✓ where 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 style="text-align: center;">AND</p> <p>b. ANY of the following:</p> <p>1. (a) At least one METHOD could not be restored to service within 15 minutes of an emergency declaration, should one occur.</p> <p style="text-align: center;">AND</p> <p>(b) No VIABLE COMPENSATORY MEASURE is in place.</p> <p style="text-align: center;">OR</p> <p>2. At least one METHOD is not expected to be restored within 72 hours from the start of the outage.</p> <p style="text-align: center;">OR</p> <p>3. At least one METHOD is not restored within 72 hours from the start of the outage.</p>			

Table D – Loss of ERO Notifications	
ERO Notification METHODS	
(site-specific ERO Notification METHODS)	
<u>Unplanned Event</u>	
a. ALL the ERO notification METHODS listed above are lost.	
<u>Planned Event</u>	
a. ALL the ERO notification METHODS listed above are lost.	
AND	
b. ANY of the following:	
1.	(a) At least one METHOD could not be restored to service within 15 minutes of an emergency declaration, should one occur.
AND	
(b) No VIABLE COMPENSATORY MEASURE is in place.	
OR	
2.	At least one METHOD is not expected to be restored within 72 hours from the start of the outage.
OR	
3.	At least one METHOD is not restored within 72 hours from the start of the outage.

Table E – Loss of ERF Communications			
Communications METHOD	Control Room	Primary TSC	Primary EOF
(site-specific ERF Communications METHODS)	(enter ✓ where appropriate)	(enter ✓ where appropriate)	(enter ✓ where appropriate)
RESTORATION TIME	None	(site-specific time #1)	(site-specific time #1)
<p><u>Unplanned Event</u></p> <p>a. ALL the ERF communications METHODS checked above for a given facility are lost.</p> <p><u>Planned Event</u></p> <p>a. ALL the ERF communications METHODS checked above for a given facility are lost.</p> <p style="text-align: center;">AND</p> <p>b. ANY of the following:</p> <p>1. (a) At least one METHOD could not be restored to service within the specified RESTORATION TIME following an emergency declaration, should one occur.</p> <p style="text-align: center;">AND</p> <p>(b) No VIABLE COMPENSATORY MEASURE is in place.</p> <p style="text-align: center;">OR</p> <p>2. At least one METHOD is not expected to be restored within 72 hours from the start of the outage.</p> <p style="text-align: center;">OR</p> <p>3. At least one METHOD is not restored within 72 hours from the start of the outage.</p>			

Table F – Loss of ERO Offsite Monitoring Team Communications

ERO Offsite Monitoring Team (OMT) Communications METHODS

(site-specific ERO OMT Communications METHODS)

Unplanned Event

- a. **ALL** the offsite monitoring team communications METHODS listed above are lost.

Planned Event

- a. **ALL** the offsite monitoring team communications METHODS listed above are lost.

AND

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

1. (a) At least one METHOD could not be restored to service within (site-specific time #2) of an emergency declaration, should one occur.

AND

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

OR

2. At least one METHOD is not expected to be restored within 72 hours from the start of the outage.

OR

3. At least one METHOD is not restored within 72 hours from the start of the outage.

Basis:

This Reportable Event addresses a major loss of offsite communications capability that could prevent a licensee from performing required communications with federal, state, and local officials; or between the site and ERO personnel at offsite locations. A report would be required for an ongoing condition that meets the criteria in one of the RAL Tables above, as well as such a condition that occurred within 3 years of the date of discovery.

A degraded capability will exist when a METHOD(S) used to perform a communications function is unavailable but the reporting criteria contained in the applicable RAL Table above are not met. A degraded offsite communications capability should not be reported. For example, if an ERF has two METHODS for maintaining communications with an ORO, an unplanned event involving a simultaneous loss of both methods would be reportable. The loss of either METHOD alone represents a degraded condition, and thus would not require a report.

The criteria in the RAL Tables distinguish between losses which are planned and unplanned. A planned loss is one that results from a scheduled work activity such as component maintenance, testing, modification or replacement. An unplanned loss would typically involve the failure of a structure or piece of equipment.

A VIABLE COMPENSATORY MEASURE is implemented as part of a planned activity. It need not meet the same design or operating requirements as the normally used METHODS; however, its effectiveness should be sufficient to ensure that the supported emergency response function would be accomplished during an actual emergency, albeit in a possibly degraded manner. 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 individual judgment.

It is recognized that the performance of a VIABLE COMPENSATORY MEASURE may require more time to complete than a normally used METHOD(S). The fact that a VIABLE COMPENSATORY MEASURE requires more time to implement than a normally used METHOD(S) does not automatically mean that the associated offsite communications capability has been lost. The time necessary to implement a VIABLE COMPENSATORY MEASURE should not be unreasonably long and minimized to the degree practical.

Since the Control Room is always activated, a RESTORATION TIME does not apply to this facility.

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.

ERDS was implemented as a supplement to the ENS in accordance with Appendix E of 10 CFR 50. The ERDS provides the NRC with the information necessary for performance of its oversight function. The loss of ERDS cannot impair a licensee’s emergency response or

communications capabilities during an emergency; therefore, a failure of the ERDS does not constitute a major loss of offsite communication capability and should not be reported.

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, 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 another communications METHOD listed in Table A is available.

Developer Notes:

(site-specific time #1) – Enter the maximum elapsed time allowed for activation of the primary TSC and EOF as described in the site emergency plan, or an implementing procedure described in the emergency plan.

(site-specific time #2) – Enter the maximum elapsed time allowed for activation of the ERF that controls ERO offsite monitoring team personnel as described in the site emergency plan, or an implementing procedure described in the emergency plan. If more than one ERF could perform this function and different time values are specified for each, use the lowest value.

(other site-specific ENS METHODS) – Enter the 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 an implementing procedure described in the emergency plan. Add as many table rows as necessary to include all METHODS and place checkmarks where appropriate.

(other site-specific HPN METHODS) – Enter the 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 an implementing procedure described in the emergency plan. Add as many table rows as necessary to include all METHODS and place checkmarks where appropriate.

(site-specific ORO Communications METHODS) – Enter the 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 an implementing procedure described in the emergency plan. Add as many table rows as necessary to include all METHODS and place checkmarks where appropriate.

(site-specific ERO Notification METHODS) – Enter the METHOD(S) that may be used to notify the ERO of an emergency during off-hours, as described in the site emergency plan or an

implementing procedure described in the emergency plan. Add as many table rows as necessary to include all METHODS.

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

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

Concerning the ERDS reporting rationale provided in the Basis, it is noted that if a licensee did rely upon the ERDS for data transmittal between ERO ERFs, then the loss of the ERDS would be appropriately assessed as a potential loss of EMERGENCY ASSESSMENT capability in accordance with RAL 3.1.

Developers should incorporate site-specific terminology where appropriate.