R — Abnormal Rad Levels / Rad Effluent

R1 — Rad Effluent

General Emergency

Release of gaseous radioactivity resulting in offsite dose greater than 1,000 mrem TEDE or 5,000 mrem thyroid CDE

1 2 3 4 5 6 DEF

RG1.1
Reading on any Table R-1 effluent radiation monitor > column "GE" for ≥ 15 min. (Notes 1, 2, 3, 4)

RG1.2
Dose assessment using actual meteorology indicates doses > 1000 mrem TEDE or 5000 mrem thyroid CDE at or beyond the SITE BOUNDARY (Notes 3, 4)

RG1.3
Field survey results indicate **EITHER** of the following at or beyond the SITE BOUNDARY:
- Closed window dose rates > 1000 mR/hr expected to continue for ≥ 60 min.
- Analyses of field survey samples indicate thyroid CDE > 5000 mrem for 60 min. of inhalation.

(Notes 1, 2)

Site Area Emergency

Release of gaseous radioactivity resulting in offsite dose greater than 100 mrem TEDE or 500 mrem thyroid CDE

1 2 3 4 5 6 DEF

RS1.1
Reading on any Table R-1 effluent radiation monitor > column "SAE" for ≥ 15 min. (Notes 1, 2, 3, 4)

RS1.2
Dose assessment using actual meteorology indicates doses > 100 mrem TEDE or 500 mrem thyroid CDE at or beyond the SITE BOUNDARY (Notes 3, 4)

RS1.3
Field survey results indicate **EITHER** of the following at or beyond the SITE BOUNDARY:
- Closed window dose rates > 100 mR/hr expected to continue for ≥ 60 min.
- Analyses of field survey samples indicate thyroid CDE > 500 mrem for 60 min. of inhalation.

(Notes 1, 2)

Alert

Release of gaseous or liquid radioactivity resulting in offsite dose greater than 10 mrem TEDE or 50 mrem thyroid CDE

1 2 3 4 5 6 DEF

RA1.1
Reading on any Table R-1 effluent radiation monitor > column "ALERT" for ≥ 15 min. (Notes 1, 2, 3, 4)

RA1.2
Dose assessment using actual meteorology indicates doses > 10 mrem TEDE or 50 mrem thyroid CDE at or beyond the SITE BOUNDARY (Notes 3, 4)

RA1.3
Analysis of a liquid effluent sample indicates a concentration or release rate that would result in doses > 10 mrem TEDE or 50 mrem thyroid CDE at or beyond the SITE BOUNDARY for 60 min. of exposure (Notes 1, 2)

RA1.4
Field survey results indicate **EITHER** of the following at or beyond the SITE BOUNDARY:
- Closed window dose rates > 10 mR/hr expected to continue for ≥ 60 min.
- Analyses of field survey samples indicate thyroid CDE > 50 mrem for 60 min. of inhalation.

(Notes 1, 2)

Unusual Event

Release of gaseous or liquid radioactivity greater than 2 times the ODCM limits for 60 minutes or longer

1 2 3 4 5 6 DEF

RU1.1
Reading on any Table R-1 effluent radiation monitor > column "UE" for ≥ 60 min. (Notes 1, 2, 3)

RU1.2
Sample analysis for a gaseous or liquid release indicates a concentration or release rate > 2 x ODCM limits for ≥ 60 min. (Notes 1, 2)

R2 — Irradiated Fuel Event

General Emergency

Spent fuel pool level cannot be restored to at least the top of the fuel racks for 60 minutes or longer

1 2 3 4 5 6 DEF

RG2.1
Spent fuel pool level cannot be restored to at least 280.7 ft. (Level 3) for ≥ 60 min. (Note 1)

Site Area Emergency

Spent fuel pool level at the top of the fuel racks

1 2 3 4 5 6 DEF

RS2.1
Lowering of spent fuel pool level ≤ 280.7 ft. (Level 3)

Alert

Significant lowering of water level above, or damage to, irradiated fuel

1 2 3 4 5 6 DEF

RA2.1
Uncovery of irradiated fuel in the REFUELING PATHWAY

RA2.2
Damage to irradiated fuel resulting in a release of radioactivity
AND
A high alarm on **any** of the following:
- Table R-2 refueling pathway area radiation monitors
- 1REM-*1FL-3508A-SA, FHB Emergency Exhaust
- 1REM-*1FL-3508B-SB, FHB Emergency Exhaust

RA2.3
Lowering of spent fuel pool level ≤ 270.7 ft. (Level 2)

Unusual Event

Unplanned loss of water level above irradiated fuel

1 2 3 4 5 6 DEF

RU2.1
UNPLANNED water level drop in the REFUELING PATHWAY as indicated by low water level alarm or indication
AND
UNPLANNED rise in corresponding area radiation levels as indicated by any Table R-2 area radiation monitors

Table R-1 Effluent Monitor Classification Thresholds

	Release Point	Monitor	GE	SAE	Alert	UE
Gaseous	Plant Vent	RM-21AV-3509-1&A	1.05E+6 µCi/sec	1.05E+7 µCi/sec	1.05E+6 µCi/sec	8.93E+3 µCi/sec
Gaseous	Turbine Building	RM-1TV-3536-1	4.60E+6 µCi/sec	4.60E+7 µCi/sec	4.60E+6 µCi/sec	1.08E+4 µCi/sec
Gaseous	Waste Process Building Vent 5	RM-1WV-3536-1	7.74E+6 µCi/sec	7.74E+6 µCi/sec	7.75E+7 µCi/sec	1.95E+5 µCi/sec
Gaseous	Waste Process Building Vent 5A	RM-1WV-3537-1	7.76E+6 µCi/sec	7.76E+6 µCi/sec	7.76E+7 µCi/sec	1.14E+4 µCi/sec
Liquid	Treated Laundry & Hot Shower Tank Discharge	REM-1WL-3540	----	----	----	1.83E+5 cpm
Liquid	Waste Monitor/Waste Evaporator Condensate Tank Discharge	REM-21WL-3541	----	----	----	5.13E+5 cpm
Liquid	Secondary Waste Sample Tank Discharge	REM-21WS-3542	----	----	----	1.83E+5 cpm

Radiation levels that IMPEDE access to equipment necessary for normal plant operations, cooldown or shutdown

1 2 3 4 5 6 DEF

RA3.1
Dose rates > 15 mR/hr in **EITHER** of the following areas:
Control Room (RM-21RR-3560-SA)
OR
Central Alarm Station (by survey)

RA3.2
An UNPLANNED event results in radiation levels that prohibit or IMPEDE access to any Table R-3/H-2 rooms or areas (Note 5)

Table R-2 Refueling Pathway AreaRadiation Monitors

Containment
- RM-1CR-3561A-SA Containment Ventilation Isolation
- RM-1CR-3561B-SB Containment Ventilation Isolation
- RM-1CR-3561C-SA Containment Ventilation Isolation
- RM-1CR-3561D-SB Containment Ventilation Isolation

Fuel Handling Building
- RM-1FR-3564A-SA Spent Fuel Pool SW, SE, SW
- RM-1FR-3564B-SB Spent Fuel Pool SW, SE, SE
- RM-1FR-3565A-SA Spent Fuel Pool SW, SE, SW
- RM-1FR-3565B-SB Spent Fuel Pool SW, SE, SE
- RM-1FR-3566A-SA Spent Fuel Pool NE, NW, NE
- RM-1FR-3566B-SB Spent Fuel Pool NW, NE, NW
- RM-1FR-3567A-SA Spent Fuel Pool NW, NE, NW
- RM-1FR-3567B-SB Spent Fuel Pool NE, NW, NE

R3 — Area Rad Levels

General Emergency

None

Site Area Emergency

None

Alert

None

Unusual Event

None

H — Hazards

H1 — Security

General Emergency

Hostile Action resulting in loss of physical control of the facility

1 2 3 4 5 6 DEF

HG1.1
A HOSTILE ACTION is occurring or has occurred within the PROTECTED AREA as reported by the Security Shift Supervision
AND EITHER of the following has occurred:
Any of the following safety functions cannot be controlled or maintained
- Reactivity
- Core Cooling
- RCS heat removal

OR
Damage to spent fuel has occurred or is IMMINENT

Site Area Emergency

Hostile Action within the Protected Area

1 2 3 4 5 6 DEF

HS1.1
A HOSTILE ACTION is occurring or has occurred within the PROTECTED AREA as reported by the Security Shift Supervision

Alert

Hostile Action within the Owner Controlled Area or airborne attack threat within 30 minutes

1 2 3 4 5 6 DEF

HA1.1
A HOSTILE ACTION is occurring or has occurred within the OWNER CONTROLLED AREA as reported by the Security Shift Supervision
OR
A validated notification from NRC of an aircraft attack threat within 30 min. of the site

Unusual Event

Confirmed SECURITY CONDITION or threat

1 2 3 4 5 6 DEF

HU1.1
A SECURITY CONDITION that does not involve a HOSTILE ACTION as reported by the Security Shift Supervision
OR
Notification of a credible security threat directed at the site
OR
A validated notification from the NRC providing information of an aircraft threat

.

H2 — Seismic Event

General Emergency

None

Site Area Emergency

None

Table R-3/H-2 Safe Operation & Shutdown Rooms/Areas

Room / Area	Mode(s)
- RAB 190 (RHR pumps)	4
- RAB 216 (BIT)	1, 2, 3, 4, 5
- RAB 236 (CSIP, Primary Sample Sink, AFW pumps, CCW pumps and HX, Boric Acid Transfer Pumps, Mezzanine Area)	1, 2, 3, 4, 5
- RAB 261 (RHR Heat Exchangers, Demin. Valve Gallery, VCT Valve Gallery)	1, 2, 3, 4, 5
- RAB 286 (Switchgear)	3, 4, 5
- Containment Building	3
- Steam Tunnel	1, 2, 3, 4
- ESW intakes	1, 2, 3, 4, 5

Alert

None

[Refer to EAL HA6.1 OR SA9.1 for escalation due to seismic event]

Unusual Event

Seismic event greater than OBE levels

1 2 3 4 5 6 DEF

HU2.1
Seismic event > OBE as indicated by **any** of the following:
- ALB-10/4-4, SEISMIC MON SYS OBE EXCEEDED is ALARMED
- ALARM light on Seismic Switch Power Supply is LIT
- Any red alarm light is LIT on the Response Spectrum Annunciator

H3 — Natural or Tech. Hazard

General Emergency

None

Site Area Emergency

None

Alert

None

[Refer to EAL HA6.1 OR SA9.1 for escalation due to natural or technological hazard]

Unusual Event

Hazardous event

1 2 3 4 5 6 DEF

HU3.1
A tornado strike within the PROTECTED AREA

HU3.2
Internal room or area FLOODING of a magnitude sufficient to require manual or automatic electrical isolation of a SAFETY SYSTEM component needed for the current operating mode

HU3.3
Movement of personnel within the PROTECTED AREA is IMPEDED due to an offsite event involving hazardous materials (e.g., an offsite chemical spill or toxic gas release)

HU3.4
A hazardous event that results in on-site conditions sufficient to prohibit the plant staff from accessing the site via personal vehicles (Note 7)

NOTES

Note 1: The Emergency Coordinator should declare the event promptly upon determining that time limit has been exceeded, or will likely be exceeded.

Note 2: If an ongoing release is detected and the release start time is unknown, assume that the release duration has exceeded the specified time limit.

Note 3: If the effluent flow past an effluent monitor is known to have stopped, indicating that the release path is isolated, the effluent monitor reading is no longer VALID for classification purposes.

Note 4: The pre-calculated effluent monitor values presented in EALs RA1.1, RS1.1 and RG1.1 should be used for emergency classification assessments until the results from a dose assessment using actual meteorology are available. If dose assessment results are available, declaration should be based on dose assessment instead of radiation monitor values.

Note 5: If the equipment in the listed room or area was already inoperable or out-of-service before the event occurred, then no emergency classification is warranted.

Note 6: If CONTAINMENT CLOSURE is re-established prior to exceeding the 30-minute time limit, declaration of a General Emergency is not required.

Note 7: This EAL does not apply to routine traffic impediments such as fog, snow, ice, or vehicle breakdowns or accidents.

Note 8: A manual trip action is any operator action, or set of actions, which causes the control rods to be rapidly inserted into the core, and does not include manually driving in control rods or implementation of boron injection strategies.

Table H-1 Fire Areas
- Containment
- Reactor Auxiliary Building
- Fuel Handling Building
- Turbine Building (including Transformer Area)
- Emergency Diesel Generator Building
- Diesel Fuel Oil Storage Building (DFOST)
- ESW Intake Structure
- Auxiliary Reservoir Intake Structure
- NSW Structure
- Switchyard
- Yard 261 Duct Banks serving any of the above areas

H4 — Fire

General Emergency

None

Site Area Emergency

None

Alert

None

[Refer to EAL HA6.1 OR SA9.1 for escalation due to FIRE]

Unusual Event

FIRE potentially degrading the level of safety of the plant

1 2 3 4 5 6 DEF

HU4.1
A FIRE is **not** extinguished within 15 min. of **any** of the following FIRE detection indications (Note 1):
- Report from the field (i.e., visual observation)
- Receipt of multiple (more than 1) fire alarms or indications
- Field verification of a single fire alarm

AND
The FIRE is located within **any** Table H-1 area

HU4.2
Receipt of a single fire alarm (i.e., **no** other indications of a FIRE)
AND
The fire alarm is indicating a FIRE within **any** Table H-1 area
AND
The existence of a FIRE is **not** verified within 30 min. of alarm receipt (Note 1)

HU4.3
A FIRE within the plant PROTECTED AREA **not** extinguished within 60 min. of the initial report, alarm or indication (Note 1)

HU4.4
A FIRE within the plant PROTECTED AREA that requires firefighting support by an offsite fire response agency to extinguish

H5 — Hazardous Gases

General Emergency

None

Site Area Emergency

None

Alert

Gaseous release IMPEDING access to equipment necessary for normal plant operations, cooldown or shutdown

1 2 3 4 5 6 DEF

HA5.1
Release of a toxic, corrosive, asphyxiant or flammable gas into **any** Table R-3/H-2 rooms or areas
AND
Entry into the room or area is prohibited or IMPEDED (Note 5)

Unusual Event

None

H6 — Control Room Evacuation

General Emergency

None

Site Area Emergency

Inability to control a key safety function from outside the Control Room

1 2 3 4 5 6 DEF

HS6.1
An event has resulted in plant control being transferred from the Control Room to the ACP
AND
Control of any of the following key safety functions is not reestablished within 15 min. (Note 1):
- Reactivity
- Core Cooling
- RCS heat removal

Alert

Control Room evacuation resulting in transfer of plant control to alternate locations

1 2 3 4 5 6 DEF

HA6.1
An event has resulted in plant control being transferred from the Control Room to the ACP

Unusual Event

None

H7 — EC Judgment

General Emergency

Other conditions exist which in the judgment of the Site Emergency Coordinator warrant declaration of a General Emergency

1 2 3 4 5 6 DEF

HG7.1
Other conditions exist which in the judgment of the Emergency Coordinator indicate that events are in progress or have occurred which involve actual or IMMINENT substantial core degradation or melting with potential for loss of containment integrity or HOSTILE ACTION that results in an actual loss of physical control of the facility. Releases can be reasonably expected to exceed EPA Protective Action Guideline exposure levels offsite for more than the immediate site area

Site Area Emergency

Other conditions existing that in the judgment of the Site Emergency Coordinator warrant declaration of a Site Area Emergency

1 2 3 4 5 6 DEF

HS7.1
Other conditions exist which in the judgment of the Emergency Coordinator indicate that events are in progress or have occurred which involve actual or likely major failures of plant functions needed for protection of the public or HOSTILE ACTION that results in intentional damage or malicious acts, (1) toward site personnel or equipment that could lead to the likely failure of or, (2) that prevent effective access to equipment needed for the protection of the public. Any releases are not expected to result in exposure levels which exceed EPA Protective Action Guideline exposure levels beyond the SITE BOUNDARY.

Alert

Other conditions exist that in the judgment of the Site Emergency Coordinator warrant declaration of an Alert

1 2 3 4 5 6 DEF

HA7.1
Other conditions exist which, in the judgment of the Emergency Coordinator, indicate that events are in progress or have occurred which involve an actual or potential substantial degradation of the level of safety of the plant or a security event that involves probable life threatening risk to site personnel or damage to site equipment because of HOSTILE ACTION. Any releases are expected to be limited to small fractions of the EPA Protective Action Guideline exposure levels.

Unusual Event

Other conditions existing that in the judgment of the Site Emergency Coordinator warrant declaration of a UE

1 2 3 4 5 6 DEF

HU7.1
Other conditions exist which in the judgment of the Emergency Coordinator indicate that events are in progress or have occurred which indicate a potential degradation of the level of safety of the plant or indicate a security threat to facility protection has been initiated. **No** releases of radioactive material requiring offsite response or monitoring are expected unless further degradation of SAFETY SYSTEMS occurs.

Modes: 1 Power Operations | 2 Startup | 3 Hot Standby | 4 Hot Shutdown | 5 Cold Shutdown | 6 Refuel | DEF Defueled

DUKE ENERGY.

Harris Nuclear Plant
Classification of Emergency
EP-EAL Revision 0

S — System Malfunct.

S1 — Loss of Emergency AC Power

General Emergency

Prolonged loss of all offsite and all onsite AC power to emergency buses

1 2 3 4

SG1.1
Loss of **all** offsite and **all** onsite AC power capability to 6.9 KV emergency buses 1A-SA and 1B-SB
AND EITHER:
- Restoration of at least one emergency bus in < 4 hours is not likely (Note 1)
- Core Cooling RED Path entry conditions met

Loss of all emergency AC and vital DC power sources for 15 minutes or longer

1 2 3 4

SG1.2
Loss of **all** offsite and **all** onsite AC power capability to 6.9 KV emergency buses 1A-SA and 1B-SB for ≥ 15 min.
AND
Loss of **all** 125 VDC power based on battery bus voltage indications < 105 VDC on **both** emergency DC buses (DP-1A-SA, DP-1B-SB) for ≥ 15 min. (Note 1)

Site Area Emergency

Loss of all offsite and all onsite AC power to emergency buses for 15 minutes or longer

1 2 3 4

SS1.1
Loss of **all** offsite and **all** onsite AC power capability to 6.9 KV emergency buses 1A-SA and 1B-SB for ≥ 15 min. (Note 1)

Alert

Loss of all but one AC power source to emergency buses for 15 minutes or longer

1 2 3 4

SA1.1
AC power capability to 6.9 KV emergency buses 1A-SA and 1B-SB reduced to a single power source for ≥ 15 min. (Note 1)
AND
Any additional single power source failure will result in loss of **all** AC power to SAFETY SYSTEMS

Unusual Event

Loss of all offsite AC power capability to emergency buses for 15 minutes or longer

1 2 3 4

SU1.1
Loss of **all** offsite AC power capability to 6.9 KV emergency buses 1A-SA and 1B-SB for ≥ 15 min. (Note 1)

S2 — Loss of Vital DC Power

General Emergency

None

Site Area Emergency

Loss of all vital DC power for 15 minutes or longer

1 2 3 4

SS2.1
Loss of **all** 125 VDC power based on battery bus voltage indications < 105 VDC on **both** emergency DC buses (DP-1A-SA, DP-1B-SB) for ≥ 15 min. (Note 1)

Alert

None

Unusual Event

None

S3 — Loss of CR Indications

General Emergency

None

Site Area Emergency

Table S-1 Safety System Parameters
- Reactor power
- RCS level
- RCS pressure
- Core exit T/C temperature
- Level in at least one S/G
- Auxiliary or emergency feed flow in at least one S/G

Alert

UNPLANNED loss of Control Room indications for 15 minutes or longer with a significant transient in progress

1 2 3 4

SA3.1
An UNPLANNED event results in the inability to monitor one or more Table S-1 parameters from within the Control Room for ≥ 15 min. (Note 1)
AND
Any significant transient is in progress, Table S-2

Unusual Event

UNPLANNED loss of Control Room indications for 15 minutes or longer

1 2 3 4

SU3.1
An UNPLANNED event results in the inability to monitor one or more Table S-1 parameters from within the Control Room for ≥ 15 min. (Note 1)

S4 — RCS Activity

General Emergency

None

Site Area Emergency

Table S-2 Significant Transients
- Reactor trip
- Runback > 25% thermal power
- Electrical load rejection > 25% electrical load
- Safety injection actuation

Alert

None

[Refer to fission product barrier EALs for escalation due to fuel clad failures]

Unusual Event

RCS activity greater than Technical Specification allowable limits

1 2 3 4

SU4.1
RCS activity > Technical Specification Section 3.4.8 limits

SU4.2
Valid Gross Failed Fuel Detector (RS-7411A) high alarm (> 1E+04 cpm)

S5 — RCS Leakage

General Emergency

None

Site Area Emergency

None

Alert

None

[Refer to fission product barrier EALs for escalation due to RCS leakage]

Unusual Event

RCS leakage for 15 minutes or longer

1 2 3 4

SU5.1
RCS unidentified or pressure boundary leakage > 10 gpm for ≥ 15 min.
OR
RCS identified leakage > 25 gpm for ≥ 15 min.
OR
Leakage from the RCS to a location outside containment > 25 gpm for ≥ 15 min. (Note 1)

S6 — RPS Failure

General Emergency

None

Site Area Emergency

Inability to shut down the reactor causing a challenge to core cooling or RCS heat removal

1

SS6.1
An automatic or manual trip fails to shut down the reactor as indicated by reactor power ≥ 5%
AND
All actions to shut down the reactor are **not** successful as indicated by reactor power ≥ 5%
AND EITHER:
- Core Cooling RED Path entry conditions met
- Heat Sink RED Path entery conditions met

Alert

Automatic or manual trip fails to shut down the reactor and subsequent manual actions taken at the reactor control consoles are not successful in shutting down the reactor

1

SA6.1
An automatic or manual trip fails to shut down the reactor as indicated by reactor power ≥ 5%
AND
Manual trip actions taken at the reactor control console (actuation of MCB Reactor Trip Switch #1, #2 or MCB Turbine Trip switch) are not successful in shutting down the reactor as indicated by reactor power ≥ 5% (Note 8)

Unusual Event

Automatic or manual trip fails to shut down the reactor

1

SU6.1
An automatic trip did **not** shut down the reactor as indicated by reactor power ≥ 5% after **any** RPS setpoint is exceeded
AND
A subsequent automatic trip or manual trip action taken at the reactor control console (actuation of MCB Reactor Trip Switch #1, #2 or MCB Turbine Trip switch) is successful in shutting down the reactor as indicated by reactor power < 5% (Note 8)

SU6.2
A manual trip did **not** shut down the reactor as indicated by reactor power ≥ 5% after **any** manual trip action was initiated
AND
A subsequent automatic trip or manual trip action taken at the reactor control console (actuation of MCB Reactor Trip Switch #1, #2 or MCB Turbine Trip switch) is successful in shutting down the reactor as indicated by reactor power < 5% (Note 8)

NOTES

Note 1: The Emergency Coordinator should declare the event promptly upon determining that time limit has been exceeded, or will likely be exceeded.

Note 2: If an ongoing release is detected and the release start time is unknown, assume that the release duration has exceeded the specified time limit.

Note 3: If the effluent flow past an effluent monitor is known to have stopped, indicating that the release path is isolated, the effluent monitor reading is no longer VALID for classification purposes.

Note 4: The pre-calculated effluent monitor values presented in EALs RA1.1, RS1.1 and RG1.1 should be used for emergency classification assessments until the results from a dose assessment using actual meteorology are available. If dose assessment results are available, declaration should be based on dose assessment instead of radiation monitor values.

Note 5: If the equipment in the listed room or area was already inoperable or out-of-service before the event occurred, then no emergency classification is warranted.

Note 6: If CONTAINMENT CLOSURE is re-established prior to exceeding the 30-minute time limit, declaration of a General Emergency is not required.

Note 7: This EAL does not apply to routine traffic impediments such as fog, snow, ice, or vehicle breakdowns or accidents.

Note 8: A manual trip action is any operator action, or set of actions, which causes the control rods to be rapidly inserted into the core, and does not include manually driving in control rods or implementation of boron injection strategies.

Table S-3 Communication Methods

System	Onsite	ORO	NRC
PABX telephone (desk phones)	X	X	X
HE&EC PABX telephone		X	X
Site paging system	X		
Satellite phone		X	X
DEMNET		X	
Radio communications networks	X		
NRC ETS phone			X
NRC HPN phone			X

S7 — Loss of Comm.

General Emergency

None

Site Area Emergency

None

Alert

None

Unusual Event

Loss of all onsite or offsite communications capabilities

1 2 3 4

SU7.1
Loss of all Table S-3 onsite communication methods
OR
Loss of all Table S-3 ORO communication methods
OR
Loss of all Table S-3 NRC communication methods

S8 — CNMT Failure

General Emergency

None

Site Area Emergency

None

Alert

None

Unusual Event

Failure to isolate containment or loss of containment pressure control

1 2 3 4

SU8.1
EITHER:
Any penetration is **not** isolated within 15 min. of a VALID containment isolation signal
OR
Containment pressure > 10 psig with < one full train of depressurization equipment operating (one CNMT spray pump and two CNMT fan coolers) per design for > 15 min. (Note 1)

S9 — Hazardous Event Affecting Safety Systems

General Emergency

None

Site Area Emergency

Table S-4 Hazardous Events
- Seismic event (earthquake)
- Internal or external FLOODING event
- High winds or tornado strike
- FIRE
- EXPLOSION
- Other events with similar hazard characteristics as determined by the Shift Manager

Alert

Hazardous event affecting a SAFETY SYSTEM needed for the current operating mode

1 2 3 4

SA9.1
The occurrence of **any** Table S-4 hazardous event
AND EITHER:
- Event damage has caused indications of degraded performance in at least one train of a SAFETY SYSTEM needed for the current operating mode
- The event has caused VISIBLE DAMAGE to a SAFETY SYSTEM component or structure needed for the current operating mode

Unusual Event

None

F — Fission Product Barriers

General Emergency

FG1.1 1 2 3 4

Loss of **any** two barriers
AND
Loss or potential loss of third barrier (Table F-1)

Site Area Emergency

FS1.1 1 2 3 4

Loss or potential loss of **any** two barriers (Table F-1)

Alert

FA1.1 1 2 3 4

Any loss or **any** potential loss of either Fuel Clad or RCS (Table F-1)

Unusual Event

None

Table F-1 Fission Product Barrier Threshold Matrix

	Fuel Clad (FC) Barrier		Reactor Coolant System (RCS) Barrier		Containment (CNMT) Barrier	
	Loss	Potential Loss	Loss	Potential Loss	Loss	Potential Loss
A. RCS or SG Tube Leakage	None	None	1. An automatic or manual ECCS (SI) actuation required by EITHER: • UNISOLABLE RCS leakage • SG tube RUPTURE	1. RCS leakage > normal makeup capacity (> 120 gpm) due to EITHER: • UNISOLABLE RCS leakage • SG tube leakage 2. CSFST Integrity-RED Path entry conditions met	1. A leaking or RUPTURED SG is FAULTED outside of containment	None
B. Inadequate Heat Removal	1. CSFST Core Cooling-RED Path entry conditions met	1. CSFST Core Cooling-ORANGE Path entry conditions met 2. CSFST Heat Sink-RED Path entry conditions met AND Heat Sink is required	None	1. CSFST Heat Sink-RED Path entry conditions met AND Heat Sink is required	None	1. CSFST Core Cooling-RED Path entry conditions met AND Restoration procedures not effective within 15 min. (Note 1)
C. CNMT Radiation / NCS Activity	1. Containment radiation >150 R/hr (RM-1CR-3589-SA or RM-1CR-3590-SB) 2. Dose equivalent I-131 coolant activity > 300 µCi/gm	None	1. Containment Leak Detection Monitor Noble Gas (REM-1LT-3502A-SA) > 8.3E-3 µCi/ml	None	None	1. Containment radiation > 600 R/hr (RM-1CR-3589-SA or RM-1CR-3590-SB)
D. CNMT Integrity or Bypass	None	None	None	None	1. Containment isolation is required AND EITHER • Containment integrity has been lost based on Emergency Coordinator judgment • UNISOLABLE pathway from Containment to the environment exists 2. Indications of RCS leakage outside of containment	1. CSFST Containment-RED Path entry conditions met 2. Containment hydrogen concentration > 4% 3. Containment pressure > 10 psig with < one full train of depressurization equipment operating (one CNMT spray pump and two CNMT fan coolers) per design for > 15 min.(Note 1)
E. EC Judgment	1. Any condition in the opinion of the Emergency Coordinator that indicates loss of the Fuel Clad barrier	1. Any condition in the opinion of the Emergency Coordinator that indicates potential loss of the Fuel Clad barrier	1. Any condition in the opinion of the Emergency Coordinator that indicates loss of the RCS barrier	1. Any condition in the opinion of the Emergency Coordinator that indicates potential loss of the RCS barrier	1. Any condition in the opinion of the Emergency Coordinator that indicates loss of the Containment barrier	1. Any condition in the opinion of the Emergency Coordinator that indicates potential loss of the Containment barrier

CSFST Entry Conditions

Core Cooling RED Path	Core Cooling ORANGE Path	Heat Sink RED Path	RCS Integrity RED Path	Containment RED Path
Core exit T/Cs > 1,200°F OR All of the following: - Subcooling < 10°F - Core exit T/Cs > 730°F - RVLIS Full Range < 39% w/ no RCPs running*	Subcooling < 10°F and EITHER of the following: - Core exit T/Cs > 730°F - RVLIS Full Range < 39% w/ no RCPs running*	All S/Gs < 25% [40%] AND Total feed flow to S/Gs < 210 KPPH	Temperature decrease in any RCS cold leg > 100°F in last 60 min. AND Any RCS cold leg temperature is to the left of Limit A	Containment pressure > 45 psig

* Alternate RVLIS levels are specified if one or more RCPs are running

EAL- HOT MODES 1, 2, 3 & 4

D01