		General Emergency	Site Area Emergency	Alert	Unusual Event
R Abnorm. Rad Release / Rad Effluent	**1** Offsite Rad Conditions	None	RS1.1 1 2 3 4 D **ANY** monitor reading > Table R-1 "SAE" column for ≥ 15 min. (Note 1) • Do **not** delay declaration awaiting dose assessment results • If dose assessment results are available, declaration should be based on dose assessment instead of radiation monitor values (see EAL RS1.2)	RA1.1 1 2 3 4 D **ANY** gaseous monitor reading > Table R-1 "Alert" column for ≥ 15 min. (Note 2)	RU1.1 1 2 3 4 D **ANY** gaseous monitor reading > Table R-1 "UE" column for ≥ 60 min. (Note 2)
		RG1.2 1 2 3 4 D Dose assessment using actual meteorology indicates doses > 1,000 mRem TEDE or 5,000 mRem thyroid CDE at or beyond the SITE BOUNDARY	RS1.2 1 2 3 4 D Dose assessment using actual meteorology indicates doses > 100 mRem TEDE or 500 mRem thyroid CDE at or beyond the SITE BOUNDARY	RA1.2 1 2 3 4 D **ANY** liquid monitor reading > Table R-1 "Alert" column for ≥ 15 min. (Note 2)	RU1.2 1 2 3 4 D **ANY** liquid monitor reading > Table R-1 "UE" column for ≥ 60 min. (Note 2)
		RG1.3 1 2 3 4 D Field survey results indicate closed window dose rates > 1,000 mRem/hr expected to continue for ≥ 60 min. at or beyond the SITE BOUNDARY (Note 1) **OR** Analyses of field survey samples indicate thyroid CDE > 5,000 mRem for 1 hr of inhalation at or beyond the SITE BOUNDARY (Note 1)	RS1.3 1 2 3 4 D Field survey results indicate closed window dose rates > 100 mRem/hr expected to continue for ≥ 60 min. at or beyond the SITE BOUNDARY (Note 1) **OR** Analyses of field survey samples indicate thyroid CDE > 500 mRem for 1 hr of inhalation at or beyond the SITE BOUNDARY (Note 1)	RA1.3 1 2 3 4 D Confirmed sample analyses for gaseous or liquid releases indicate concentrations or release rates > 200 x ODCM limits for ≥ 15 min. (Note 2)	RU1.3 1 2 3 4 D Confirmed sample analyses for gaseous or liquid releases indicate concentrations or release rates > 2 x ODCM limits for ≥ 60 min. (Note 2)
	2 Onsite Rad Conditions & Spent Fuel Events	**Table R-1 Effluent Monitor Classification Thresholds** GASEOUS: Stack (RN 10A/B) — GE: N/A; SAE: N/A; ALERT: 3.0E4 cps; UE: 300 cps GASEOUS: EC Vent — GE: N/A; SAE: 300 mRem/hr; ALERT: 30 mRem/hr; UE: 10 mRem/hr LIQUID: SW Effluent — GE: N/A; SAE: N/A; ALERT: 90,000 cpm; UE: 900 cpm LIQUID: RW Discharge — GE: N/A; SAE: N/A; ALERT: 200 x batch; UE: 2 x batch		RA2.1 1 2 3 4 D Alarm on **ANY** of the following radiation monitors due to damage to irradiated fuel or loss of water level: • ARM 18 (West end of shield wall) • ARM 25 (Rx building - east wall) • ARM 29 (Refuel bridge (LOW RANGE)) • Refuel Bridge (HIGH RANGE) • Reactor Building Vent Radiation Monitor	RU2.1 1 2 3 4 D UNPLANNED water level drop in a reactor refueling pathway as indicated by inability to restore and maintain SFP level > low water level alarm (Note 3) **AND** Area radiation monitor reading rise on **ANY** of the following: • ARM 18 (West end of shield wall) • ARM 25 (Rx building - east wall) • ARM 29 (Refuel bridge (LOW RANGE)) • Refuel Bridge (HIGH RANGE)
				RA2.2 1 2 3 4 D A water level drop in a reactor refueling pathway that will result in irradiated fuel becoming uncovered	RU2.2 1 2 3 4 D UNPLANNED area radiation readings rise by a factor of 1,000 over NORMAL LEVELS
	3 CR/CAS Rad	None	None	RA3.1 1 2 3 4 D Dose rates > 15 mRem/hr in **EITHER** of the following areas requiring continuous occupancy to maintain plant safety functions: Control Room **OR** CAS	

H Hazards & Other Conditions Affecting Plant Safety	**1** Natural or Destructive Phenomena	**Table H-1 Safe Shutdown Areas**
		• Reactor Building (including Primary Containment)
		• Control Room
		• Screenhouse
		• Turbine Building
		  • Battery Rooms
		  • Battery Board Rooms
		  • Cable Spreading Room
		  • Main Steam Isolation Valve Room
		  • Diesel Generator Engine and Board Rooms
		• Security
		  • Central Alarm Station
		  • Secondary Alarm Station
		  • Security Uninterruptible Power Supply Room
		Notes
		1. The ED should **not** wait until the applicable time has elapsed, but should declare the event as soon as it is determined that the condition will likely exceed the applicable time
		2. The ED should **not** wait until the applicable time has elapsed, but should declare the event as soon as it is determined that the release duration has exceeded, or will likely exceed, the applicable time. In the absence of data to the contrary, assume that the release duration has exceeded the applicable time if an ongoing release is detected and the release start time is unknown.
		3. If loss of water level in the refueling pathway occurs while in Mode 3, 4 or D, consider classification under EALs CU3.1, CU3.2 or CU3.3
		4. The ED should **not** wait until the applicable time has elapsed, but should declare the event as soon as it is determined that the condition has exceeded, or will likely exceed, the applicable time.
		5. If the equipment in the stated area was already inoperable, or out of service, before the event occurred, then EAL HA3.1 should **not** be declared as it will have **no** adverse impact on the ability of the plant to safely operate or safely shutdown beyond that already allowed by Technical Specifications at the time of the event.
				HA1.1 1 2 3 4 D
				NMP-2 seismic instrumentation indicates > 0.075 g
				AND
				Earthquake confirmed by **ANY** of the following:
				• Earthquake felt in plant
				• JAFNPP seismic instrumentation
				• Control Room indication of degraded performance of systems required for the safe shutdown of the plant
					HU1.1 1 2 3 4 D
					Seismic event identified by **ANY two** of the following:
					• Annunciator H2-1-6 SEISMIC DETECTION EQUIPMENT EVENT indicates seismic event detected
					• Confirmation of earthquake received on NMP-2 or JAFNPP seismic instrumentation
					• Earthquake felt in plant

				HA1.2 1 2 3 4 D Tornado striking **OR** Sustained high winds > 90 mph resulting in **EITHER**: VISIBLE DAMAGE to **ANY** SAFETY-RELATED STRUCTURE, SYSTEM or COMPONENT within **ANY** Table H-1 area **OR** Control Room indication of degraded performance of **ANY** SAFETY-RELATED STRUCTURE, SYSTEM or COMPONENT within **ANY** Table H-1 area	HU1.2 1 2 3 4 D Tornado striking within PROTECTED AREA boundary **OR** Sustained high winds > 90 mph
				HA1.3 1 2 3 4 D Internal flooding resulting in **EITHER**: An electrical shock hazard that precludes access to operate or monitor **ANY** SAFETY-RELATED STRUCTURE, SYSTEM, OR COMPONENT within **ANY** Table H-1 area **OR** Control Room indication of degraded performance of **ANY** SAFETY-RELATED STRUCTURE, SYSTEM or COMPONENT within **ANY** Table H-1 area	HU1.3 1 2 3 4 D Internal flooding that has the potential to affect **ANY** SAFETY-RELATED STRUCTURE, SYSTEM, OR COMPONENT required by Technical Specifications for the current operating mode in **ANY** Table H-1 area
				HA1.4 1 2 3 4 D Turbine failure-generated PROJECTILEs resulting in **EITHER**: VISIBLE DAMAGE to or penetration of **ANY** SAFETY-RELATED STRUCTURE, SYSTEM or COMPONENT within **ANY** Table H-1 area **OR** Control Room indication of degraded performance of **ANY** SAFETY-RELATED STRUCTURE, SYSTEM or COMPONENT within ANY Table H-1 area	HU1.4 1 2 3 4 D Turbine failure resulting in **ANY** of the following: • Casing penetration • Damage to turbine seals • Damage to generator seals
				HA1.5 1 2 3 4 D Lake water level > 254 ft **OR** Intake water level < 236 ft	HU1.5 1 2 3 4 D Lake water level > 248.2 ft **OR** Intake water level < 238.8 ft
				HA1.6 1 2 3 4 D Vehicle crash resulting in **EITHER**: VISIBLE DAMAGE to **ANY** SAFETY-RELATED STRUCTURE, SYSTEM or COMPONENT within **ANY** Table H-1 area **OR** Control Room indication of degraded performance of **ANY** SAFETY-RELATED STRUCTURE, SYSTEM or COMPONENT within **ANY** Table H-1 area	
	2 Fire or Explosion	None	None	HA2.1 1 2 3 4 D FIRE or EXPLOSION resulting in **EITHER**: VISIBLE DAMAGE to **ANY** SAFETY-RELATED STRUCTURE, SYSTEM or COMPONENT within **ANY** Table H-1 area **OR** Control Room indication of degraded performance of **ANY** SAFETY-RELATED STRUCTURE, SYSTEM or COMPONENT within **ANY** Table H-1 area	HU2.1 1 2 3 4 D FIRE **not** extinguished within 15 min. of Control Room notification or verification of a Control Room FIRE alarm in **ANY** Table H-1 area, RadWaste Solidification and Storage Bldg, or Security West Bldg (Note 4)
					HU2.2 1 2 3 4 D EXPLOSION of sufficient force to damage permanent structures or equipment within the PROTECTED AREA
	3 Hazardous Gas	None	None	HA3.1 1 2 3 4 D Access to **ANY** Table H-1 area is prohibited due to toxic, corrosive, asphyxiant or flammable gases which jeopardize operation of **ANY** SAFETY-RELATED STRUCTURE, SYSTEM or COMPONENT (Note 5)	HU3.1 1 2 3 4 D Toxic, corrosive, asphyxiant or flammable gases in amounts that have or could adversely affect NORMAL PLANT OPERATIONS
					HU3.2 1 2 3 4 D Recommendation by local, county or state officials to evacuate or shelter site personnel based on an offsite event
	4 Security	HG4.1 1 2 3 4 D A HOSTILE ACTION has occurred such that plant personnel are unable to operate equipment required to maintain safety functions HG4.2 1 2 3 4 D A HOSTILE ACTION has caused failure of Spent Fuel Cooling systems **AND** IMMINENT fuel damage is likely	HS4.1 1 2 3 4 D A HOSTILE ACTION is occurring or has occurred within the PROTECTED AREA as reported by the Security Site Supervisor	HA4.1 1 2 3 4 D A HOSTILE ACTION is occurring or has occurred within the Owner Controlled Area as reported by the Security Site Supervisor **OR** A validated notification from NRC of an AIRLINER attack threat within 30 min. of the site	HU4.1 1 2 3 4 D A SECURITY CONDITION that does **not** involve a HOSTILE ACTION as reported by the Security Site Supervisor **OR** A credible site-specific security threat notification **OR** A validated notification from NRC providing information of an aircraft threat
	5 Control Room Evacuation	None	HS5.1 1 2 3 4 D Control Room evacuation has been initiated **AND** Control of the plant **cannot** be established within 15 min. (Note 4)	HA5.1 1 2 3 4 D Control Room evacuation has been initiated	None
	6 Judgment	HG6.1 1 2 3 4 D Other conditions exist which in the judgment of the Emergency Director 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 (1,000 mRem TEDE or 5,000 mRem thyroid CDE) offsite for more than the immediate site area	HS6.1 1 2 3 4 D Other conditions exist which in the judgment of the Emergency Director 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 (1,000 mRem TEDE or 5,000 mRem thyroid CDE) beyond the SITE BOUNDARY	HA6.1 1 2 3 4 D Other conditions exist which in the judgment of the Emergency Director 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 (1,000 mRem TEDE or 5,000 mRem thyroid CDE)	HU6.1 1 2 3 4 D Other conditions exist which in the judgment of the Emergency Director 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
E ISFSI		None	None	None	EU1.1 1 2 3 4 D Damage to a loaded cask CONFINEMENT BOUNDARY as indicated by measured dose rates > then **ANY** of the following: • 400 mRem/hr at 3 feet from the HSM surface • 100 mRem/hr outside HSM door on centerline • 20 mRem/hr end shield wall exterior

		General Emergency	Site Area Emergency	Alert	Unusual Event
S System Malfunct.	**1** Loss of AC Power	SG1.1 1 2 Loss of **all** offsite and **all** onsite AC power, Table S-1, to 4.16 kV emergency buses **AND EITHER**: Restoration of at least one 4.16 kV emergency bus within 4 hours is **not** likely **OR** RPV water level **cannot** be restored and maintained above -84 in. or RPV water level **cannot** be determined	SS1.1 1 2 Loss of **all** offsite and **all** onsite AC power, Table S-1, to 4.16 KV emergency buses for ≥ 15 min. (Note 4)	SA1.1 1 2 AC power capability to 4.16 kV emergency buses reduced to a single power source, Table S-1, for ≥ 15 min. (Note 4) **AND** **ANY** additional single power source failure will result in a loss of **all** 4.16 kV emergency bus power	SU1.1 1 2 Loss of **all** offsite AC power, Table S-1, to 4.16 kV emergency buses for ≥ 15 min. (Note 4)
	2 Loss of DC Power	None	SS2.1 1 2 < 106 VDC on **both** Battery Board 11 and Battery Board 12 for ≥ 15 min. (Note 4)	None	
	3 Criticality & RPS Failure	SG3.1 1 An automatic scram fails to shut down the reactor as indicated by reactor power > 6% **AND** **All** manual actions fail to shut down the reactor as indicated by reactor power > 6% **AND EITHER** of the following exist or have occurred: RPV water level **cannot** be restored and maintained above -109 in. or RPV water level **cannot** be determined **OR** Torus water temperature and RPV pressure **cannot** be maintained below the Heat Capacity Temperature Limit (N1-EOP-4 Figure M)	SS3.1 1 An automatic scram failed to shut down the reactor as indicated by reactor power > 6% **AND** Manual actions taken at the reactor control console (mode switch in shutdown, manual scram push buttons and ARI) failed to shut down the reactor as indicated by reactor power > 6%	SA3.1 1 An automatic scram failed to shut down the reactor **AND** Manual actions taken at the reactor control console (mode switch in shutdown, manual scram push buttons or ARI) successfully shut down the reactor as indicated by reactor power ≤ 6%	SU3.1 2 An UNPLANNED sustained positive period observed on nuclear instrumentation
	4 Inability to Reach or Maintain Shutdown Conditions	None	None	None	SU4.1 1 2 Plant is **not** brought to required operating mode within Technical Specifications LCO required action completion time
	5 Inst.	**Table S-2 Significant Transients** • Turbine runback > 25% thermal reactor power • Electric load rejection > 25% full electrical load • Reactor scram • ECCS injection • Thermal power oscillations > 10%	SS5.1 1 2 Loss of > approximately 75% of annunciation or indication on Control Room panels L, K, H, F and G for ≥ 15 min. (Note 4) **AND** A significant transient is in progress, Table S-2 **AND** Compensatory indications are unavailable (Plant Computer, SPDS)	SA5.1 1 2 UNPLANNED loss of > approximately 75% of annunciation or indication on Control Room panels L, K, H, F and G for ≥ 15 min. (Note 4) **AND EITHER**: A significant transient is in progress, Table S-2 **OR** Compensatory indications are unavailable (Plant Process Computer, SPDS)	SU5.1 1 2 UNPLANNED loss of > approximately 75% of annunciation or indication on Control Room panels L, K, H, F and G for ≥ 15 min. (Note 4)
	6 Comm.	None	**Table S-3 Communications Systems** PBX (normal dial telephones): Onsite (internal) X; Offsite (external) X Gaitronics: X Hand-Held Portable Radio (station radio): X Control Room installed satellite phones (non portable): Offsite X ENS: Offsite X RECS: Offsite X ~~UHF radios~~: Offsite X		SU6.1 1 2 Loss of **all** Table S-3 onsite (internal) communication methods affecting the ability to perform routine operations **OR** Loss of **all** Table S-3 offsite (external) communication methods affecting the ability to perform offsite notifications
	7 Fuel Clad Degradation	None			SU7.1 1 2 Reactor coolant activity > 4 µCi/gm I-131 Equivalent SU7.2 1 2 Offgas radiation monitor RN-12A or RN-12B ≥ hi-hi alarm for ≥ 15 min.
	8 RCS Leakage	None	None	None	SU8.1 1 2 Unidentified drywell leakage > 10 gpm **OR** Identified reactor coolant drywell leakage > 25 gpm
F Fission Product Barrier Degradation		FG1.1 1 2 Loss of **ANY** two fission product barriers **AND** Loss or potential loss of third fission product barrier (Table F-1)	FS1.1 1 2 Loss or potential loss of **ANY** two fission product barriers (Table F-1)	FA1.1 1 2 **ANY** loss or **ANY** potential loss of **EITHER** Fuel Clad barrier **OR** RCS barrier (Table F-1)	FU1.1 1 2 **ANY** loss or **ANY** potential loss of Containment barrier (Table F-1)

Table F-1 Fission Product Barrier Matrix

	Fuel Clad Barrier		Reactor Coolant System Barrier		Containment Barrier	
	Loss	Potential Loss	Loss	Potential Loss	Loss	Potential Loss
A RPV Water Level	1. Primary Containment Flooding is required	1. RPV water level **cannot** be restored and maintained above -84 in. following depressurization of the RPV or RPV water level **cannot** be determined	1. RPV water level **cannot** be restored and maintained above -84 in. or RPV water level **cannot** be determined	None	None	1. Primary Containment Flooding is required
B Primary Containment Pressure / Temperature	None	None	2. Primary Containment pressure > 3.5 psig due to RCS leakage	None	1. Primary Containment pressure rise followed by a rapid UNPLANNED drop in Primary Containment pressure 2. Primary Containment pressure response **not** consistent with LOCA conditions	2. Torus pressure > 35 psig and rising 3. Explosive mixture exists inside Primary Containment (≥ 6% H_2 and ≥ 5% O_2) 4. Torus water temperature and RPV pressure **cannot** be maintained below the Heat Capacity Temperature Limit (N1-EOP-4 Figure M)
C Isolation	None	None	3. Release pathway exists outside Primary Containment resulting from isolation failure in **ANY** of the following systems (excluding normal process system flowpaths from an UNISOLABLE system): • Main steam line • EC steam line • RWCU • Feedwater 4. RPV blowdown is required	1. UNISOLABLE primary system leakage outside Primary Containment as indicated by exceeding **EITHER**: **ANY** N1-EOP-5 Detail T area temperature alarm setpoint **OR** **ANY** N1-EOP-5 Detail R area radiation alarm setpoint	3. Failure of **all** Primary Containment isolation valves in **ANY** one line to close following auto or manual initiation **AND** Direct downstream pathway outside Primary Containment and to the environment exists 4. Intentional Primary Containment venting per EOPs 5. UNISOLABLE primary system leakage outside Primary Containment as indicated by exceeding **EITHER**: Maximum safe general area temperature of 135°F **OR** Maximum safe area radiation of 8 R/hr	None
D Rad	2. Drywell radiation ≥ 3,000 R/hr 3. Reactor coolant activity > 300 µCi/gm I-131 Equivalent	None	5. Drywell radiation ≥ 80 R/hr	None	None	5. Drywell radiation ≥ 4.0 E4 R/hr
E Judgment	4. **ANY** condition in the opinion of the Emergency Director that indicates loss of the Fuel Clad barrier	2. **ANY** condition in the opinion of the Emergency Director that indicates potential loss of the Fuel Clad barrier	6. **ANY** condition in the opinion of the Emergency Director that indicates loss of the Reactor Coolant System barrier.	2. **ANY** condition in the opinion of the Emergency Director that indicates potential loss of the Reactor Coolant System barrier	6. **ANY** condition in the opinion of the Emergency Director that indicates loss of the Containment barrier	6. **ANY** condition in the opinion of the Emergency Director that indicates potential loss of the Containment barrier

EAL Identifier

XXX.X

- Category (R, H, E, S, F, C)
- Emergency classification (G, S, A, U)
- Sequential number within subcategory/classification
- Subcategory number (1 if no subcategory)

Modes: 1 Power Operation; 2 Hot Shutdown; 3 Cold Shutdown; 4 Refuel; D Defueled

Constellation Energy
Nine Mile Point Nuclear Station Unit 1

EPIP-EP-001
Attachment 1
EAL Matrix Unit 1
Page 1 of 2

Approved: _____ Director, Emergency Planning _____ Date

MODE 1 or 2

D01