RE-G-03 MP2-20-01

Rapid Down Power Reactivity Plans

	RWST – 1 pump	RWST – 2 pump	BAST – 1%/min
	RE-G-04	RE-G-05	RE-G-06
90%	BA vol - 880 gals BA flow - 44 gpm CEA pos - 180 steps	BA vol - 880 gals BA flow - 88 gpm CEA pos - 180 steps	BA vol - 204 gals BA flow - 20 gpm CEA pos - 180 steps
	Time - 20 min.	Time - 10 min.	Time - 10 min.
	Rate - 30%/hr	Rate - 60%/hr	Rate - 60%/hr
	RE-G-07	RE-G-08	RE-G-09
70% (No CEAs)	BA vol - 2458 gals BA flow - 44 gpm CEA pos - 180 steps	BA vol - 2640 gals BA flow - 88 gpm CEA pos - 180 steps	BA vol - 606 gals BA flow - 20 gpm CEA pos - 180 steps
	Time - 56 min.	Time - 30 min.	Time - 30 min.
	Rate - 32%/hr	Rate - 60%/hr	Rate - 60%/hr
55%	RE-G-10	RE-G-11	RE-G-12
	BA vol - 3080 gals BA flow - 44 gpm CEA pos - 154 steps	BA vol - 3315 gals BA flow - 88 gpm CEA pos - 154 steps	BA vol - 720 gals BA flow - 18 gpm CEA pos - 154 steps
	Time - 70 min.	Time - 38 min.	Time - 40 min.
	Rate - 39%/hr	Rate - 71%/hr	Rate - 68%/hr
15%	RE-G-13	RE-G-14	RE-G-15
	BA vol - 4400 gals BA flow - 44 gpm CEA pos - 140 steps	BA vol - 5120 gals BA flow - 88 gpm CEA pos - 140 steps	BA vol - 1100 gals BA flow - 16 gpm CEA pos - 140 steps
	Time - 100 min.	Time - 58 min.	Time - 80 min.
	Rate - 51%/hr	Rate - 88%/hr	Rate - 64%/hr

MILLSTONE UNIT 2 EMERGENCY ACTION LEVELS

7/29/08
APPROVAL DATE

8/6/08

EFFECTIVE DATE

GENERAL EMERGENCY ALPHA G	ENERAL EMERGENCY BRAVO CHARLIE-TV	VO ALERT CHARLIE-ONE	UNUSUAL EVENT DELTA-TWO	UNUSUAL EVENT DELTA-ONE
BARRIER FAILURE	LOSS OF POWER	EQUIPMENT FAILURE	OFFSITE RELEASES	CLASSIFICATION
BG1 ALL THREE BARRIERS Mode 1, 2, 3, 4 See Barrier Failure Reference Table	PG1 STATION BLACKOUT Mode 1, 2, 3, 4 Loss of Voltage on Buses 24C AND 24D AND ANY of the Following: Restoration of Power to AT LEAST One Vital Bus is NOT Likely Within Four Hours Core Exit Thermocouple Readings Indicate Superheat Inadequate SG Heat Removal Capability as Indicated by SG Water Level ≤ 10% in BOTH SGs AND Inadequate Terry Turbine Feedwater Flow	EG1 ATWS/INADEQUATE COOLING Mode 1 Functional Recovery of Reactivity Control Ineffective AND EITHER of the Following: RCS Heat Removal by Steam Generator Heat Removal SFSC Criteria Can NOT Be Satisfied Core Exit TC Temperature Readings > 800°F	OG1 OFFSITE DOSE Mode ALL 1. MP2 Kaman Vent Monitor (RM-8168) Reading ≥ 2 μCl/cc for > 15 Minutes 2. MP2 WRGM Site Stack Effluent Activity (RM-8169) Reading ≥ 30 μCl/cc for > 15 Minutes 3. MSL Monitor (RM-4299/A/B/C) Reading ≥ 2 R/hr for > 15 Minutes 4. Measured Plume Dose Rate OnSite ≥ 1,000 mR/hr for > 15 Minutes 5. Rad Assessment Determines Integrated Dose Offsite ≥ 1 Rem TEDE OR ≥ 5 Rem CDE Thyroid	GENERAL EMERGENCY ALPHA OR BRAVO Events are in process or have occurred which involve actual or imminent substantial core degradation or melting with potential for loss of containment integrity or security events that result 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.
BS1 ANY TWO BARRIERS Mode 1, 2, 3, 4 See Barrier Failure Reference Table	PS1 STATION BLACKOUT Mode 1, 2, 3, 4 Loss of Voltage on Buses 24C AND 24D > 15 Minutes PS2 LOSS OF DC Mode 1, 2, 3, 4 Loss of Voltage on DC Buses 201A AND 201B > 15 Minutes	ES1 ATWS Mode 1 Manual Reactor Trip Attempted At Panel C04 AND Reactor Is NOT Shutdown ES2 INABILITY TO MAINTAIN HOT S/D Mode 1, 2, 3, 4 1. No RCS Heat Removal Via Steam Generators AND Once Through Cooling NOT Effective AND Shutdown Cooling is NOT in Service 2. RCS Boration Capability Unable to Eliminate Inadvertent Criticality ES3 IN-VESSEL FUEL UNCOVERY Mode 5, 6 Shutdown Cooling Has Been Lost AND ANY of the Following Conditions Exist. • Alternate Methods for Restoring RCS Inventory are NOT Effective • RVLMS Reading = 0% with OPERABLE #8 string (NA if no OPERABLE #8 string) • Core Exit TC Temperature Readings Indicate Superheat ES4 LOSS OF ANNUNCIATORS/TRANSIENT Mode 1, 2, 3, 4 Loss of Most (75%) MCB Annunciators AND BOTH of the Following • Significant Transient in Progress • Loss of SPDS AND ICC Instrumentation	OS1 OFFSITE DOSE Mode ALL. 1. MP2 Kaman Vent Monitor (RM−8168) Reading ≥ 0.2 μCi/cc for > 15 Minutes 2. MP2 WRGM Site Stack Effluent Activity (RM−8169) Reading ≥ 10 μCi/cc for > 15 Minutes 3. MSL Monitor (RM−4299A/B/C) Reading ≥ 0.3 R/hr for > 15 Minutes 4. Measured Plume Dose Rate Onsite ≥ 50 mR/hr for > 15 Minutes 5. Rad Assessment Determines Integrated Dose Offsite ≥ 0.05 Rem TEDE OR ≥ 0.25 Rem CDE Thyroid	CHARLIE—TWO Events are in process or have occurred which involve an actual or likely major failure of plant functions needed for protection of the public or security events that result in intentional damage or malicious acts; (1) toward site personnel or equipment that could lead to the likely failure of or; (2) prevents effective access to equipment needed for the protection of the public. Any releases are not expected to result in exposure levels which exeed EPA Protective Action Guideline exposure levels beyond the site boundary.
BA1 FUEL CLAD OR RCS BARRIER Mode 1, 2, 3, 4 See Barrier Failure Reference Table BA2 STEAM LINE BREAK Mode 1, 2, 3, 4 Unisolable Steam Line Break Outside CTMT	PA1 STATION BLACKOUT Mode 5, 6, 0 Loss of Voltage on Buses 24C AND 24D > 15 Minutes PA2 SINGLE AC POWER SOURCE Mode 1, 2, 3, 4 Only One AC Power Source Available to Supply Buses 24C AND/OR 24D > 15 Minutes Such That Loss of That Power Source Would Result in a Station Blackout (Unit 3 Buses 34A/B CANNOT be Credited unless already aligned to Unit 2 Bus 24C or 24D)	EA1 AUTOMATIC RX TRIP FAILURE Mode 1, 2 Failure of Automatic Reactor Trip AND Manual Trip Was Successful EA2 INABILITY TO MAINTAIN COLD S/D Mode 5, 6 1. Uncontrolled RCS Temperature Increase > 10°F That Results in RCS Temperature > 200°F 2. Inadvertent Criticality EA3 LOSS OF ANNUNCIATORS/TRANSIENT Mode 1, 2, 3, 4 Loss of Most (75%) MCB Annunciators > 15 Minutes AND EITHER of the Following: • Significant Transient in Progress • Loss of SPDS AND ICC Instrumentation	OA1 OFFSITE DOSE Mode ALL 1. MP2 Kaman Vent Monitor (RM−8168) Reading ≥ 0.02 μCi/cc for > 15 Minutes 2. MP2 WRGM Site Stack Effluent Activity (RM−8169) Reading ≥ 1 μCi/cc for > 15 Minutes 3. MSL Monitor (RM−4299A/B/C) Reading ≥ 0.03 R/hr for > 15 Minutes 4. Measured Plume Dose Rate Onsite ≥ 5 mR/hr for > 15 Minutes 5. Rad Assessment Determines Integrated Dose Offsite ≥ 0.005 Rem TEDE OR ≥ 0.025 Rem CDE Thyroid	ALERT CHARLIE—ONE Events are in process 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 intentional malicious dedicated efforts of a hostile act. Any releases are expected to be limited to small fractions of the EPA Protective Action Guideline exposure levels.
BU1 CTMT BARRIER Mode 1, 2, 3, 4 See Barrier Failure Reference Table BU2 RCS LEAKAGE Mode 1, 2, 3, 4 1. Pressure Boundary Leakage > 10 GPM 2. Unidentified Leakage > 10 GPM 3. Identified Leakage > 25 GPM 4. Primary to Secondary Leakage > 25 GPM BU3 FUEL CLAD DEGRADATION Mode ALL 1. RCS Activity > 60 μCi/gm I-131 DEQ 2. Dose Rate at One Foot from Unpressurized RCS Sample > 2 mR/hr/ml	PU1 LOSS OF OFFSITE POWER Mode ALL Loss of all OFFSITE power to buses 24C AND 24D for > 15 Minutes. PU2 LOSS OF DC Mode 5, 6 Loss of Voltage on DC Buses 201A AND 201B > 15 Minutes	EU1 LOSS OF COLD S/D FUNCTION Mode 5, 6 1. Loss of Shutdown Cooling > 15 Minutes AND Refuel Pool Water Level < 35 Ft., 6 In. 2. Uncontrolled RCS Temperature Increase > 10°F 3. RCS Boron Concentration < Minimum Required EU2 REFUEL/SPENT FUEL POOL LEVEL Mode 6, 0 1. Uncontrolled Spent Fuel Pool Water Level Decrease Causing Loss of Cooling Suction Flow 2. Uncontrolled Refuel Pool Water Level Decrease Requiring Containment Evacuation AND All Spent Fuel Assemblies in Safe Storage Locations EU3 LOSS OF ANNUNCIATORS Mode 1, 2, 3, 4 Loss of Most (75%) MCB Annunciators > 15 Minutes AND SPDS OR ICC Instrumentation Available	OU1 UNPLANNED RELEASE Mode ALL Effluent Monitors in Alarm OR Unplanned, Unmonitored or Uncontrolled Offsite Release AND DELTA-TWO Posture Code Limits as Determined from EPI—FAP06, "Classification and PARs," Exceeded Note: Effluent Monitors Indicate Release Above Alarm Setpoint Continuing > 60 minutes and Reportability Evaluations NOT Complete	UNUSUAL EVENT OR DELTA—ONE Events are in process or have occurred which indicate a potential degradation of the level of safety of the plant or indicate a security threat to facility protection. No releases of radioactive material requiring offsite response or monitoring are expected unless further degradation of safety systems occurs.
NOTE: When two or more EALs apply, always choose the EAL of the highest incident of	classification; also always read from top to bottom in each category.	EU4 LOSS OF COMMUNICATIONS Mode ALL 1. Loss of ALL Onsite Electronic Communications Methods 2. Loss of ALL Electronic Communications Methods With Government Agencies EU5 SHUTDOWN LCO EXCEEDED Mode 1, 2, 3, 4 Unit NOT Brought To Required Mode Within Applicable LCO Action Statement Time Limits		Millstone MP-26-EPI-FAP06-002 Revision 006 Page 1 of 3

• MILLSTONE UNIT 2 EMERGENCY ACTION LEVELS

GENERAL EMERGENCY ALPHA GE	NERAL EMERGENCY BRAVO SITE AREA EMEI	RGENCY ALERT CHARLIE-ONE	UNUSUAL EVENT DELTA-TWO	UNUSUAL EVENT DELTA-ONE
IN-PLANT RADIATION	SECURITY THREAT/ DESTRUCTIVE PHENOMENA	FIRE/GASES	JUDGEMENT	CLASSIFICATION
RG1 MAJOR FUEL DAMAGE Mode ALL 1. RM-8240/8241 Reading > 1,200 R/hr 2. At Least 20% Fuel Clad Damage As Determined By Core Damage Estimate 3. Spent Fuel is Exposed from Water Loss from Open Vessel, Cavity, Or SF Pool AND BOTH of the Following: • Spent Fuel Has Decayed < 30 Days • CTMT Integrity is NOT Established OR Exposed Spent Fuel is Outside CTMT RS1 SPENT FUEL DAMAGE Mode ALL Spent Fuel is Exposed from Open Vessel or Cavity AND BOTH	TG1 SECURITY EVENT Mode ALL A HOSTILE FORCE has taken control of plant equipment such that plant personnel are unable to operate equipment required to maintain safety functions. Any of the following meet this EAL: 1. Loss of Control Room 2. Loss of Hot Shutdown Panel (C-21) (West 480v SWGR Room) 3. Loss of Cold Shutdown Panel (C-10) (Upper 4160v SWGR Room) 4. Security reports the loss or imminent loss of a Target Set TS1 SECURITY EVENT Mode ALL A notification from the site security force that an armed attack.	GS1 CONTROL ROOM EVACUATION Mode ALL Unit Control from Hot Shutdown Panel C-10 Or C-21	JG1 JUDGEMENT Mode ALL Other Conditions Exist For Which Judgement Indicates: 1. Actual Or Imminent Substantial Core Degradation With Potential For Loss Of Containment, OR 2. Potential For Uncontrolled Radiological Releases. These Releases Can Be Reasonably Expected To Exceed EPA PAG Plume Exposure Levels Outside The Site Boundary JS1 JUDGEMENT Mode ALL Other Conditions Exist For Which Judgement Indicates	ALPHA OR BRAVO Events are in process or have occurred which involve actual or imminent substantial core degradation or melting with potential for loss of containment integrity or security events that result 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 CHARLIE—TWO
of the Following: Spent Fuel Has Decayed < 30 Days CTMT Integrity Established	explosive attack, airliner impact, or other HOSTILE ACTION is occurring or has occurred within the protected area.	NOT Established Within 15 Minutes After Control Room. Evacuation	Actual Or Likely Major Failures of Plant Functions Needed For Protecton Of The Public	Events are in process or have occurred which involve an actual or likely major failure of plant functions needed for protection of the public or security events that result in intentional damage or malicious acts; (1) toward site personnel or equipment that could lead to the likely failure of or; (2) prevents effective access to equipment needed for the protection of the public. Any releases are not expected to result in exposure levels which exeed EPA Protective Action Guideline exposure levels beyond the site boundary.
 RA1 SPENT FUEL ASSEMBLY DAMAGE Mode ALL Spent Fuel is Exposed from Open Vessel, Cavity, or SF Pool AND Spent Fuel Has Decayed ≥ 30 Days Fuel Handling Accident Causing Damage to Spent Fuel, Indicated by Fuel Building OR Containment Radiation Monitors Increasing RA2 PLANT RADIATION Mode ALL Radiation Readings > 15 mR/hr in Control Room OR Central Alarm Station OR Secondary Alarm Station Radiation Reading > 5 R/hr in Areas Requiring Access for Safe Shutdown 	TA1 SECURITY EVENT Mode ALL 1. Security Events as determined for Station Safeguards Contingency Plan and reported by Security Shift Supervision. (Addresses events that involve Actual or Potential Substantial degradation to the level of safety of the plant.) 2. A notification from the site security force that an armed attack, explosive attack, airliner impact, or other HOSTILE ACTION is occurring or has occurred within the OCA. 3. A validated notification from the NRC of an airliner attack threat less than 30 minutes away. TA2 DESTRUCTIVE PHENOMENA Mode ALL 1. Seismic Event > 0.09g ZPA 2. Onsite Sustained Windspeed > 90 MPH 3. Visible Damage to Structures or Equipment AND Affecting Safe Shutdown 4. Vessel or Vehicle Collision AND Affecting Safe Shutdown 5. Missiles Affecting Safe Shutdown	GA1 CONTROL ROOM EVACUATION Mode ALL Control Room Evacuation Initiated GA2 FIRE/EXPLOSION Mode ALL Fire or Explosion Affecting Safe Shutdown Area AND Damage to Structures OR Equipment Indicated GA3 TOXIC/FLAMMABLE GASES Mode ALL Life Threatening Toxic Gases OR Flammable Gas Concentrations as Identified in C—OP 200.5, "Oil, Hazardous Material, Hazardous Waste and Mixed Waste Contingency Plan" Affecting Areas for Safe Shutdown	JA1 JUDGEMENT Mode ALL Any Condition For Which Judgement Indicates That Safety Systems May Be Degraded AND Which Requires Emergency Response Organization Staffing	CHARLIE—ONE Events are in process 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 intentional malicious dedicated efforts of a hostile act. Any releases are expected to be limited to small fractions of the EPA Protective Action Guideline exposure levels.
PULL PAR MONTORS Made All	6. Flooding Affecting Safe Shutdown	CUI Mode ALL	JU1 JUDGEMENT Mode ALL	LINUIGUAL EN/ENT
RU1 RAD MONITORS Mode ALL 1. Uncontrolled Refuel Pool Water Level Decrease AND Rad Levels Require Evacuation of CTMT or Spent Fuel Pool Area	TU1 SECURITY EVENT Mode ALL 1. Security Events as determined for Station Safeguards Contingency Plan and reported by Security Shift Supervision. (Addresses events that involve Potential degradation in the level of safety of the plant.)	GU1 FIRE Mode ALL 1. Fire in Building OR Areas Adjacent to Areas Needed for Safe Shutdown NOT Extinguished Within 15 Minutes of Notification OR Verification of Control Room Alarms	Any Condition For Which Judgement Indicates Potential Degradation in the Level of Safety of the Plant	DELTA-TWO
Unexpected Area Rad Monitor Reading Offscale High OR 1000 Times Normal Reading NOTE: When two or more FALs apply always choose the FAL of the highest incident class.	2. A credible site specific security threat notification. 3. A validated notification from the NRC providing information of an aircraft threat. TU2 DESTRUCTIVE PHENOMENA Mode ALL 1. Seismic Activity Detected Per AOP-2562, Earthquake 2. Report by Plant Personnel of Tornado Striking Within Protected Area 3. Visible Damage to Structures or Equipment Within the Protected Area 4. Onsite Sustained Windspeed > 75 MPH 5. Explosion Within the Protected Area 6. Turbine Failure Causing Observable Casing Damage 7. Vessel or Vehicle Collision With Structures OR Equipment Required for Safe Shutdown or a loaded ISFSI Confinement Boundary 8. Flood Level > 19 Feet Mean Sea Level 9. Flooding in Areas Containing Safe Shutdown Equipment	Fire Affecting a Loaded ISFSI-Confinement Boundary NOT Extinguished Within 15 Minutes of Notification. GU2 TOXIC/FLAMMABLE GASES Mode ALL Life Threatening Toxic Gases OB Flammable Gas Concentrations as Identified in C – OP 200.5, "Oil, Hazardous Material, Hazardous Waste and Mixed Waste Contingency Plan" Affecting Normal Operation Notification of a Near-Site Release That May Require Evacuation AREAS OF CONCERN Control Room Cable Vaults Turbine Building Penetration Areas RBCCW Rooms Diesel Generator Room Charging Pump Cubicles Switchyard	FOR SAFE SHUTDOWN Switchgear Rooms Intake Structure Switchgear Area Coolant Tanks Area Containment DC Equipment and Battery Rooms Safety Injection Pump Rooms	Events are in process or have occurred which indicate a potential degradation of the level of safety of the plant or indicate a security threat to facility protection. No releases of radioactive material requiring offsite response or monitoring are expected unless further degradation of safety systems occurs.
NOTE: When two or more EALs apply, always choose the EAL of the highest incident class	ilication; also always read from top to bottom in each category.	Switchyaru		Page 2 of 3

MILLSTONE 2 EMERGENCY ACTION LEVELS BARRIER FAILURE REFERENCE TABLE

IMMINENT - No Turnaround in Safety System Performance is Expected AND Escalation to General Emergency Conditions Will Occur Within 2 Hours

