Northeast
Nuclear Energy

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Millstone Nuclear Power Station
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The Northeast Utilities System

MAR 23 2001

Docket Nos. 50-245
50-336
50-423
B18353

RE: 10 CFR 50, Appendix E
10 CFR 50.47(b)(5)

U.S. Nuclear Regulatory Commission
Attention: Document Control Desk
Washington, DC 20555

Millstone Nuclear Power Station, Unit Nos. 1, 2, and 3
Revised Emergency Plan Procedures

The purpose of this letter is to inform the Nuclear Regulatory Commission that the following Emergency Plan Procedures have been implemented:

- MP-26-EPI-FAP06-002, "Millstone Unit 2 Emergency Action Levels," Major Revision 1
- MP-26-EPI-FAP06-003, "Millstone Unit 3 Emergency Action Levels," Major Revision 1
- MP-26-EPI-FAP10, "Dose Assessment," Major Revision 1. Attachment 3 contains a complete copy of Major Revision 1 to MP-26-EPI-FAP10, which includes all the previously approved but undistributed changes associated with Major Revision 0, Minor Revision 2 to MP-26-EPI-FAP10.
- MP-26-EPI-FAP10-001, "IDA - Data Input Information," Major Revision 0, Minor Revision 1
- MP-26-EPI-FAP10-002, "MIDAS - Data Input Information," Major Revision 0, Minor Revision 1
- MP-26-EPI-FAP10-004, "Thyroid CDE Calculation Based on Field Air Sample Worksheet," Major Revision 0, Minor Revision 1
- MP-26-EPI-FAP10-005, "Unit 1 Dose Calculation for Fuel Handling Accident," Major Revision 0

A045

- MP-26-EPI-FAP11, "Core Damage Assessment," Major Revision 1
- MP-26-EPI-FAP11-010, "Unit 2 Vent and Containment Air Sample Worksheet," Major Revision 0, Minor Revision 1
- MP-26-EPI-FAP11-012, "Unit 3 Vent and Containment Air Sample Worksheet," Major Revision 0, Minor Revision 1
- MP-26-EPI-FAP15-006, "OFIS Instruction," Major Revision 0, Minor Revision 1
- MP-26-EPI-FAP15-007, "Critical Parameter Data Sheet - MP1," Major Revision 0, Minor Revision 1
- MP-26-EPI-FAP15-008, "Critical Parameter Data Sheet - MP2," Major Revision 0, Minor Revision 1
- MP-26-EPI-FAP15-009, "Critical Parameter Data Sheet - MP3," Major Revision 0, Minor Revision 1

There are no regulatory commitments contained within this letter.

If you have any additional questions concerning this submittal, please contact Mr. David A. Smith at (860) 437-5840.

Very truly yours,

NORTHEAST NUCLEAR ENERGY COMPANY

Robert G. Lizotte
Master Process Owner - Assessment

Attachments (14)

cc: H. J. Miller, Region I Administrator (2 copies)
R. J. Conte, Chief, Operational Safety Branch, Region I

cc: w/o attachments

J. B. Hickman, NRC Project Manager, Millstone Unit No. 1
P. C. Cataldo, Resident Inspector, Millstone Unit No. 2
D. S. Collins, NRC Project Manager, Millstone Unit No. 2
S. R. Jones, Senior Resident Inspector, Millstone Unit No. 2
V. Nerses, NRC Senior Project Manager, Millstone Unit No. 3
A. C. Cerne, Senior Resident Inspector, Millstone Unit No. 3

Docket Nos. 50-245
50-336
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Attachment 1

Millstone Nuclear Power Station, Unit Nos. 1, 2, and 3

Emergency Plan Procedures
Emergency Procedures Implementing (EPI) Functional Administrative Procedure (FAP)
MP-26-EPI-FAP06-002, "Millstone Unit 2 Emergency Action Levels," Major Revision 1

MILLSTONE UNIT 2 EMERGENCY ACTION LEVELS

10/25/00
APPROVAL DATE

02/27/01
EFFECTIVE DATE

GENERAL EMERGENCY ALPHA | GENERAL EMERGENCY BRAVO | SITE AREA EMERGENCY CHARLIE-TWO | 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 µCi/cc for > 15 Minutes 2. MP2 WRGM Site Stack Effluent Activity (RM-8169) Reading ≥ 30 µCi/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 In Progress or Have Occurred Which Involve Actual or Imminent Substantial Core Degradation or Melting With Potential for Loss of Containment Integrity
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 Method Meets SFSC Criteria > 15 Minutes 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% • 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	SITE AREA EMERGENCY **CHARLIE-TWO** Events in Progress or Have Occurred Which Involve Actual or Likely Major Failures of Plant Functions Needed for Protection of the Public
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 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 1 Bus 14H CANNOT be Credited)	**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 in Progress or Have Occurred Which Involve an Actual or Potential Substantial Degradation of the Level of Safety of the Plant
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 **BU3** FUEL CLAD DEGRADATION — Mode ALL 1. RCS Activity > 60 µCi/gm I-131 DEQ Dose Rate at One Foot from Unpressurized RCS Sample ≥ 2 mR/hr/ml	**PU1** LOSS OF OFFSITE POWER — Mode ALL Buses 24C AND 24D Are Powered from Emergency Generators AND Offsite Power NOT Restored Within 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 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 **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	**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 **DELTA-TWO** OR **DELTA-ONE** Events in Progress or Have Occurred Which Indicate a Potential Degradation of the Level of Safety of the Plant

NOTE: When two or more EALs apply, always choose the EAL of the highest incident classification; also always read from top to bottom in each category.

2
Millstone

C01

MILLSTONE UNIT 2 EMERGENCY ACTION LEVELS

10/25/00
APPROVAL DATE

02/27/01
EFFECTIVE DATE

GENERAL EMERGENCY ALPHA ■ GENERAL EMERGENCY BRAVO ■ SITE AREA EMERGENCY CHARLIE-TWO ☐ 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	PG1 STATION BLACKOUT — Mode 1, 2, 3, 4	EG1 ATWS/INADEQUATE COOLING — Mode 1	OG1 OFFSITE DOSE — Mode ALL	GENERAL EMERGENCY
BS1 ANY TWO BARRIERS — Mode 1, 2, 3, 4	PS1 STATION BLACKOUT — Mode 1, 2, 3, 4	ES1 ATWS — Mode 1	OS1 OFFSITE DOSE — Mode ALL	SITE AREA EMERGENCY
	PS2 LOSS OF DC — Mode 1, 2, 3, 4	ES2 INABILITY TO MAINTAIN HOT S/D — Mode 1, 2, 3, 4		
		ES3 IN-VESSEL FUEL UNCOVERY — Mode 5, 6		
		ES4 LOSS OF ANNUNCIATORS/TRANSIENT — Mode 1, 2, 3, 4		
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 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 1 Bus 14H CANNOT be Credited)	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 in Progress or Have Occurred Which Involve an Actual or Potential Substantial Degradation of the Level of Safety of the Plant
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 BU3 FUEL CLAD DEGRADATION — Mode ALL 1. RCS Activity > 60 µCi/gm I-131 DEQ Dose Rate at One Foot from Unpressurized RCS Sample ≥ 2 mR/hr/ml	PU1 LOSS OF OFFSITE POWER — Mode ALL Buses 24C AND 24D Are Powered from Emergency Generators AND Offsite Power NOT Restored Within 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 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 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	OU1 UNPLANNED RELEASE — Mode ALL	UNUSUAL EVENT [redacted] **OR** **DELTA-ONE** Events in Progress or Have Occurred Which Indicate a Potential Degradation of the Level of Safety of the Plant

NOTE: When two or more EALs apply, always choose the EAL of the highest incident classification; also always read from top to bottom in each category.

2
Millstone

MILLSTONE UNIT 2 EMERGENCY ACTION LEVELS

GENERAL EMERGENCY ALPHA | GENERAL EMERGENCY BRAVO | SITE AREA EMERGENCY CHARLIE-TWO | 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	**TG1** SECURITY EVENT — Mode ALL 1. Loss of Physical Control of the Control Room 2. Loss of Physical Control of Remote Shutdown Capability		**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	GENERAL EMERGENCY ALPHA OR BRAVO Events In Progress or Have Occurred Which Involve Actual or Imminent Substantial Core Degradation or Melting With Potential for Loss of Containment Integrity
RS1 SPENT FUEL DAMAGE — Mode ALL Spent Fuel is Exposed from Open Vessel or Cavity AND BOTH of the Following: • Spent Fuel Has Decayed < 30 Days • CTMT Integrity Established	**TS1** SECURITY EVENT — Mode ALL Intrusion into Vital Area by a Hostile Force	**GS1** CONTROL ROOM EVACUATION — Mode ALL Unit Control from Hot Shutdown Panel C-19 Or C-21 NOT Established Within 15 Minutes After Control Room Evacuation	**JS1** JUDGEMENT — Mode ALL Other Conditions Exist For Which Judgement Indicates Actual Or Likely Major Failures of Plant Functions Needed For Protecton Of The Public	SITE AREA EMERGENCY CHARLIE–TWO Events In Progress or Have Occurred Which Involve Actual or Likely Major Failures of Plant Functions Needed for Protection of the Public
RA1 SPENT FUEL ASSEMBLY DAMAGE — Mode ALL 1. Spent Fuel is Exposed from Open Vessel, Cavity, or SF Pool AND Spent Fuel Has Decayed ≥ 30 Days 2. Fuel Handling Accident Causing Damage to Spent Fuel, Indicated by Fuel Building OR Containment Radiation Monitors Increasing **RA2** PLANT RADIATION — Mode ALL 1. Radiation Readings > 15 mR/hr in Control Room OR Central Alarm Station OR Secondary Alarm Station 2. Radiation Reading > 5 R/hr in Areas Requiring Access for Safe Shutdown	**TA1** SECURITY EVENT — Mode ALL Intrusion Into Protected Area by a Hostile Force **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 6. Flooding 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	ALERT CHARLIE–ONE Events in Progress or Have Occurred Which Involve an Actual or Potential Substantial Degradation of the Level of Safety of the Plant
RU1 RAD MONITORS — Mode ALL 1. Uncontrolled Refuel Pool Water Level Decrease AND Rad Levels Require Evacuation of CTMT Or Spent Fuel Pool Area 2. Unexpected Area Rad Monitor Reading Offscale High OR > 1000 Times Normal Reading	**TU1** SECURITY EVENT — Mode ALL Bomb Device Discovered in Protected Area **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 8. Flood Level > 19 Feet Mean Sea Level 9. Flooding in Areas Containing Safe Shutdown Equipment	**GU1** FIRE — Mode ALL 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 **GU2** TOXIC/FLAMMABLE GASES — Mode ALL 1. 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 Normal Operation 2. Notification of a Near-Site Release That May Require Evacuation	**JU1** JUDGEMENT — Mode ALL Any Condition For Which Judgement Indicates Potential Degradation in the Level of Safety of the Plant	UNUSUAL EVENT DELTA–TWO OR DELTA–ONE Events in Progress or Have Occurred Which Indicate a Potential Degradation of the Level of Safety of the Plant

NOTE: When two or more EALs apply, always choose the EAL of the highest incident classification; also always read from top to bottom in each category.

AREAS OF CONCERN FOR SAFE SHUTDOWN

Control Room
Cable Vaults
Turbine Building
Penetration Areas
RBCCW Rooms
Diesel Generator Room
Charging Pump Cubicles
Switchyard
Switchgear Rooms
Intake Structure
Switchgear Area
Coolant Tanks Area
Containment
DC Equipment and Battery Rooms
Safety Injection Pump Rooms

2
Millstone

C02

MILLSTONE UNIT 2 EMERGENCY ACTION LEVELS

GENERAL EMERGENCY ALPHA ■ GENERAL EMERGENCY BRAVO ■ SITE AREA EMERGENCY CHARLIE-TWO ☐ 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	TG1 SECURITY EVENT Mode ALL		JG1 JUDGEMENT Mode ALL	GENERAL EMERGENCY
RS1 SPENT FUEL DAMAGE Mode ALL	TS1 SECURITY EVENT Mode ALL	GS1 CONTROL ROOM EVACUATION Mode ALL	JS1 JUDGEMENT Mode ALL	SITE AREA EMERGENCY
RA1 SPENT FUEL ASSEMBLY DAMAGE Mode ALL	TA1 SECURITY EVENT Mode ALL	GA1 CONTROL ROOM EVACUATION Mode ALL	JA1 JUDGEMENT Mode ALL	ALERT
RA2 PLANT RADIATION Mode ALL	TA2 DESTRUCTIVE PHENOMENA Mode ALL	GA2 FIRE/EXPLOSION Mode ALL GA3 TOXIC/FLAMMABLE GASES Mode ALL		
RU1 RAD MONITORS Mode ALL	TU1 SECURITY EVENT Mode ALL TU2 DESTRUCTIVE PHENOMENA Mode ALL	GU1 FIRE Mode ALL GU2 TOXIC/FLAMMABLE GASES Mode ALL	JU1 JUDGEMENT Mode ALL	UNUSUAL EVENT DELTA-TWO OR DELTA-ONE

RA1 SPENT FUEL ASSEMBLY DAMAGE Mode ALL

1. Spent Fuel is Exposed from Open Vessel, Cavity, or SF Pool AND Spent Fuel Has Decayed ≥ 30 Days
2. Fuel Handling Accident Causing Damage to Spent Fuel, Indicated by Fuel Building OR Containment Radiation Monitors Increasing

RA2 PLANT RADIATION Mode ALL

1. Radiation Readings > 15 mR/hr in Control Room OR Central Alarm Station OR Secondary Alarm Station
2. Radiation Reading > 5 R/hr in Areas Requiring Access for Safe Shutdown

RU1 RAD MONITORS Mode ALL

1. Uncontrolled Refuel Pool Water Level Decrease AND Rad Levels Require Evacuation of CTMT Or Spent Fuel Pool Area
2. Unexpected Area Rad Monitor Reading Offscale High OR > 1000 Times Normal Reading

TA1 SECURITY EVENT Mode ALL

Intrusion Into Protected Area by a Hostile Force

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
6. Flooding Affecting Safe Shutdown

TU1 SECURITY EVENT Mode ALL

Bomb Device Discovered in Protected Area

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
8. Flood Level > 19 Feet Mean Sea Level
9. Flooding in Areas Containing Safe Shutdown Equipment

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

GU1 FIRE Mode ALL

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

GU2 TOXIC/FLAMMABLE GASES Mode ALL

1. 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 Normal Operation
2. Notification of a Near-Site Release That May Require Evacuation

AREAS OF CONCERN FOR SAFE SHUTDOWN

Control Room	Switchgear Rooms
Cable Vaults	Intake Structure
Turbine Building	Switchgear Area
Penetration Areas	Coolant Tanks Area
RBCCW Rooms	Containment
Diesel Generator Room	DC Equipment and Battery Rooms
Charging Pump Cubicles	Safety Injection Pump Rooms
Switchyard	

JA1 JUDGEMENT Mode ALL

Any Condition For Which Judgement Indicates That Safety Systems May Be Degraded AND Which Requires Emergency Response Organization Staffing

JU1 JUDGEMENT Mode ALL

Any Condition For Which Judgement Indicates Potential Degradation in the Level of Safety of the Plant

ALERT

CHARLIE–ONE

Events in Progress or Have Occurred Which Involve an Actual or Potential Substantial Degradation of the Level of Safety of the Plant

UNUSUAL EVENT

DELTA–TWO

OR

DELTA–ONE

Events in Progress or Have Occurred Which Indicate a Potential Degradation of the Level of Safety of the Plant

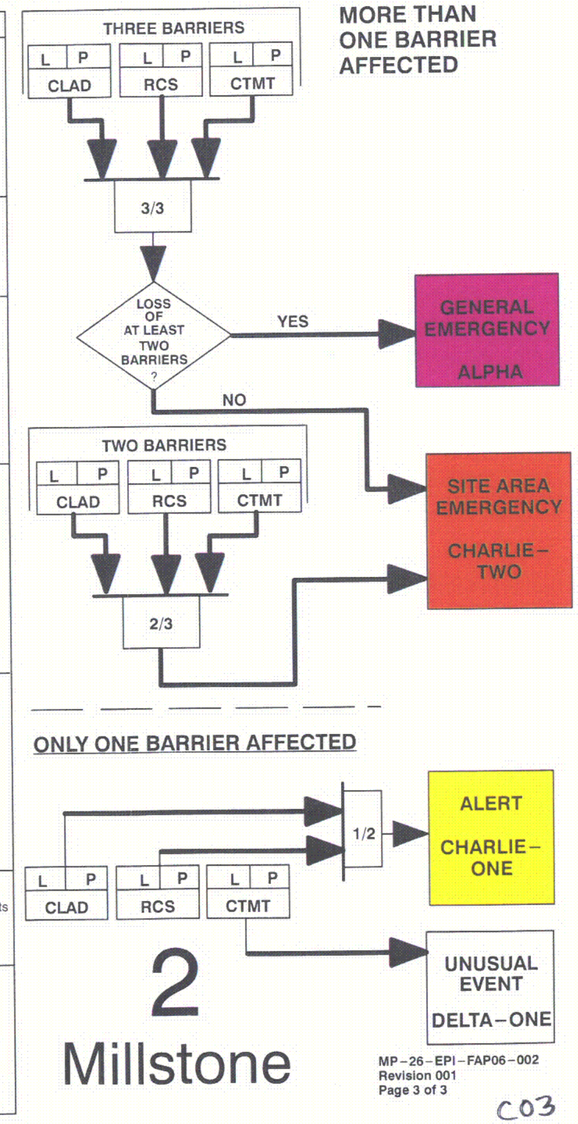
NOTE: When two or more EALs apply, always choose the EAL of the highest incident classification; also always read from top to bottom in each category.

2
Millstone

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

INDICATORS	FUEL CLAD BARRIER	RCS BARRIER	CTMT BARRIER
SAFETY FUNCTION STATUS/ FUNCTIONAL RECOVERY	FCB1 LOSS Not Applicable POTENTIAL LOSS P NO RCS Heat Removal Method Meets SFSC Criteria > 15 Minutes AND Shutdown Cooling System Is NOT In Service	RCB1 LOSS Not Applicable POTENTIAL LOSS P Uncontrolled RCS Cooldown AND RCS Pressure-Temperature To the Left Of the PTS Limit 200°F Subcooling Maximum Curve P NO RCS Heat Removal Method Meets SFSC Criteria > 15 Minutes AND Shutdown Cooling System Is NOT In Service	
CORE EXIT TC TEMPERATURES	FCB2 LOSS L Core Exit Thermocouple Readings > 1300 °F POTENTIAL LOSS P Core Exit Thermocouple Readings > 800 °F	RCB2 LOSS L RCS Subcooling < 30°F POTENTIAL LOSS Not Applicable	CNB1 LOSS Not Applicable POTENTIAL LOSS P Core Exit TC Temperature Readings >1300°F AND Do NOT Decrease Within 15 Minutes
PRESSURE		RCB3 LOSS Not Applicable POTENTIAL LOSS P Uncontrolled RCS Pressure Decrease and Increasing Containment Radiation Monitors	CNB2 LOSS L Rapid Unexplained CTMT Pressure Decrease Following Initial Increase L No CTMT Pressure Increase When Expectation Exists POTENTIAL LOSS P CTMT Pressure > 10 PSIG AND Increasing AND No Containment Spray Pump P CTMT H_2 Concentration $\geq$ 4%
COOLANT LEAKAGE		RCB4 LOSS L Reactor Coolant Leak > CVCS Capacity AND Entry Into EOP-2534, Steam Generator Tube Rupture POTENTIAL LOSS P Reactor Coolant Leak > CVCS Capacity AND Entry Into EOP-2525, Standard Post Trip Actions P Reactor Coolant Leak $\leq$ CVCS Capacity AND Entry Into EOP-2534, Steam Generator Tube Rupture	CNB3 LOSS L Primary to Secondary Leakage > Tech Spec Limits AND Unisolable Secondary Release to the Environment (Does NOT Include Normal Cycling of S/G Atmospheric Dump Valves or Safety Valves to Maintain Pressure/Temperature) L Failure of BOTH Isolation Valves AND a Pathway to the Environment Exists POTENTIAL LOSS P Entry Into EOP-2532, Loss of Primary Coolant, AND Leakage Exists Outside CTMT Requiring Local Isolation
RADIATION	FCB3 LOSS L RM-8240/8241 Reading > 300 R/hr L RM-8240/8241 Reading > 5 R/hr Without RCS Release Inside CTMT L At Least 5% Fuel Clad Damage As Determined By Core Damage Estimate L Dose Rate at One Foot from Unpressurized RCS Sample $\geq$ 28 mR/hr/ml POTENTIAL LOSS Not Applicable	RCB5 LOSS L RM-8240/8241 Reading > 5 R/hr Without Fuel Clad Barrier Loss POTENTIAL LOSS Not Applicable	CNB4 LOSS L Offsite Dose Plume Rate $\geq 10^{-6}$ Times RM-8240/8241 Reading if Release is to CTMT POTENTIAL LOSS P RM-8240/8241 Reading > 1,200 R/hr P At Least 20% Fuel Clad Damage As Determined By Core Damage Estimate
WATER LEVEL	FCB4 LOSS Not Applicable POTENTIAL LOSS P RVLMS Reading = 0%		CNB5 LOSS L No CTMT Sump Level Increase When Expectation Exists POTENTIAL LOSS Not Applicable
JUDGEMENT	FCB5 Any Condition For Which Judgement Indicates Loss or Potential Loss of Fuel Clad Barrier Due to: • Imminent Barrier Degradation Based On Current Safety System Performance • Degraded Fission Barrier Monitoring Capability Making Barrier Status Indeterminate	RCB6 Any Condition For Which Judgement Indicates Loss or Potential Loss of RCS Barrier Due to: • Imminent Barrier Degradation Based On Current Safety System Performance • Degraded Fission Barrier Monitoring Capability Making Barrier Status Indeterminate	CNB6 Any Condition For Which Judgement Indicates Loss or Potential Loss of CTMT Barrier Due to: • Imminent Barrier Degradation Based On Current Safety System Performance • Degraded Fission Barrier Monitoring Capability Making Barrier Status Indeterminate



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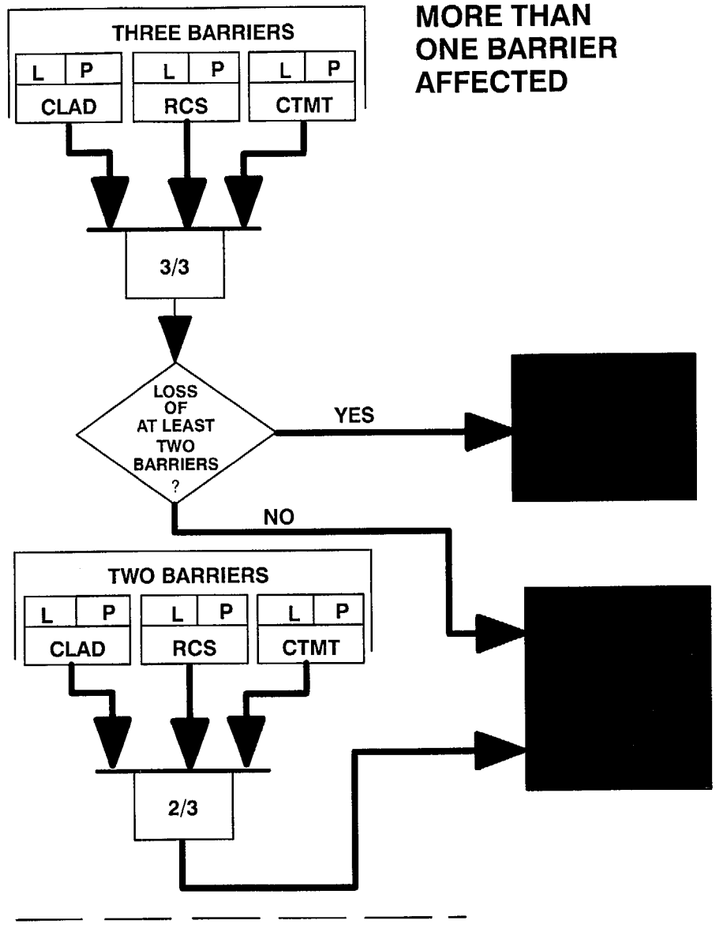
Millstone

C03

MILLSTONE 2 EMERGENCY ACTION LEVELS BARRIER FAILURE REFERENCE TABLE

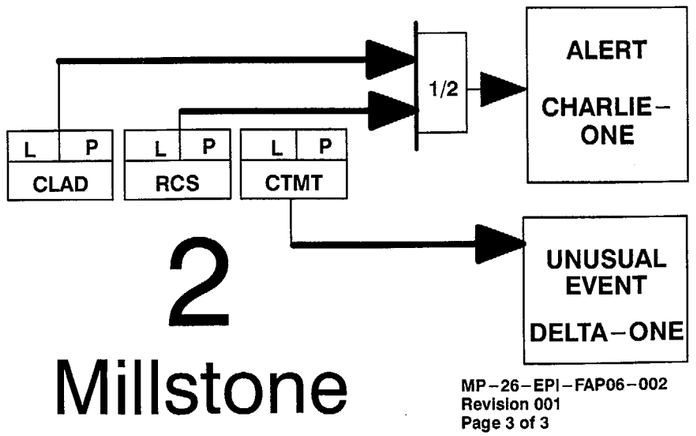
IMMINENT - No Turnaround in Safety System Performance is Expected AND Escalation to General Emergency Conditions Will Occur Within 2 Hours

INDICATORS	FUEL CLAD BARRIER	RCS BARRIER	CTMT BARRIER
SAFETY FUNCTION STATUS/ FUNCTIONAL RECOVERY	FCB1 LOSS Not Applicable POTENTIAL LOSS P NO RCS Heat Removal Method Meets SFSC Criteria > 15 Minutes AND Shutdown Cooling System Is NOT In Service	RCB1 LOSS Not Applicable POTENTIAL LOSS P Uncontrolled RCS Cooldown AND RCS Pressure-Temperature To the Left Of the PTS Limit 200°F Subcooling Maximum Curve P NO RCS Heat Removal Method Meets SFSC Criteria > 15 Minutes AND Shutdown Cooling System Is NOT In Service	
CORE EXIT TC TEMPERATURES	FCB2 LOSS L Core Exit Thermocouple Readings > 1300 °F POTENTIAL LOSS P Core Exit Thermocouple Readings > 800 °F	RCB2 LOSS L RCS Subcooling < 30°F POTENTIAL LOSS Not Applicable	CNB1 LOSS Not Applicable POTENTIAL LOSS P Core Exit TC Temperature Readings >1300°F AND Do NOT Decrease Within 15 Minutes
PRESSURE		RCB3 LOSS Not Applicable POTENTIAL LOSS P Uncontrolled RCS Pressure Decrease and Increasing Containment Radiation Monitors	CNB2 LOSS L Rapid Unexplained CTMT Pressure Decrease Following Initial Increase L No CTMT Pressure Increase When Expectation Exists POTENTIAL LOSS P CTMT Pressure > 10 PSIG AND Increasing AND No Containment Spray Pump P CTMT H_2 Concentration $\geq$ 4%
COOLANT LEAKAGE		RCB4 LOSS L Reactor Coolant Leak > CVCS Capacity AND Entry Into EOP-2534, Steam Generator Tube Rupture POTENTIAL LOSS P Reactor Coolant Leak > CVCS Capacity AND Entry Into EOP-2525, Standard Post Trip Actions P Reactor Coolant Leak $\leq$ CVCS Capacity AND Entry Into EOP-2534, Steam Generator Tube Rupture	CNB3 LOSS L Primary to Secondary Leakage > Tech Spec Limits AND Unisolable Secondary Release to the Environment (Does NOT Include Normal Cycling of S/G Atmospheric Dump Valves or Safety Valves to Maintain Pressure/Temperature) L Failure of BOTH Isolation Valves AND a Pathway to the Environment Exists POTENTIAL LOSS P Entry Into EOP-2532, Loss of Primary Coolant, AND Leakage Exists Outside CTMT Requiring Local Isolation
RADIATION	FCB3 LOSS L RM-8240/8241 Reading > 300 R/hr L RM-8240/8241 Reading > 5 R/hr Without RCS Release Inside CTMT L At Least 5% Fuel Clad Damage As Determined By Core Damage Estimate L Dose Rate at One Foot from Unpressurized RCS Sample $\geq$ 28 mR/hr/ml POTENTIAL LOSS Not Applicable	RCB5 LOSS L RM-8240/8241 Reading > 5 R/hr Without Fuel Clad Barrier Loss POTENTIAL LOSS Not Applicable	CNB4 LOSS L Offsite Dose Plume Rate $\geq 10^{-6}$ Times RM-8240/8241 Reading if Release is to CTMT POTENTIAL LOSS P RM-8240/8241 Reading > 1,200 R/hr P At Least 20% Fuel Clad Damage As Determined By Core Damage Estimate
WATER LEVEL	FCB4 LOSS Not Applicable POTENTIAL LOSS P RVLMS Reading = 0%		CNB5 LOSS L No CTMT Sump Level Increase When Expectation Exists POTENTIAL LOSS Not Applicable
JUDGEMENT	FCB5 Any Condition For Which Judgement Indicates Loss or Potential Loss of Fuel Clad Barrier Due to: • Imminent Barrier Degradation Based On Current Safety System Performance • Degraded Fission Barrier Monitoring Capability Making Barrier Status Indeterminate	RCB6 Any Condition For Which Judgement Indicates Loss or Potential Loss of RCS Barrier Due to: • Imminent Barrier Degradation Based On Current Safety System Performance • Degraded Fission Barrier Monitoring Capability Making Barrier Status Indeterminate	CNB6 Any Condition For Which Judgement Indicates Loss or Potential Loss of CTMT Barrier Due to: • Imminent Barrier Degradation Based On Current Safety System Performance • Degraded Fission Barrier Monitoring Capability Making Barrier Status Indeterminate



MORE THAN ONE BARRIER AFFECTED

ONLY ONE BARRIER AFFECTED



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Millstone

Docket Nos. 50-245
50-336
50-423
B18353

Attachment 2

Millstone Nuclear Power Station, Unit Nos. 1, 2, and 3

Emergency Plan Procedures
Emergency Procedures Implementing (EPI) Functional Administrative Procedure (FAP)
MP-26-EPI-FAP06-003, "Millstone Unit 3 Emergency Action Level," Major Revision 1

MILLSTONE UNIT 3 EMERGENCY ACTION LEVELS

10/25/00
APPROVAL DATE

02/27/01
EFFECTIVE DATE

GENERAL EMERGENCY ALPHA | GENERAL EMERGENCY BRAVO | SITE AREA EMERGENCY CHARLIE-TWO | 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 34C AND 34D AND ANY of the Following: • Restoration of Power to AT LEAST One Bus is NOT Likely Within Four Hours • Core Cooling - RED • Heat Sink - RED	**EG1** ATWS/INADEQUATE COOLING — Mode 1 Reactor Power > 5% Following Entry into FR-S.1 AND EITHER of the Following: • Core Cooling - RED • All SG Wide Range Levels < 29% (59% Adverse CTMT)	**OG1** OFFSITE DOSE — Mode ALL 1. MP3 Kaman Vent Monitor (RE-10A) Reading ≥ 0.8 µCi/cc for > 15 Minutes 2. MP3 SLCRS Gas Monitor (HVR*19A) Reading ≥ 30 µCi/cc for > 15 Minutes 3. MP3 Safeties or Steam Dump Monitor (RE-75/76/77/78) Reading ≥ 20 µCi/cc for > 15 Minutes 4. Terry Turbine Monitor (RE-79) Reading ≥ 50 µCi/cc for > 15 Minutes 5. Measured Plume Dose Rate Onsite ≥ 1,000 mR/hr for > 15 Minutes 6. Rad Assessment Determines Integrated Dose Offsite ≥ 1 Rem TEDE OR ≥ 5 Rem CDE Thyroid	GENERAL EMERGENCY **ALPHA** OR **BRAVO** Events in Progress or Have Occurred Which Involve Actual or Imminent Substantial Core Degradation or Melting With Potential for Loss of Containment Integrity
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 34C AND 34D > 15 Minutes **PS2** LOSS OF DC — Mode 1, 2, 3, 4 Loss of Voltage on DC Buses 1, 2, 3 AND 4 > 15 Minutes	**ES1** ATWS — Mode 1 FR-S.1 is Entered Directly From E-0 **ES2** INABILITY TO MAINTAIN HOT S/D — Mode 1, 2, 3, 4 1. Heat Sink - RED AND BOTH of the Following: • Required Feedwater Flow Can NOT Be Established Within 15 Minutes • RCS Feed and Bleed Can NOT Be Established 2. RCS Boration Capability Unable to Eliminate Inadvertent Criticality **ES3** IN-VESSEL FUEL UNCOVERY — Mode 5, 6 RHR Has Been Lost AND ANY of the Following Conditions Exist: • Alternate Methods for Restoring RCS Inventory Are NOT Effective • RVLM3 Reading Decreasing Toward 19% Level (Plenum) • CET Readings Indicate Superheat Conditions **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. MP3 Kaman Vent Monitor (RE-10A) Reading ≥ 0.1 µCi/cc for > 15 Minutes 2. MP3 SLCRS Gas Monitor ((HVR*19A) Reading ≥ 10 µCi/cc for > 15 Minutes 3. MP3 Safeties or Steam Dump Monitor (RE-75/76/77/78) Reading ≥ 0.8 µCi/cc for > 15 Minutes 4. Terry Turbine Monitor (RE-79) Reading ≥ 10 µCi/cc for > 15 Minutes 5. Measured Plume Dose Rate Onsite ≥ 50 mR/hr for > 15 Minutes 6. Rad Assessment Determines Integrated Dose Offsite ≥ 0.05 Rem TEDE OR ≥ 0.25 Rem CDE Thyroid	SITE AREA EMERGENCY **CHARLIE-TWO** Events in Progress or Have Occurred Which Involve Actual or Likely Major Failures of Plant Functions Needed for Protection of the Public
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 Loss of Voltage on Buses 34C AND 34D > 15 Minutes **PA2** SINGLE AC POWER SOURCE — Mode 1, 2, 3, 4 Only One AC Power Source Available to Supply Buses 34C AND 34D > 15 Minutes Such That Loss of That Power Source Would Result in a Station Blackout (Station Blackout Diesel CANNOT be Credited)	**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. MP3 Kaman Vent Monitor (RE-10A) Reading ≥ 0.01 µCi/cc for > 15 Minutes 2. MP3 SLCRS Gas Monitor (HVR*19A) Reading ≥ 1 µCi/cc for > 15 Minutes 3. MP3 Safeties or Steam Dump Monitor (RE-75/76/77/78) Reading ≥ 0.08 µCi/cc for > 15 Minutes 4. Terry Turbine Monitor (RE-79) Reading Of ≥ 1 µCi/cc for > 15 Minutes 5. Measured Plume Dose Rate Onsite ≥ 5 mR/hr for > 15 Minutes 6. Rad Assessment Determines Integrated Dose Offsite ≥ 0.005 Rem TEDE OR ≥ 0.025 Rem CDE Thyroid	ALERT **CHARLIE-ONE** Events in Progress or Have Occurred Which Involve an Actual or Potential Substantial Degradation of the Level of Safety of the Plant
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 **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 Buses 34C AND 34D Are Powered From Emergency Generators AND Offsite Power NOT Restored Within 15 Minutes **PU2** LOSS OF DC — Mode 5, 6 Loss of Voltage on DC Buses 1, 2, 3 AND 4 > 15 Minutes	**EU1** LOSS OF COLD S/D FUNCTION — Mode 5, 6 1. Loss of RHR Cooling > 15 Minutes AND Valid PZR Water Level (LT 462) Reading < 40% 2. Uncontrolled RCS Temperature Increase > 10°F 3. RCS Boron Concentration < Minimum Required **EU2** CAVITY SEAL FAILURE — Mode 6 Refueling Cavity Seal Failure AND EITHER of the Following: • Valid PZR Level (LT 462) Reading < 40% • Valid SFP Level (LI 26) Reading = 0% **EU3** LOSS OF ANNUNCIATORS — Mode 1, 2, 3, 4 Loss of Most (75%) MCB Annunciators > 15 Minutes AND SPDS OR ICC Instruments Available **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	**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 **DELTA-TWO** OR **DELTA-ONE** Events in Progress or Have Occurred Which Indicate a Potential Degradation of the Level of Safety of the Plant

NOTE: When two or more EALs apply, always choose the EAL of the highest incident classification; also always read from top to bottom in each category.

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Millstone

C04

MILLSTONE UNIT 3 EMERGENCY ACTION LEVELS

10/25/00
APPROVAL DATE

02/27/01
EFFECTIVE DATE

■ GENERAL EMERGENCY ALPHA ■ GENERAL EMERGENCY BRAVO ■ SITE AREA EMERGENCY CHARLIE-TWO ☐ 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	PG1 STATION BLACKOUT Mode 1, 2, 3, 4	EG1 ATWS/INADEQUATE COOLING Mode 1	OG1 OFFSITE DOSE Mode ALL	GENERAL EMERGENCY
BS1 ANY TWO BARRIERS Mode 1, 2, 3, 4	PS1 STATION BLACKOUT Mode 1, 2, 3, 4	ES1 ATWS Mode 1	OS1 OFFSITE DOSE Mode ALL	SITE AREA EMERGENCY
	PS2 LOSS OF DC Mode 1, 2, 3, 4	ES2 INABILITY TO MAINTAIN HOT S/D Mode 1, 2, 3, 4		
		ES3 IN-VESSEL FUEL UNCOVERY Mode 5, 6		
		ES4 LOSS OF ANNUNCIATORS/TRANSIENT Mode 1, 2, 3, 4		
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 Loss of Voltage on Buses 34C AND 34D > 15 Minutes PA2 SINGLE AC POWER SOURCE Mode 1, 2, 3, 4 Only One AC Power Source Available to Supply Buses 34C AND 34D > 15 Minutes Such That Loss of That Power Source Would Result in a Station Blackout (Station Blackout Diesel CANNOT be Credited)	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. MP3 Kaman Vent Monitor (RE-10A) Reading ≥ 0.01 µCi/cc for > 15 Minutes 2. MP3 SLCRS Gas Monitor (HVR*19A) Reading ≥ 1 µCi/cc for > 15 Minutes 3. MP3 Safeties or Steam Dump Monitor (RE-75/76/77/78) Reading ≥ 0.08 µCi/cc for > 15 Minutes 4. Terry Turbine Monitor (RE-79) Reading Of ≥ 1 µCi/cc for > 15 Minutes 5. Measured Plume Dose Rate Onsite ≥ 5 mR/hr for > 15 Minutes 6. Rad Assessment Determines Integrated Dose Offsite ≥ 0.005 Rem TEDE OR ≥ 0.025 Rem CDE Thyroid	ALERT **CHARLIE-ONE** Events in Progress or Have Occurred Which Involve an Actual or Potential Substantial Degradation of the Level of Safety of the Plant
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 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 Buses 34C AND 34D Are Powered From Emergency Generators AND Offsite Power NOT Restored Within 15 Minutes PU2 LOSS OF DC Mode 5, 6 Loss of Voltage on DC Buses 1, 2, 3 AND 4 > 15 Minutes	EU1 LOSS OF COLD S/D FUNCTION Mode 5, 6 1. Loss of RHR Cooling > 15 Minutes AND Valid PZR Water Level (LT 462) Reading < 40% 2. Uncontrolled RCS Temperature Increase > 10°F 3. RCS Boron Concentration < Minimum Required EU2 CAVITY SEAL FAILURE Mode 6 Refueling Cavity Seal Failure AND EITHER of the Following: • Valid PZR Level (LT 462) Reading < 40% • Valid SFP Level (LI 26) Reading = 0% EU3 LOSS OF ANNUNCIATORS Mode 1, 2, 3, 4 Loss of Most (75%) MCB Annunciators > 15 Minutes AND SPDS OR ICC Instruments Available 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	OU1 UNPLANNED RELEASE Mode ALL	UNUSUAL EVENT DELTA-TWO **OR** **DELTA-ONE** Events in Progress or Have Occurred Which Indicate a Potential Degradation of the Level of Safety of the Plant

NOTE: When two or more EALs apply, always choose the EAL of the highest incident classification; also always read from top to bottom in each category.

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Millstone

MILLSTONE UNIT 3 EMERGENCY ACTION LEVELS

GENERAL EMERGENCY ALPHA | GENERAL EMERGENCY BRAVO | SITE AREA EMERGENCY CHARLIE-TWO | 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. Valid RE04A/05A Reading > 2,000 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 • Release Can Bypass CTMT	**TG1** SECURITY EVENT — Mode ALL 1. Loss of Physical Control of the Control Room 2. Loss of Physical Control of Remote Shutdown Capability		**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	GENERAL EMERGENCY ALPHA OR BRAVO Events in Progress or Have Occurred Which Involve Actual or Imminent Substantial Core Degradation or Melting With Potential for Loss of Containment Integrity
RS1 SPENT FUEL DAMAGE — Mode ALL Spent Fuel is Exposed from Open Vessel, or Cavity AND BOTH of the Following: • Spent Fuel Has Decayed < 30 Days • CTMT Integrity Established	**TS1** SECURITY EVENT — Mode ALL Intrusion into Vital Area by a Hostile Force	**GS1** CONTROL ROOM EVACUATION — Mode ALL Unit Control from Auxiliary Shutdown Panel NOT Established Within 15 Minutes After Control Room Evacuation	**JS1** JUDGEMENT — Mode ALL Other Conditions Exist For Which Judgement Indicates Actual Or Likely Major Failures of Plant Functions Needed For Protecton Of The Public	SITE AREA EMERGENCY CHARLIE–TWO Events in Progress or Have Occurred Which Involve Actual or Likely Major Failures of Plant Functions Needed for Protection of the Public
RA1 SPENT FUEL ASSEMBLY DAMAGE — Mode ALL 1. Spent Fuel is Exposed from Open Vessel, Cavity OR SF Pool AND Spent Fuel Has Decayed ≥ 30 Days 2. Fuel Handling Accident Causing Damage to Spent Fuel, Indicated by Fuel Building OR Containment Radiation Monitors Increasing **RA2** PLANT RADIATION — Mode ALL 1. Radiation Readings > 15 mR/hr in Control Room OR Central Alarm Station OR Secondary Alarm Station 2. Radiation Reading > 5 R/hr in Areas Requiring Access for Safe Shutdown	**TA1** SECURITY EVENT — Mode ALL Intrusion Into Protected Area by a Hostile Force **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 6. Flooding 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 Structure 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	ALERT CHARLIE–ONE Events in Progress or Have Occurred Which Involve an Actual or Potential Substantial Degradation of the Level of Safety of the Plant
RU1 RAD MONITORS — Mode ALL 1. Containment OR Fuel Building Area Rad Monitor Alarms Indicate Cavity Seal Failure 2. Unexpected Rad Monitor Reading Offscale High OR > 1000 Times Normal Reading	**TU1** SECURITY EVENT — Mode ALL Bomb Device Discovered in Protected Area **TU2** DESTRUCTIVE PHENOMENA — Mode ALL 1. Seismic Activity Detected Per AOP-3570, 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 8. Flood Level > 19.7 Feet Mean Sea Level 9. Flooding in Areas Containing Safe Shutdown Equipment	**GU1** FIRE — Mode ALL Fire in Buildings OR Areas Adjacent to Areas Needed for Safe Shutdown NOT Extinguished Within 15 Minutes of Control Room Notification OR Verification of Control Room Alarms **GU2** TOXIC/FLAMMABLE GASES — Mode ALL 1. 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 Normal Operation 2. Notification of a Near-Site Release That May Require Evacuation	**JU1** JUDGEMENT — Mode ALL Any Condition For Which Judgement Indicates Potential Degradation in the Level of Safety of the Plant	UNUSUAL EVENT DELTA–TWO OR DELTA–ONE Events in Progress or Have Occurred Which Indicate a Potential Degradation of the Level of Safety of the Plant

NOTE: When two or more EALs apply, always choose the EAL of the highest incident classification; also always read from top to bottom in each category.

AREAS OF CONCERN FOR SAFE SHUTDOWN

- Containment Building
- Auxiliary Building
- Control Building
- Main Steam Valve Building
- Demineralized Water Storage Tank
- ESF Building
- Intake Structure
- Station Transformers
- Emergency Generator Enclosure
- Fuel Building

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Millstone

C05

MILLSTONE UNIT 3 EMERGENCY ACTION LEVELS

■ GENERAL EMERGENCY ALPHA ■ GENERAL EMERGENCY BRAVO ■ SITE AREA EMERGENCY CHARLIE-TWO ☐ 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	TG1 SECURITY EVENT Mode ALL		JG1 JUDGEMENT Mode ALL	GENERAL EMERGENCY
RS1 SPENT FUEL DAMAGE Mode ALL	TS1 SECURITY EVENT Mode ALL	GS1 CONTROL ROOM EVACUATION Mode ALL	JS1 JUDGEMENT Mode ALL	SITE AREA EMERGENCY
[illegible]A1 SPENT FUEL ASSEMBLY DAMAGE Mode ALL 1. Spent Fuel is Exposed from Open Vessel, Cavity OR SF Pool AND Spent Fuel Has Decayed ≥ 30 Days 2. Fuel Handling Accident Causing Damage to Spent Fuel, Indicated by Fuel Building OR Containment Radiation Monitors Increasing RA2 PLANT RADIATION Mode ALL 1. Radiation Readings > 15 mR/hr in Control Room OR Central Alarm Station OR Secondary Alarm Station 2. Radiation Reading > 5 R/hr in Areas Requiring Access for Safe Shutdown	TA1 SECURITY EVENT Mode ALL Intrusion Into Protected Area by a Hostile Force 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 6. Flooding 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 Structure 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	ALERT **CHARLIE–ONE** Events in Progress or Have Occurred Which Involve an Actual or Potential Substantial Degradation of the Level of Safety of the Plant
RU1 RAD MONITORS Mode ALL 1. Containment OR Fuel Building Area Rad Monitor Alarms Indicate Cavity Seal Failure 2. Unexpected Rad Monitor Reading Offscale High OR > 1000 Times Normal Reading	TU1 SECURITY EVENT Mode ALL Bomb Device Discovered in Protected Area TU2 DESTRUCTIVE PHENOMENA Mode ALL 1. Seismic Activity Detected Per AOP-3570, 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 8. Flood Level > 19.7 Feet Mean Sea Level 9. Flooding in Areas Containing Safe Shutdown Equipment	GU1 FIRE Mode ALL Fire in Buildings OR Areas Adjacent to Areas Needed for Safe Shutdown NOT Extinguished Within 15 Minutes of Control Room Notification OR Verification of Control Room Alarms GU2 TOXIC/FLAMMABLE GASES Mode ALL 1. 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 Normal Operation 2. Notification of a Near-Site Release That May Require Evacuation	JU1 JUDGEMENT Mode ALL Any Condition For Which Judgement Indicates Potential Degradation in the Level of Safety of the Plant	UNUSUAL EVENT [illegible]A TWO **OR** **DELTA–ONE** Events in Progress or Have Occurred Which Indicate a Potential Degradation of the Level of Safety of the Plant

NOTE: When two or more EALs apply, always choose the EAL of the highest incident classification; also always read from top to bottom in each category.

AREAS OF CONCERN FOR SAFE SHUTDOWN

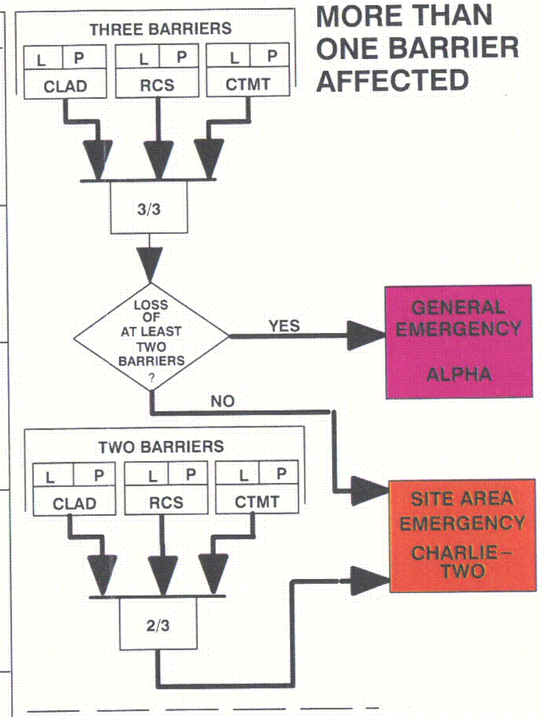
Containment Building	Intake Structure
Auxiliary Building	Station Transformers
Control Building	Emergency Generator Enclosure
Main Steam Valve Building	Fuel Building
Demineralized Water Storage Tank	
ESF Building	

3
Millstone

MILLSTONE 3 EMERGENCY ACTION LEVELS BARRIER FAILURE REFERENCE TABLE

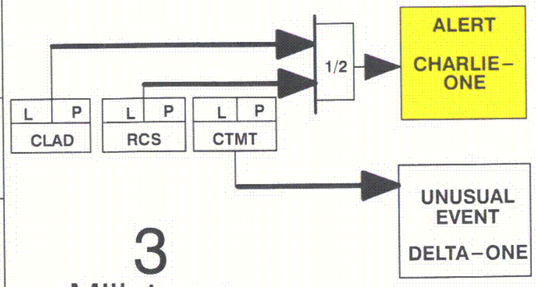
IMMINENT - No Turnaround in Safety System Performance is Expected AND Escalation to General Emergency Conditions Will Occur Within 2 Hours

INDICATORS	FUEL CLAD BARRIER	RCS BARRIER	CTMT BARRIER
STATUS TREES	FCB1 LOSS L Core Cooling - RED POTENTIAL LOSS P Core Cooling - ORANGE P Heat Sink - RED AND BOTH of the Following: • Required Feedwater Flow Can NOT Be Established Within 15 Minutes • RCS Feed and Bleed Can NOT Be Established	RCB1 LOSS Not Applicable POTENTIAL LOSS P RCS Integrity - RED P Heat Sink - RED AND Required Feedwater Flow Can NOT Be Established Within 15 Minutes	CNB1 LOSS Not Applicable POTENTIAL LOSS P Containment - RED
CORE EXIT TC TEMPERATURES	FCB2 LOSS L Core Exit TC Temperatures > 1200 °F POTENTIAL LOSS P Core Exit TC Temperatures > 718 °F	RCB2 LOSS L RCS Subcooling < 32 °F Due to RCS Leak (115°F Adverse CTMT) POTENTIAL LOSS Not Applicable	CNB2 LOSS Not Applicable POTENTIAL LOSS P Entry Into FR-C.1, Response to Inadequate Core Cooling, or FR-C.2, Response to Degraded Core Cooling with RVLMS $\leq$ 19% (Plenum) AND Core Exit TC Temperatures Do NOT Decrease Within 15 Minutes
PRESSURE		RCB3 LOSS Not Applicable POTENTIAL LOSS P Uncontrolled RCS Pressure Decrease and Increasing Containment Radiation Monitors	CNB3 LOSS L Rapid Unexplained CTMT Pressure Decrease Following Initial Increase L No CTMT Pressure Increase When Expectation Exists POTENTIAL LOSS P CTMT Pressure $\geq$ 60 PSIA AND Increasing P CTMT H_2 Concentration $\geq$ 4%
COOLANT LEAKAGE		RCB4 LOSS L Entry Into E-3, "Steam Generator Tube Rupture" AND Reactor Coolant Leak > Capacity of One Charging Pump POTENTIAL LOSS P Entry Into E-0, "Reactor Trip or Safety Injection" OR AOP 3555, "Reactor Coolant Leak" AND Reactor Coolant Leak > Capacity of One Charging Pump P Entry into E-3, "Steam Generator Tube Rupture" AND Reactor Coolant Leak $\leq$ Capacity of One Charging Pump	CNB4 LOSS L Primary to Secondary Leakage > Tech Spec Limits AND Unisolable Secondary Release to the Environment (Does NOT Include Normal Cycling of S/G Atmospheric Dump Valves or Safety Valves) L Failure of BOTH Isolation Valves AND a Pathway to the Environment Exists L Entry Into ECA-1.2, LOCA Outside Containment, Is Required AND Reactor Coolant Leakage is Verified POTENTIAL LOSS P Entry Into ECA-1.2, LOCA Outside Containment
RADIATION	FCB3 LOSS L RE-04A/05A Reading > 500 R/hr L RE-04A/05A Reading > 5 R/hr Without RCS Release L At Least 5% Fuel Clad Damage As Determined By Core Damage Estimate L Dose Rate at One Foot from Unpressurized RCS Sample $\geq$ 30 mR/hr/ml POTENTIAL LOSS Not Applicable	RCB5 LOSS L RE-04/05A Reading > 5 R/hr Without Fuel Clad Barrier Loss POTENTIAL LOSS Not Applicable	CNB5 LOSS L Offsite Dose Plume Rate $\geq 10^{-6}$ Times RE-04A/RE-05A Reading if Coolant Loss is to CTMT POTENTIAL LOSS P RE-04A/05A Reading > 2,000 R/hr P At Least 20% Fuel Clad Damage As Determined By Core Damage Estimate
WATER LEVEL	FCB4 LOSS Not Applicable POTENTIAL LOSS P RVLMS $\leq$ 19% (Plenum)		CNB6 LOSS L No CTMT Sump Level Increase When Expectation Exists POTENTIAL LOSS Not Applicable
JUDGEMENT	FCB4 Any Condition For Which Judgement Indicates Loss or Potential Loss of Fuel Clad Barrier Due to: • Imminent Barrier Degradation Based On Current Safety System Performance • Degraded Fission Barrier Monitoring Capability Making Barrier Status Indeterminate	RCB6 Any Condition For Which Judgement Indicates Loss or Potential Loss of RCS Barrier Due to: • Imminent Barrier Degradation Based On Current Safety System Performance • Degraded Fission Barrier Monitoring Capability Making Barrier Status Indeterminate	CNB7 Any Condition For Which Judgement Indicates Loss or Potential Loss of CTMT Barrier Due to: • Imminent Barrier Degradation Based On Current Safety System Performance • Degraded Fission Barrier Monitoring Capability Making Barrier Status Indeterminate



MORE THAN ONE BARRIER AFFECTED

ONLY ONE BARRIER AFFECTED



3
Millstone

C06

MILLSTONE 3 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

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COOLANT LEAKAGE		RCB4 LOSS L Entry Into E-3, "Steam Generator Tube Rupture" AND Reactor Coolant Leak > Capacity of One Charging Pump POTENTIAL LOSS P Entry Into E-0, "Reactor Trip or Safety Injection" OR AOP 3555, "Reactor Coolant Leak" AND Reactor Coolant Leak > Capacity of One Charging Pump P Entry into E-3, "Steam Generator Tube Rupture" AND Reactor Coolant Leak ≤ Capacity of One Charging Pump	CNB4 LOSS L Primary to Secondary Leakage > Tech Spec Limits AND Unisolable Secondary Release to the Environment (Does NOT Include Normal Cycling of S/G Atmospheric Dump Valves or Safety Valves) L Failure of BOTH Isolation Valves AND a Pathway to the Environment Exists L Entry Into ECA-1.2, LOCA Outside Containment, Is Required AND Reactor Coolant Leakage is Verified POTENTIAL LOSS P Entry Into ECA-1.2, LOCA Outside Containment
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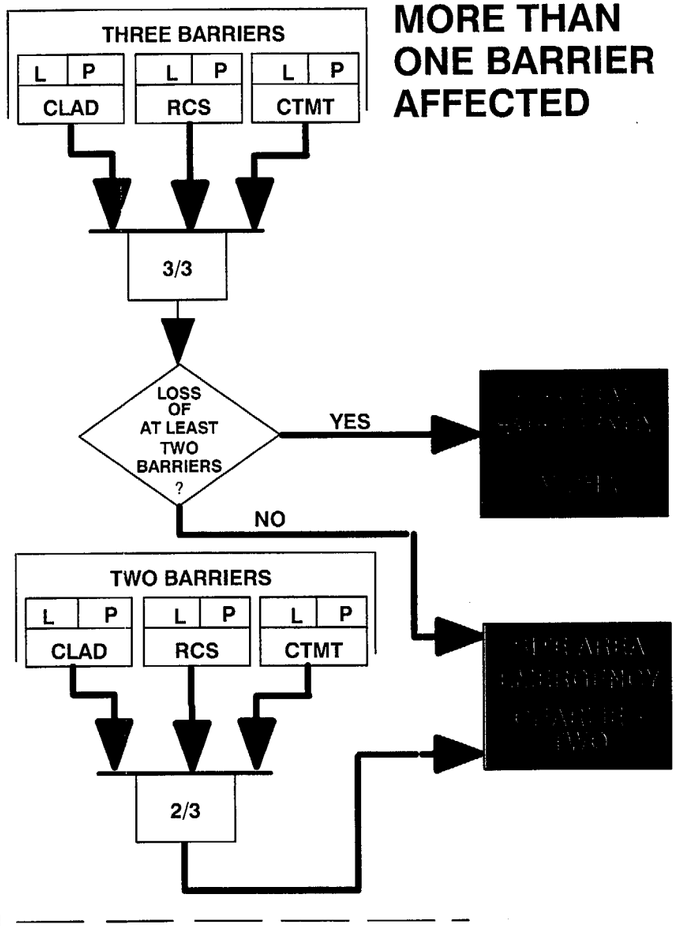
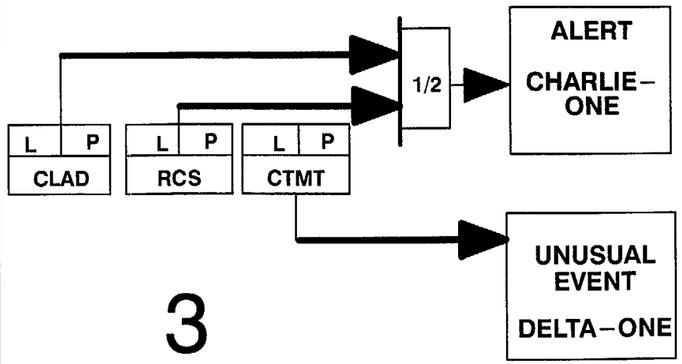


MORE THAN ONE BARRIER AFFECTED

ONLY ONE BARRIER AFFECTED



3
Millstone

Docket Nos. 50-245
50-336
50-423
B18353

Attachment 3

Millstone Nuclear Power Station, Unit Nos. 1, 2, and 3

Emergency Plan Procedures
Emergency Procedures Implementing (EPI) Functional Administrative Procedure (FAP)
MP-26-EPI-FAP10, "Dose Assessment," Major Revision 1

6/27/00
Approval Date

6/30/00
Effective Date

Document Action Request

SPG# 010129-10345

A

Initiated By: P. Luckey Date: 1/3/01 Department: EPSD Ext.: 5474

Document No.: MP-26-EPI-FAP10 Rev. No.: 001 Minor Rev.:

Title: Dose Assessment

B

Reason for Request (attach commitments, CRs, ARs, OEs etc)

Revised with new information on MP2 Wide Range Gas Monitor and MP3 SLCRs. Rev 000-01

This DAR documents the review and approval of MP-26-EPI-FAP10-001 and MP-26-EPI-FAP10-002, MP-26-EPI-FAP10-004.

Continued ☐

C

Instructions: Rev 000-01 Rev. 000-01

Continued ☐

D

TPC Interim Approval (1) Plant Mngt Staff Member Print/Sign/Date (2) SM/SRO/CFH on Unit Print/Sign/Date

E

Procedure Request/Feedback Disposition

Priority: ☒ Perform Now ☐ Perform Later - See Comments ☐ Rejected - See Comments

Activity: ☒ Revision ☐ Minor Revision (See DC-GDL01 for guidance) ☐ Cleanup Rev ☐ Biennial Review ☐ Cancellation ☐ Supersedure

☐ TPC ☐ OTC ☐ Place in VOID ☐ Edit Corr.:⇒ Plant Mngt Staff Member - Approval

Comments:

RI/DPC Print Name and Date Continued ☐

F

Reviews		Print	Sign	Date	SQR Qualified Yes	SQR Qualified No	Dept.	✔ If Comments
	☐				☐	☐		
	☐				☐	☐		
	☐				☐	☐		
Writer's Guide	☒	B. Tarallo	B. Tarallo	1/29/01	☐	☑	unit 1	✓
Validation	☒	~~W. Eakin~~ M. White	M. White	1/29/01	☒	☐	EPSI	✓
RCD	☒	K. Burgess	K Burgess	1/9/01			EPSD	
Independent	☒	J. Doroski	John D. Doroski	1/24/01	☒	☐	Chem	✓

G

Safety Evaluation Required ☐ Yes ☒ No Environmental Review Required ☐ Yes ☒ No

H

1. ☒ **SQR Program Final Review and Approval**

Approval ☒ Disapproval ☐

K Burgess 1/31/01
SQR Qualified Independent Reviewer / Date

Paul A. Flaiola
Department Head/Responsible Individual

2/5/01
Approval Date

2. ☐ **SORC/PORC/RI/DH Final Review and Approval**

Department Head/Responsible Individual / Date

Meeting No.:

Approval Signature

Approval Date

Effective Date: 2/27/01

Functional Administrative Procedure

Millstone Station

Dose Assessment

MP-26-EPI-FAP10

Rev. 001

Approval Date: 2/5/01

Effective Date: 2/27/01

Table of Contents

1. PURPOSE

1.1 Objective

Provide methods for calculating dose equivalents around the Millstone Nuclear Power Station for actual or potential airborne releases to use in assessing radiological event classifications and dose based general public protective action recommendations.

1.2 Applicability

An emergency has been declared.

Events require the projection of off-site doses due to an actual or potential release of radioactive materials near or beyond the site boundary.

1.3 Documents

1.3.1 EPUG 07, "Accident Dose Assessment Model (ADAM) User's Guide"

1.4 Discussion

Dose assessment requires an understanding of the purpose for the analysis (e.g., off-site protective actions), knowledge of the physical situation (i.e., release point), knowledge of the available release rate, and dose rate calculational models, including their limitations and personnel requirements and a validation by comparison to field measurements.

Radiological emergency classification and dose based protective action recommendations are based on the TEDE and the thyroid CDE. Potential exposure pathways within this procedure include:

- External gamma dose (DDE) from noble gases in the plume
- External gamma dose (DDE) from ground shine from deposited radioactive material
- CEDE from inhalation of plume activity

Two computer programs can be used within this procedure, MIDAS (Meteorological Information and Dose Assessment System) and IDA (Initial Dose Assessment).

MIDAS

All MIDAS accident calculations (TEDE, CDE, EDE, etc.) are performed in accordance with EPA 400 and NRC guidance. An unlimited number of fixed field monitoring points can be displayed on MIDAS maps. MIDAS can accommodate up to 10 design basis accident scenarios for each unit. The MIDAS roadmap is centered on the site stack and contains features such as the EPZ or IPZ towns, roads, railroads, bodies of water, and field monitoring points. MIDAS accident reports contain site specific protective action recommendations.

The MIDAS software can handle up to four release points per unit. Each release point is calculated separately and merged together spatially on a grid. The output reports are then plotted and printed from the gridded results. Release points can have multiple sources and are distinguished only by physical features that affect dispersion. The MIDAS software performs range checking on all data and numeric entries. The input ranges are in user friendly site specific files. The MIDAS software also has a user friendly mouse screen input. The user selects from large boxes that are easy to read and understand. The MIDAS

accident software is set up so that the user is required to make a minimum of entries. Each menu has a default duration and monitor flow (if required). In most cases, other than automatic runs, the user has the option to change these values before proceeding with the run. The MIDAS accident software has many methods of source term entry. The data can be automatic, manually entered, default values, or preplanned scenario data. The scenario data are typically used for drills. The MIDAS software can calculate dose and release rates down to 1.0 E-17 and has the capability to back calculate from field data. Once the release rate is established, based on the location of the field monitoring reading, the normal variable trajectory dose calculations are made. The MIDAS software takes into account the affect of daughter in-growth.

The MIDAS software can be run from each PC workstation connected to the central server where the real time meteorological and effluent data will be stored. All software changes under system manager control will be made on the central server and sent to each PC workstation. The accident model can be run using manually entered data as a stand-alone computer calculation if data are not available from the central server. MIDAS accepts and displays data only in English units.

MIDAS utilizes both dry and wet deposition depending on existing weather conditions. Different deposition velocities and rainout rates are used depending on the precipitation rate.

All MIDAS emergency dose calculations for plume and ingestion pathway are made on a polar fine grid with 64 direction sectors by 56 downwind distances typically out to 50 miles. This distance and detail of the grid is under user control in a site specific edit. The grid approach allows plume tracking to follow changes in weather conditions.

The age of the fuel for fuel handling accidents can be taken into account through the design basis accidents. Different mixes can be entered for the various fuel ages required.

All MIDAS reports are available in tabular format. In most cases, reports are also available as color plots. The graphical data are always plotted on site specific maps with contours depicting various projected dose or concentration levels. All MIDAS plots have "point of interest" capability. This allows the user to select any point on the map and immediately display numerical text giving dose or dose rate information. There is no limit to the number of points that can be selected. The wind speed is adjusted up or down to the actual release height using the Power Law. Before all calculations are made, the user has the opportunity to check both the meteorological and radiological data to be used for each release point calculation. The MIDAS software has editors for both meteorological and radiological data.

The following methods can be used to perform dose assessment using MIDAS:

- **What If** - Provides an integrated dose based on an assumed future release. Typically done in anticipation of a barrier failure to assist in classification and to project dose based PARs for comparison with plant based PARs.
- **Real Time** - Based on releases in progress in order to project radiological conditions and validate the adequacy of the current classification level and PARs.
- **Normalized** - Based on an assumed release rate of noble gas and iodine or monitor reading. Normalized dose calculations could be run with near-term or current forecast meteorological data and anticipated release points, etc. The results are used to establish ratios with field data should releases occur. The ratio can then be used to estimate the release rate for noble gas or iodines.

IDA

IDA, developed in-house, is written to be user friendly. IDA estimates plume centerline TEDE, thyroid CDE, CEDE, plume, and ground DDE values. The results provided by the program comply to EPA-400 methodology and represent an "estimate" of off-site dose equivalents that would result due to real time user inputs (i.e., met data and monitor data) as well as specified accident conditions (i.e., filtered release, sprays operating, fuel degradation, accident type, and decontamination factors).

IDA is a database program based on results obtained from the NRC's RASCAL code, version 2.1. RASCAL was run for multiple accident and meteorological conditions and the results were placed in a Microsoft Access data file. The RASCAL generated results provide all aspects of the resulting dose assessment. The site specific inputs that determine the accident, determine the appropriate RASCAL results to use. The noble gas source term is calculated using defined monitor conversion methods, or can be input by the user. Assumptions for various release pathways were incorporated into IDA to determine eventual release height of the resulting plume.

2. INSTRUCTIONS

2.1 Selecting and Initiating Dose Calculations

2.1.1 IF in the EOF, perform dose assessment as follows:

a. Ensure the Meteorological Assistant refers to EPI-FAP04-010, "Meteorological Assistant," Table 1, and determines if fumigation potential exists.

b. IF the release is from the site stack AND fumigation potential exists, run projections using ground release and an "E" stability class until fumigation conditions cease to exist.

NOTE

Attachment 4, "Reference Information," is available, as required, to perform dose calculations.

2.1.2 Select the appropriate dose assessment method from one of the following:

- IF a Unit 1 event, Go To EPI-FAP10-005, "Unit 1 Dose Calculation for Fuel Handling Accident."
- IF performing dose calculations from the Control Room using IDA, Go To Section 2.2.
- IF performing dose calculations from the EOF using IDA, Go To Section 2.4.
- IF performing dose calculations using MIDAS, Go To Section 2.5.
- IF calculating thyroid CDE from a field air sample, Go To Section 2.6.

2.2 Control Room OFIS Access for IDA Dose Calculations

NOTE

If a monitored and unmonitored release are occurring simultaneously, only the field monitoring data is used to calculate dose.

2.2.1 Refer To EPI-FAP10-001, "IDA - Data Input Information" and obtain information for Part 1 and Part 3, Column A of the section from the CR-DSEO or Designee.

2.2.2 IF accessing the OFIS program through the mainframe, perform the following:

a. Open "Control Room Dose Assessment" icon.

b. Open "Mainframe" icon.

c. Type CICSNPRX in the "APPLICATION" field and press "Enter."

d. Type the emergency log-on user ID BE091AZ and press "Tab."

e. Type Password DRAGON and press "Enter."

f. Press the "PAUSE" key on upper right hand corner of keyboard to clear the screen.

g. Type OFIS and press "Enter."

h. Select "Unit 3" from OFIS menu by pressing "F3" key.

i. Type S A11 and press "Enter."

j. Refer To and complete EPI-FAP10-001, "IDA - Data Input Information" Part 2 (Meteorology).

NOTE

The CR-DSEO is the source of data if OFIS is not available or functioning. To ensure OFIS is current, the time and date should be checked.

k. IF meteorological data is *not* available on OFIS, request the CR-DSEO or Designee provide data from an alternate source.

l. Press"F3."

m. Enter one of the following commands into OFIS, as applicable, to obtain monitor and flow parameters and record in EPI-FAP10-001, Part 3:

- IF Unit 3, type S A10 and press "Enter."
- IF Unit 2, perform the following:
  - a.) Type U MP2 and press "Enter."
  - b.) Type S A10 and press "Enter."

n. IF designated OFIS item is *not* available, perform the following:

1) Refer to Attachment 3, "Data Sources" and select an alternate source.

2) Consult CR-DSEO or TIC on method to obtain data.

o. Press "F3" twice.

p. Press "PAUSE" to clear the screen.

q. Type logoff and press "Enter."

r. Close "Mainframe" window.

2.2.3 IF accessing the OFIS program through a personal computer, perform the following:

a. Open the "OFIS" icon.

b. Select "Connect to Millstone LAN" from the "Millstone OFIS Connection Menu."

c. Select "MP3 OFIS" or "MP2 OFIS" from the "Millstone Station PPC Top Menu," as applicable.

d. Select "Meteorological (A11)" from the "MP3 OFIS" or "MP2 OFIS" menu, as applicable.

e. IF connection is *not* successful, connect to the "MP3 PPC" or "MP2 PPC," as follows:

1) Open the "OFIS" icon.

2) Select "Connect to MP3 PPC or MP2 PPC" from the "Millstone OFIS Connection Menu," as applicable.

3) Select "OFIS" from the "MP3 PPC" or "MP2 PPC Top Menu," as applicable.

4) Select "Meteorological (A11)" from the "MP3 OFIS" or "MP2 OFIS" menu," as applicable.

f. IF meteorological data is *not* available on OFIS, request the CR-DSEO or Designee provide data from an alternate source and perform the following:

g. Press the "Page Up" (↑) arrow.

h. IF Unit 3, select "Radioactivity (A10)."

i. IF Unit 2, select the top level display icon and perform the following:

   1) Select "MP2 OFIS."

   2) Select "Radioactivity (A10). "

j. IF designated OFIS item is *not* available, perform the following:

   1) Refer To Attachment 3, "Data Sources," and select an alternate source.

   2) Consult CR-DSEO or TIC on method to obtain data.

k. Close the "R*TIME Data Viewer" window.

l. Close the Millstone "OFIS Connection Menu" window.

2.3 Control Room IDA Dose Calculations

NOTE

A back-up computer is located in the TSC if the Control Room PC is not available.

2.3.1 Select IDA icon from the designated Control Room PC.

2.3.2 Refer To EPI-FAP10-001, "IDA - Data Input Information," Part 1, and enter the following on the "Accident Description" screen:

- Unit affected
- Accident type
- Fuel damage state
- IF applicable, containment sprays "YES" (on) or "NO" (off)

NOTE

1. If reactor is still critical, the reactor shutdown date and time should be left blank.
2. If a fuel drop accident, most recent refueling date and time must be estimated by the CR-DSEO and entered.

- Current (now) and reactor shutdown date and time
- Release duration (2 hour default unless instructed otherwise by the CR-DSEO)

2.3.3 Select "Next."

2.3.4 Refer To EPI-FAP10-001, "IDA - Data Input Information," Part 2, and enter all of the following on the "Meteorology" screen:

- Wind speeds from the 033', 142', and 374' elevations
- Wind directions from the 033', 142', and 374' elevations
- Delta temperatures from the 142' and 374' elevations

NOTE

1. If the unmonitored ground release pathway is selected, no other release pathway can be selected.
2. IDA can accept up to two NON GROUND release pathways.
3. If multiple NON GROUND release pathways are chosen, only the two LOWEST elevation pathways are entered.

2.3.5 Select "Next."

2.3.6 Refer To EPI-FAP10-001, "IDA - Data Input Information," Part 3, and enter the following on the "Release Pathways" screen:

- Active release pathways
- Filters operating, if applicable
- Number of safeties releasing, if applicable
- Flow rates using default values or OFIS

2.3.7 Select "Next."

NOTE

Plant monitor data is zeroed if unmonitored field team data is entered.

2.3.8 Refer To EPI-FAP10-001, "IDA - Data Input Information," Part 3, and enter the following on the "Monitor" screen:

- Applicable radiation monitor readings
- Applicable field team reading (If unmonitored release)

2.3.9 Select "Finish."

2.3.10 Press "Printer" icon and select "All."

2.3.11 Press "OK" to print output.

2.3.12 IF printer is *not* available, Refer To EPI-FAP10-003, "Doses for Protective Action Recommendation," and manually record data.

2.3.13 Attach EPI-FAP10-001, "IDA - Data Input Information," to printed output or to EPI-FAP10-003, "Doses for Protective Action Recommendation."

2.3.14 Refer To EPI-FAP10-001, "IDA - Data Input Information," and perform verification of input data from Output Summary.

2.3.15 Submit results to the CR-DSEO.

2.3.16 IF warranted by changing conditions, repeat Sections 2.3 and notify CR-DSEO of changes.

2.4 EOF IDA Dose Calculations

2.4.1 Select the following from the designated EOF PC:

a. IDA icon

b. "OPTION"

c. "EXTENDED"

2.4.2 Enter the following information on the "Accident Description" screen:

- Affected unit
- Accident type
- Fuel damage state
- IF applicable, containment sprays "YES" (on) or "NO" (off)

NOTE

If the reactor is still critical, leave the reactor shutdown date and time as a blank.

- Current (now) and reactor shutdown date and time
- Release duration (2 hour default unless instructed otherwise by the MRDA)

2.4.3 Select "Next."

2.4.4 Enter the following on the "Meteorology" screen:

- Wind Speeds from the 033', 142', and 374' elevations in metric units
- Wind directions from the 033', 142', and 374' elevations
- Delta temperatures from the 142', and 374' elevations in metric units

2.4.5 Select "Next."

NOTE

1. If the unmonitored ground release pathway is chosen, no other release pathway can be selected.
2. IDA can accept up to two non-ground release paths.
3. If multiple non-ground release pathways are chosen, only the two lowest elevation pathways shall be entered.

2.4.6 Enter the following on the "Release Pathways" screen:

- Release Pathways
- Filters operating (if applicable)

- Number of safeties releasing (if applicable)
- Flow rates using default values or OFIS

2.4.7 Select "Next."

NOTE

1. Plant monitor data is zeroed if unmonitored field team data is entered. If field team data is entered first, the code will not allow monitor data input.
2. Iodine release rates are inversely proportional to DF. If iodine release rates need to be reduced by a factor of 100, the DF must be increased by a factor of 100.

2.4.8 Enter the following on the "Monitor" screen:

- Applicable radiation monitor readings
- Applicable field team reading (if unmonitored release)
- Applicable noble gas release rate (if available)
- Applicable DF based on field team comparisons to calculated values

2.4.9 Press "Enter" and calculate Source Term Ci/sec.

2.4.10 Select "Finish" and calculate TEDE and Thyroid CDE.

2.4.11 Print the report.

2.4.12 Review the results and verify the inputs to the calculations prior to releasing data.

2.4.13 IF performed by the RAE, submit results to the MRDA.

2.5 MIDAS Dose Calculations

2.5.1 Refer To and complete the following Sections as appropriate:

a. IF performing a projection using manual entry of radiation monitor data, EPI-FAP10-002 Section A, "Manual Entry of Radiation Monitor Data."

b. IF performing a "What-If" projection for a LOCA in containment, EPI-FAP10-002 Section B, "What-If Based Upon LOCA in Containment."

c. IF performing a back calculation based on field data, EPI-FAP10-002 Section C, "Back Calculation Based Upon Field Monitoring."

d. IF MIDAS is *not* available, Go To step 2.5.46.

2.5.2 Select the "MIDAS" icon.

2.5.3 Ensure the site selection is set to "Millstone."

2.5.4 Select the appropriate affected unit.

2.5.5 Set "Accident Run Menu Selection" to correspond to the applicable data sheet section.

2.5.6 Select "OK."

2.5.7 Ensure the following:

a. Data source is set to "Manual Entry" on the spreadsheet.

b. Appropriate release points have check marks.

c. "Exit Flow to Environment" is correct for the projected release point.

d. "Initial Display Radius" is adequate (typically set to 13 miles).

2.5.8 Select the "Next" down arrow.

2.5.9 Ensure the Dose Calculation Mode is set to "Projected PAG."

NOTE

Projection times are integrated duration (stay) times starting from the current time. The plume transit time must be considered as well as the evacuation time estimates to ensure the projection time will encompass the entire dose.

2.5.10 Ensure the "Start of Exposure" is appropriate.

2.5.11 Ensure the "Exposure Times" are set to "0.25," "2," "6," and "12."

2.5.12 Select the "Next" down arrow.

2.5.13 Ensure the "Release Option" is set to mode from the applicable section.

2.5.14 Select "Confirm."

2.5.15 IF the calculation mode is "Manual Radiation Monitor Mode," perform the following:

a. Select "New" on the spreadsheet control menu.

b. Select "OK" on the warning dialog box.

NOTE

All required meteorological data must be entered on the blue highlighted time line.

c. Enter met data on the time step for the beginning of the release.

d. Select "OK" at the bottom of the met spreadsheet.

CAUTION

Only one monitor per release point (i.e., stack low or stack high range monitor) shall be entered.

e. Enter the applicable monitor/flow data on the same time step as in "Met Data."

f. Select "OK" at the bottom of the Met and Vent Flow spreadsheet.

g. Select "Event Tree" at the bottom of the page.

h. Using the pull down boxes, select the type of accident and associated conditions for the same time step as in the Met and Vent Flow spreadsheets.

i. Select "OK."

j. Ensure the "Event Tree" is appropriate.

k. Select the "Next" down arrow.

l. Set "Data and Time" of trip by using one of the following methods:

- Select by clicking in the associated time window using the thumb wheels.
- Select "At Current Time" and manually adjust, as necessary.

2.5.16 IF the calculation mode is "What If Based Upon LOCA in Containment," perform the following:

a. Ensure "Data Source" is set to Manual Entry on the spreadsheet.

b. Select "OK."

c. Complete the "Event Tree" by using the pull down boxes to set the type of accident and associated conditions.

d. Enter containment leak rate as a percent as shown in Table 1

Table 1 Design Basis Leak Rate	
Unit	%/Day
MP2	0.5
MP3	0.3

e. Select either day or hour, as appropriate for the selected leak rate.

f. Select "OK."

g. Select "New" on the spreadsheet control menu.

h. Select "OK" on the warning dialog box.

CAUTION

All required meteorological data must be entered on the blue highlighted time line.

i. Select "Met Data" on the time step for the beginning of the release.

j. Select "OK" at the bottom of the met spreadsheet.

CAUTION

Only one monitor per release point shall be entered. The lower of the two containment monitors must be chosen. If it is not already chosen, only one release elevation must be selected.

k. Enter the applicable containment monitor reading.

l. Select the "Next" down arrow.

2.5.17 IF the calculation mode is "Back Calculation from Field Data," perform the following:

a. Select the appropriate release height (ground or elevated).

b. Enter closed window field monitoring reading near the plume centerline in mR/hr.

c. Enter the distance from the release point in miles.

d. Select "OK."

e. Complete the "Event Tree" by using the pull down boxes to select the type of accident and associated conditions.

f. Select "OK."

g. Select "New" on the spreadsheet control menu.

CAUTION

All required meteorological data must be entered on the blue highlighted time line.

h. Enter met data on the time step for the beginning of the release.

i. Select "OK" at the bottom of the met spreadsheet.

j. Select the "Next" down arrow.

CAUTION

"Start of Release" defaults to the time step of input for the first non-zero rad monitoring reading.

2.5.18 IF known, set "Remaining Duration."

2.5.19 IF "Remaining Duration" is *not* known, set 2 hours as the default.

2.5.20 Select "Start Calc."

2.5.21 Upon completion of calculations, ensure the projected time is set to 12 hours.

2.5.22 Under "Special Reports" select "State."

2.5.23 Select "Confirm."

2.5.24 Select "Printer" icon.

2.5.25 Select "OK."

2.5.26 IF acceptable results are obtained, submit the "State Report" to the MRDA.

2.5.27 Select "X" in the upper right corner to close the "State Report" window.

2.5.28 Under "Special Reports" select "Met/Rad Summary."

2.5.29 Select "Confirm."

2.5.30 Ensure time is set to current time step.

2.5.31 Select "Print" icon.

2.5.32 Select "OK."

2.5.33 Select "X" in upper right corner to close "Met/Rad Summary" window.

2.5.34 Ensure the following options are selected at the bottom of the screen:

- TEDE
- Integrated Dose
- Graphic

2.5.35 Select "Confirm."

2.5.36 Select the "Printer" icon.

2.5.37 Ensure the following options are selected at the bottom of the screen:

- CDE Thyroid
- Integrated Dose
- Graphic

2.5.38 Select "Confirm."

2.5.39 Select the "Printer" icon.

2.5.40 Ensure the following options are selected at the bottom of the screen:

- Special Report
- RMP

2.5.41 Select "Confirm."

2.5.42 Select the "Printer" icon.

2.5.43 Document the run by placing copies of the following in the Computer Run notebook:

- State Report
- Special Report/Rad Met Summary
- RMP
- TEDE Integrated 12 hour Graphic
- CDE Thyroid Integrated 12 hour Graphic

2.5.44 Select "End Run" to complete.

2.5.45 Select appropriate option to perform the following:

a. Run the next time step

b. Exit the program

NOTE

EPUG 07, "Accident Dose Assessment Model (ADAM) User's Guide," provides information on ADAM operation.

2.5.46 Refer To Section 2.4, "EOF IDA Dose Calculations," and perform IDA calculations.

2.5.47 Using IDA release rate results, perform ADAM run to determine DDE dose rates and iodine concentrations.

2.5.48 Verify input information on ADAM input summary sheet and initial sheet.

2.5.49 Ensure RDAT member performs an independent review of ADAM inputs.

2.5.50 Compare ADAM results to field team measurements and discuss results with the MRDA.

2.5.51 IF IDA release rates need to be revised, Go To step 2.5.46.

2.6 Calculating Thyroid CDE From a Field Air Sample

2.6.1 Obtain air sample data from the FTDC or Designee.

2.6.2 Refer To EPI-FAP10-004, "Thyroid CDE Calculation Based on Field Air Sample Worksheet," and record the following:

- Location
- Time of sample
- Field air sample results (ccpm)

2.6.3 Determine the appropriate calculation method based on time since reactor shutdown and the I-131 Dose Equivalent Concentration.

2.6.4 IF the air sample was analyzed by gamma analysis, determine I-131 DEQ.

2.6.5 Calculate thyroid CDE for 1 hour of inhalation.

2.6.6 Notify the MRDA of the results.

3. SUMMARY OF CHANGES

3.1 Incorporated previously approved change 1 and change 2 to revision 000.

3.2 Modified step 2.1.1.b by adding a condition to clarify that a release must be from the site stack.

3.3 Added information to step 2.1.2 to clarify that the user must go to Section 2.6 if calculating thyroid CDE from field air samples.

3.4 Added information to step 2.4.4 to clarify that wind speeds and delta temperatures must be entered on the Meteorology screen in metric units.

3.5 Added Table 1 to step 2.5.16 to identify the design basis leak rate for containment.

3.6 Added EBFS, SLCRS, and WRGM to Attachment 1, "Definitions."

3.7 Modified Attachment 3, Data Sources," as follows:

- Deleted met data for Unit 1 and Unit 2.
- Added references to MP2 WRGM and MP2 WRGM flow.

3.8 Added MP3 SLCRS, normal monitor, extended monitor, and flow to monitor data.

3.9 Corrected default flow rates for MP2 and MP3 on Attachment 4, "Reference Information."

3.10 Added note to Attachment 4, "Reference Information," to clarify that the default flow rate for MP2 was set at 12,000 cfm for consistency between Unit 2 and Unit 3.

3.11 Changed references in EPI-FAP10-001, "IDA Data Input Information," from stack gas radiation, radiation HI RNG, and flow rate to MP2 WRGM and MP3 SLCRS.

3.12 Added references to MP2 WRGM and MP3 SLCRS and corrected exposure time in EPI-FAP10-002, "Midas Input Information."

3.13 Performed Writer's Guide and minor editorial corrections throughout procedure.

Attachment 1
Definitions and Abbreviations

(Sheet 1 of 1)

Definitions

Committed Dose Equivalent (CDE) - The dose equivalent to an individual organ or tissue that will be received from an intake of radioactive material during the 50 year period following the intake.

Committed Effective Dose Equivalent (CEDE) - the sum of the products of the CDEs and their weighting factors. The weighting factors account for the relative sensitivities of different organs to radiation.

Deep Dose Equivalent (DDE) - External exposure at a 1 cm tissue depth.

Fumigation Potential - Seashore meteorology conditions can combine infrequently to create an atmospheric downdraft called a fumigation that converts elevated releases to ground level.

Mixed Mode Release - A release at a level of, or above, but lower than twice the height of adjacent solid structures.

Radiation Monitoring Points (RMP) - Set of site-specific monitoring locations.

Total Effective Dose Equivalent (TEDE) - The sum of the DDE and the CEDE.

Abbreviations

CDE - Committed Dose Equivalent

CEDE - Committed Effective Dose Equivalent

DCF - Dose Conversion Factor

DDE - Deep Dose Equivalent

EBFS - Enclosure Building Filtration System (MP2)

IDA - Initial Dose Assessment computer program

IPZ - Ingestion Pathway Zone

MIDAS - Meteorological Information and Dose Assessment System

MRDA - Manager of Radiological Dose Assessment

PAR - Protective Action Recommendation

RASCAL - Radiological Assessment System for Consequence Analysis. The dose assessment model used by the NRC.

RDAT - Radiological Dose Assessment Team

SLCRS - Supplementary Leak and Collection Removal System (MP3)

WRGM - Wide Range Gas Monitor (MP2)

Attachment 2
Responsibilities

(Sheet 1 of 1)

Manager of Radiological Dose Assessment (MRDA) - Responsible for determining when the Emergency Operations Facility will assume offsite dose assessment responsibilities from the Control Room and for performing IDA dose calculations as necessary.

Radiological Assessment Engineer (RAE) - Responsible for performing the appropriate calculations.

On-Shift Chemistry Technician - Responsible for performing initial dose assessment if available until relieved by the MRDA.

Attachment 3
Data Sources

(Sheet 1 of 2)

UNIT 1 - Monitor Data					
		Primary Source		Backup Source	
Data	Units	Obtain From	Label	Obtain From	Label
MP1 Spent Fuel Pool Island (Area Rad Monitor)	mR/hr	Control Room Panel	RM-SFPI-01	Remote Location	RM-SFPI-01

UNIT 2 - Monitor Data					
		Primary Source		Backup Source	
Data	Units	Obtain From	Label	Obtain From	Label
MP2 WRGM (Site Stack)	µCi/cc	Unit 2 OFIS (A10)	R8169 or RU1	Control Room Panel	RM-8169
MP2 WRGM Flow (Site Stack)	SCFM	Unit 2 OFIS (A10)	F8169	Control Room Panel	FC-8169
MP2 Vent Monitor	cpm	Unit 2 OFIS (A10)	R8132B	Control Room panel	PT.2: r 8132B
MP2 KAMAN Mid or High Range Vent Monitor	µCi/cc	Unit 2 OFIS (A10)	RIC8168	Control Room panel	RIC 8168
MP2 Vent Flow	CFM	Control Room panel	PT.3: F 8412	None Available	
MP2 Steam Line Monitors					
4299A	R/hr	Unit 2 OFIS (A10)	R4299A	Control Room Panel	R 4299A
4299B	R/hr	Unit 2 OFIS (A10)	R4299B	Control Room Panel	R 4299B
4299C	R/hr	Unit 2 OFIS (A10)	R4299C	Control Room Panel	R 4299C

Attachment 3
Data Sources

(Sheet 2 of 2)

UNIT 3 - Monitor Data					
		Primary Source		Backup Source	
Data	Units	Obtain From	Label	Obtain From	Label
MP3 SLCRS Normal Monitor (Site Stack)	µCi/cc	Unit 3 OFIS (A10)	CVHVR19B	Control Room Remote Indicating Panel	HVR19B
MP3 SLCRS Extended Monitor (Site Stack)	µCi/cc	Unit 3 OFIS (A10)	CVHVR19A1	Control Room Remote Indicating Panel	HVR19A
MP3 SLCRS Flow(Site Stack)	SCFM	Unit 3 OFIS (A10)	CVFE19	Rad Monitor Console	
MP3 KAMAN Normal Range Vent Monitor	µCi/cc	Unit 3 OFIS (A10)	CVHVR10B	Control Room panel	RIC-5A3HVR*RIY10B
MP3 KAMAN Mid or High Range Stack Monitor	µCi/cc	Unit 3 OFIS (A10)	CVHVR10A1	Control Room panel	RIC-4A3HVR*RIY10A
MP3 Vent Flow	CFM	Unit 3 OFIS (A10)	CVFE10	KAMAN Computer	RE10 process flow
MP3 Steam Line Monitors					
RE 75	µCi/cc	Unit 3 OFIS (A10)	CVMSS75	KAMAN Computer	MSS75
RE 76	µCi/cc	Unit 3 OFIS (A10)	CVMSS76	KAMAN Computer	MSS76
RE 77	µCi/cc	Unit 3 OFIS (A10)	CVMSS77	KAMAN Computer	MSS77
RE 78	µCi/cc	Unit 3 OFIS (A10)	CVMSS78	KAMAN Computer	MSS78

Met Data					
		Primary Source		Backup Source	
Data	Units	Obtain From	Label	Obtain From	Label
WS033	mph	Unit 3 OFIS (A11)	CVWS033MPH	Unit 3 PPC	CVWS033MPH
WS142	mph	Unit 3 OFIS (A11)	CVWS142MPH	Unit 3 PPC	CVWS142MPH
WS374	mph	Unit 3 OFIS (A11)	CVWS374MPH	Unit 3 PPC	CVWS374MPH
DT142	°F	Unit 3 OFIS (A11)	CVDT142F	Unit 3 PPC	CVDT142F
DT374	°F	Unit 3 OFIS (A11)	CVDT374F	Unit 3 PPC	CVDT374
WD033	deg from	Unit 3 OFIS (A11)	CVWD033	Unit 3 PPC	CVWD033
WD142	deg from	Unit 3 OFIS (A11)	CVWD142	Unit 3 PPC	CVWD142
WD374	deg from	Unit 3 OFIS (A11)	CVWD374	Unit 3 PPC	CVWD374

Attachment 4
Reference Information

(Sheet 1 of 3)

Mnemonic Definitions:

AT = Ambient Temperature

DT = Differential in Temperature (to determine stability class)

WS = Wind Speed

WD = Wind Direction (listed as the direction the wind is from)

Conversion Formulas:

°C = 5/9 (°F - 32)

Δ °C = Δ °F x 0.556

m/sec = mph x 0.447

DT 142

Differential Temperature (°F)	Stability Class
DT ≤ -1.25	A
-1.25 < DT ≤ -1.10	B
-1.10 < DT ≤ -0.90	C
-0.90 < DT ≤ -0.36	D
-0.36 < DT ≤ +0.72	E
+0.72 < DT	F

DT 374

Differential Temperature (°F)	Stability Class
DT ≤ -3.6	A
-3.6 < DT ≤ -3.3	B
-3.3 < DT ≤ -2.9	C
-2.9 < DT ≤ -1.1	D
-1.1 < DT ≤ +2.7	E
+2.7 < DT	F

Default Flow Rates

MP2	MP3
Site Stack.....12,000 cfm*	Site Stack ..... 12,000 cfm
Vent .....64,000 cfm	SLCRS ..... 12,000 cfm
Safety.....6,000 cfm per	Vent..... 210,000 cfm
Dump .....7,375 cfm	Safety ..... 6,000 cfm per
Terry .....550 cfm	Dump..... 3,500 cfm
EBFS.....11,000 cfm	Terry..... 1,200 cfm

*Set at 12,000 cfm for consistency between Unit 2 and Unit 3.

Attachment 4
Reference Information

(Sheet 2 of 3)

Wind Directions and Distances to Nearest Land and Site Boundary

			MP1, MP2, Ground & MP2 Mixed		MP3 Ground & Mixed		MP1 Stack	
Wind Direction (From)	**Downwind Direction**	**Downwind Sector**	**Nearest Land**	**Nearest Site Boundary**	**Nearest Land**	**Nearest Site Boundary**	**Nearest Land**	**Nearest Site Boundary**
169°-191°	349°-011°	A (N)	1,138 m	1,138 m	924 m	924 m	1,695 m	1,695 m
192°-213°	012°-033°	B (NNE)	997 m	997 m	1,550 m	1,550 m	813 m	813 m
214°-236°	034°-056°	C (NE)	620 m	620 m	841 m	841 m	496 m	496 m
237°-258°	057°-078°	D (ENE)	1,070 m	620 m	602 m	602 m	1,101 m	496 m
259°-281°	079°-101°	E (E)	1,600 m	620 m	1,300 m	602 m	1,410 m	496 m
282°-303°	102°-123°	F (ESE)	1,900 m	620 m	1,690 m	602 m	1,640 m	496 m
304°-326°	124°-146°	G (SE)	31,700 m	620 m	33,000 m	602 m	31,700 m	496 m
327°-348°	147°-168°	H (SSE)	12,390 m	620 m	22,200 m	631 m	12,390 m	496 m
349°-011°	169°-191°	J (S)	11,800 m	620 m	16,100 m	602 m	11,800 m	496 m
012°-033°	192°-213°	K (SSW)	13,030 m	620 m	18,300 m	602 m	13,030 m	496 m
034°-056°	214°-236°	L (SW)	3,430 m	620 m	3,380 m	602 m	3,660 m	496 m
057°-078°	237°-258°	M(WSW)	3,100 m	620 m	3,050 m	602 m	3,270 m	496 m
079°-101°	259°-281°	N (W)	2,830 m	620 m	2,700 m	602 m	3,050 m	496 m
102°-123°	282°-303°	P (WNW)	2,550 m	620 m	2,310 m	602 m	2,660 m	649 m
124°-146°	304°-326°	Q (NW)	1,930 m	620 m	684 m	602 m	997 m	710 m
147°-168°	327°-348°	R (NNW)	915 m	915 m	694 m	694 m	1,029 m	1,029 m

NOTES

1. Meter - m
2. Nearest site boundary is given as 620 m from the MP2 stack for water sectors (D through Q).
3. Nearest site boundary is given as 602 m from the MP3 ventilation vent for water sectors (D-G and J-Q).
4. Nearest site boundary is given as 496 m from the site stack for water sectors (D through N).

Attachment 4
Reference Information

(Sheet 3 of 3)

Stability Dependent X•μ/Q Values per Release Height

Site Stack 374' Release

Distance Miles	Stability Class					
	A	B	C	D	E	F
0.3	1.7E-5*	6.8E-6	3.4E-7	1.6E-12	1.0E-20	< 1.0E-20
0.5	6.6E-6	1.3E-5*	5.4E-6	1.9E-8	1.5E-12	1.0E-20
1	1.4E-6	6.6E-6	9.9E-6*	2.1E-6	8.9E-8	1.1E-11
2	7.4E-7	1.9E-6	4.8E-6	5.3E-6*	1.8E-6	3.7E-8
3	5.2E-7	8.9E-7	2.6E-6	5.3E-6	3.1E-6	2.5E-7
4	4.0E-7	5.0E-7	1.6E-6	4.2E-6	3.5E-6*	5.6E-7
5	3.3E-7	4.3E-7	1.1E-6	3.4E-6	3.5E-6	8.4E-6
10	1.7E-7	2.3E-7	3.1E-7	1.6E-6	2.5E-6	1.4E-5*

MP Rooftop Release

Distance Miles	Stability Class					
	A	B	C	D	E	F
0.3	2.3E-5*	5.0E-5*	5.2E-5*	1.3E-5	9.1E-7	1.4E-10
0.5	6.9E-6	2.7E-5	4.4E-5	3.6E-5*	1.2E-5	2.5E-7
1	1.4E-6	7.7E-6	1.8E-5	3.4E-5	3.5E-5*	1.4E-5
2	7.4E-7	2.0E-6	5.7E-6	1.7E-5	2.6E-5	2.6E-5*
3	5.2E-7	9.0E-7	2.8E-6	1.0E-5	1.8E-5	2.4E-5
4	4.0E-7	5.1E-7	1.7E-6	6.9E-6	1.3E-5	2.0E-5
5	3.3E-7	4.3E-7	1.1E-6	5.1E-6	1.0E-5	1.7E-5
10	1.7E-7	2.3E-7	3.2E-7	1.9E-6	4.5E-6	9.0E-6

MP Ground Release

Distance Miles	Stability Class					
	A	B	C	D	E	F
0.3	2.5E-5*	7.3E-5*	1.4E-4*	2.6E-4*	3.7E-4*	4.9E-4*
0.5	7.0E-6	3.1E-5	6.6E-5	1.5E-4	2.5E-4	3.8E-4
1	1.4E-6	8.0E-6	2.0E-5	5.8E-5	1.1E-4	2.0E-4
2	7.5E-7	2.0E-6	5.9E-6	2.1E-5	4.3E-5	9.1E-5
3	5.2E-7	9.0E-7	2.8E-6	1.2E-5	2.5E-5	5.6E-5
4	4.0E-7	5.1E-7	1.7E-6	7.6E-6	1.7E-5	3.9E-5
5	3.3E-7	4.3E-7	1.1E-7	5.5E-6	1.3E-5	3.0E-5
10	1.7E-7	2.3E-7	3.2E-8	2.0E-6	5.1E-6	1.3E-5

*Denotes location of maximum concentration.

Docket Nos. 50-245
50-336
50-423
B18353

Attachment 4

Millstone Nuclear Power Station, Unit Nos. 1, 2, and 3

Emergency Plan Procedures
Emergency Procedures Implementing (EPI) Functional Administrative Procedure (FAP)
MP-26-EPI-FAP10-001 "IDA - Data Input Information,"
Major Revision 0, Minor Revision 1

6/27/00
Approval Date

6/30/00
Effective Date

Document Action Request

SPG# 010129-10345

A

Initiated By: P. Luckey Date: 1/3/01 Department: EPSD Ext.: 5474

Document No.: MP-26-EPI-FAP10 Rev. No.: 001 Minor Rev.:

Title: Dose Assessment

B

Reason for Request (attach commitments, CRs, ARs, OEs etc)

Revised with new information on MP2 Wide Range Gas Monitor and MP3 SLCRs. Rev 000-01
This DAR documents the review and approval of MP-26-EPI-FAP10-001 and MP-26-EPI-FAP10-002, MP-26-EPI-FAP10-004. Continued ☐

C

Instructions: Rev 000-01 Rev. 000-01

Continued ☐

D

TPC Interim Approval (1) Plant Mngt Staff Member Print/Sign/Date (2) SM/SRO/CFH on Unit Print/Sign/Date

E

Procedure Request/Feedback Disposition

Priority: ☒ Perform Now ☐ Perform Later - See Comments ☐ Rejected - See Comments

Activity: ☒ *Revision* ☐ *Minor Revision* ☐ Cleanup Rev ☐ Biennial Review ☐ Cancellation ☐ Supersedure
See DC-GDL01 for guidance

☐ TPC ☐ OTC ☐ Place in VOID ☐ Edit Corr.⇒ Plant Mngt Staff Member - Approval

Comments:

RI/DPC Print Name and Date Continued ☐

F

Reviews		Print	Sign	Date	SQR Qualified Yes	SQR Qualified No	SQR Qualified Dept.	✓ If Comments
	☐				☐	☐		
	☐				☐	☐		
	☐				☐	☐		
Writer's Guide	☒	B. Tarallo	B. Tarallo	1/29/01	☐	☒	Unit 1	✓
Validation	☒	~~W. Eakin~~ K.B 1/29/01 M. White		1/29/01	☒	☐	EPSI	✓
RCD	☒	K. Burgess	K Burgess	1/9/01			EPSD	
Independent	☒	J. Doroski	John D. Doroski	1/24/01	☒	☐	Chem	✓

G

Safety Evaluation Required ☐ Yes ☒ No Environmental Review Required ☐ Yes ☒ No

H

1. ☒ **SQR Program Final Review and Approval**

Approval ☒ Disapproval ☐

K Burgess 1/31/01
SQR Qualified Independent Reviewer / Date

Paul A. Blaisdell
Department Head/Responsible Individual

2/5/01
Approval Date

2. ☐ **SORC/PORC/RI/DH Final Review and Approval**

Department Head/Responsible Individual / Date

Meeting No.:

Approval Signature

Approval Date

I

Effective Date: 2/27/01

2/5/01
Approval Date

2/27/01
Effective Date

IDA - Data Input Information

Part 1. Accident Parameters (circle as appropriate)

A. Unit Affected: Unit 2 Unit 3

B. Accident Type: LOCA SGTR Fuel Drop

C. Damage State: Coolant Clad

D. Containment Sprays Initiated: YES NO

E. Rx Shutdown: Date: _____ Time: _____
MM/DD/YY HH:MM

Note: If fuel drop accident, enter most recent refueling date and time.

F. Estimated Duration: _____ hours (default = 2 hours)

G. Is there an unmonitored release? YES / NO If yes, _____ mR/hr
Max. Field team reading "closed window"

H. Refer To Part 3, "Release Pathways, Flow and Monitors" Column A, and circle all appropriate pathways, filter status, and number of safeties, as applicable.

Part 2. Meteorology

Description	Data Values	Units OFIS Points
Wind Speed (33 feet)		MPH CVWS033MPH
Wind Speed (142 feet)		MPH CVWS142MPH
Wind Speed (374 feet)		MPH CVWS374MPH
Wind Direction (33 feet)		° from CVWD033
Wind Direction (142 feet)		° from CVWD142
Wind Direction (374 feet)		° from CVWD374
Delta Temp. (142 feet)		°F CVDT142F
Delta Temp. (374 feet)		°F CVDT374F

IDA - Data Input Information

Part 3. Release Pathways, Flow, and Monitors (circle all that are appropriate)

A	B	C	D
Release Pathway/Monitors	**OFIS Designation**	**Reading**	**Units**
Unmonitored Ground Release Path (33')	Field Team Reading		CW mR/hr
Site Stack (374')			
(Filtered, Unfiltered)	Unmonitored		mR/hr
MP2 WRGM	R8169 or RU1		µCi/cc
MP2 WRGM Flow	F8169		SCFM
MP3 SLCRS Normal	CVHVR19B		µCi/cc
MP3 SLCRS Extended	CVHVR19A1		µCi/cc
MP3 SLCRS Flow	CVFE19		SCFM
MP2 Vent (142')			
(Unfiltered)	Unmonitored		mR/hr
Unit 2 Vent Gas	R8132B		CPM
Unit 2 Vent Rad Monitor	RIC8168		µCi/cc
Vent Flow Rate	None (panel -PT 3:F 8412)		CFM
MP2 Safeties (142')			
(How Many? _____)	Unmonitored		mR/hr
Main Steam Line 4299A	R4299A		R/hr
Main Steam Line 4200C	R4299C		R/hr
MP2 Relief Valves (Dumps) (142')	Unmonitored		mR/hr
Main Steam Line 4299B	R4299B		R/hr
Main Steam Line 4299C	R4299C		R/hr
MP2 Aux Feed (Terry Turbine) (142')	Unmonitored		mR/hr
Main Steam Line 4299A	R4299A		R/hr
Main Steam Line 4299B	R4299B		R/hr
Main Steam Line 4299C	R4299C		R/hr
MP3 Vent (142')			
(Filtered, Unfiltered)	Unmonitored		mR/hr
Vent. Vent Normal Range	CVHVR10B		µCi/cc
Vent. Vent Ext Range	CVHVR10A1		µCi/cc
Ventilation Vent Air Flow	CVFE10		CFM
MP3 Safeties (142') (How Many? _____) Main Steam Lines RE75-78	Unmonitored (Highest of) CVMSS75, 76, 77, or 78		mR/hr µCi/cc
MP3 Relief Valves (Dumps) (142') Main Steam Lines RE75-78	Unmonitored (Highest of) CVMSS75, 76, 77, or 78		mR/hr µCi/cc
MP3 Aux Feed (Terry Turbine) (142') Main Steam Line RE79	Unmonitored CVMSS79		mR/hr µCi/cc

Prepared by: _____ _____ _____
Signature Print Date/Time

Reviewed by: _____ _____ _____
Signature Print Date/Time

Docket Nos. 50-245
50-336
50-423
B18353

Attachment 5

Millstone Nuclear Power Station, Unit Nos. 1, 2, and 3

Emergency Plan Procedures
Emergency Procedures Implementing (EPI) Functional Administrative Procedure (FAP)
MP-26-EPI-FAP10-002, "MIDAS - Data Input Information,"
Major Revision 0, Minor Revision 1

6/27/00
Approval Date

6/30/00
Effective Date

Document Action Request

SPG# 010129-10345

A

Initiated By: P. Luckey Date: 1/3/01 Department: EPSD Ext.: 5474

Document No.: MP-26-EPI-FAP10 Rev. No.: 001 Minor Rev.:

Title: Dose Assessment

B

Reason for Request (attach commitments, CRs, ARs, OEs etc)

Revised with new information on MP2 Wide Range Gas Monitor and MP3 SLCRs. Rev 000-01
This DAR documents the review and approval of MP-26-EPI-FAP10-001 and MP-26-EPI-FAP10-002, MP-26-EPI-FAP10-004. Continued ☐

C

Instructions: Rev 000-01 Rev. 000-01

Continued ☐

D

TPC Interim Approval (1) Plant Mngt Staff Member Print/Sign/Date (2) SM/SRO/CFH on Unit Print/Sign/Date

E

Procedure Request/Feedback Disposition

Priority: ☒ Perform Now ☐ Perform Later - See Comments ☐ Rejected - See Comments

Activity: ☒ *Revision* ☐ *Minor Revision* ☐ Cleanup Rev ☐ Biennial Review ☐ Cancellation ☐ Supersedure
See DC-GDL01 for guidance

☐ TPC ☐ OTC ☐ Place in VOID ☐ Edit Corr.:⇒ Plant Mngt Staff Member - Approval

Comments:

RI/DPC Print Name and Date Continued ☐

F

Reviews		Print	Sign	Date	SQR Qualified Yes	SQR Qualified No	SQR Qualified Dept.	✓ if Comments
	☐				☐	☐		
	☐				☐	☐		
	☐				☐	☐		
Writer's Guide	☒	B. Tarallo	B. Tarallo	1/29/01	☐	☑	Unit 1	✓
Validation	☒	~~W. Eakin~~ KB 1/29/01 M. White	M. White	1/29/01	☒	☐	EPSI	✓
RCD	☒	K. Burgess	K Burgess	1/9/01			EPSD	
Independent	☒	J. Doroski	John D. Doroski	1/24/01	☒	☐	Chem	✓

G

Safety Evaluation Required ☐ Yes ☒ No Environmental Review Required ☐ Yes ☒ No

H

1. ☒ **SQR Program Final Review and Approval**
Approval ☒ Disapproval ☐

K Burgess 1/31/01
SQR Qualified Independent Reviewer / Date

Paul A. Klevoda
Department Head/Responsible Individual

2/5/01
Approval Date

2. ☐ **SORC/PORC/RI/DH Final Review and Approval**

Department Head/Responsible Individual / Date

Meeting No.:

Approval Signature

Approval Date

I

Effective Date: 2/27/01

2/5/01
Approval Date

2/27/01
Effective Date

MIDAS - Data Input Information

Section A: Manual Entry of Radiation Monitor Data

Screen 1

1.	Unit Affected:	☐ Unit 1	☐ Unit 2	☐ Unit 3
2.	Run Menu:	☒ Manual Entry	☐ LOCA in Ctmt	☐ Back Calc

Screen 2 - Panel A

1.	Data Source:	☒ Manual Entry		
2.	Release Points:	☐ Site Stack	_____	CFM*
		☐ Vent	_____	CFM*
		☐ Steam	_____	CFM*
		☐ Terry/Ground	_____	CFM*
3.	Initial Display Radius:		_____	Miles*

Screen 2 - Panel B

1.	Dose Calculation Mode:	☒ Projected Dose				
2.	Start of Exposure:	Use Default	Time*			
3.	Exposure Times:	0.25*	2*	6*	12*	(1)
		_____	_____	_____	_____	

Screen 2 - Panel C

End Time of Met Data Buffer: _____

1.	Release Option:	☒ Manual Entry	☐ LOCA in Ctmt	☐ Back Calc	
2.	Met Data:	33'	142'	374'	
	Wind Speed (m/sec):	_____	_____	_____	
	Direction (°from):	_____	_____	_____	
	Delta Temp (°F):	N/A	_____	_____	
	Rainfall (inches)	_____			(1)
	Temp 33' (°F)	_____			

* A default is available in code or on EPI-FAP10, Attachment 4, "Reference Information."

MIDAS - Data Input Information

Screen 2 - Panel D

Rad Monitor Data

1. Unit 2:

Site Stack	WRGM R8169		WRGM Flow F8169		
Vent	LO Range R8132B	HI Range RIC8168	Vent Flow F8412		
Steam (Safety/Dump)	MSL4299A	MSL4299B	MSL4299C	Steam Flow*	
Steam (Terry)	MSL4299A	MSL4299B	MSL4299C	Steam Flow*	

2. Unit 3:

Site Stack	SLCRS HVR19B	SLCRS HVR19A	SLCRS Flow CVFE19		
Vent	LO Range HVR10B	HI Range HVR10A	Vent Flow CVFE10		
Steam (Safety/Dump)	RE75	RE76	RE77	RE78	Steam Flow
Steam (Terry)	RE79	Steam Flow			

3. Event Tree:

☐ LOCA ☐ SGTR ☐ Fuel Handling
☐ Coolant ☐ Gap ☐ Melt ☐ Fire
☐ Spray ☐ No Spray
☐ Filter ☐ No Filter
☐ Safety/Dump ☐ SJAE/Leak

1. Time of Trip: Date: _____ Time: _____
2. Time of Release: Date: Use Default Time: : Use Default
3. Remaining Duration: Hours*: _____

Prepared by: _____ (Signature) _____ (Print) _____ (Date/Time)

Reviewed by: _____ (Signature) _____ (Print) _____ (Date/Time)

* A default is available in code or on EPI-FAP10, Attachment 4, "Reference Information."

MIDAS - Data Input Information

Section B: MIDAS Input Sheet - What If Based Upon LOCA in Containment

Screen 1

1.	Unit Affected:	☐ Unit 1	☐ Unit 2	☐ Unit 3
2.	Run Menu:	☐ Manual Entry	☒ LOCA in Ctmt	☐ Back Calc

Screen 2 - Panel A

1.	Data Source:	☒ Manual Entry		
2.	Release Points:	☐ Site Stack	_____	CFM*
		☐ Vent	_____	CFM*
		☐ Terry/Ground	_____	CFM*
3.	Initial Display Radius:		_____	Miles*

Screen 2 - Panel B

1.	Dose Calculation Mode:	☒ Projected Dose			
2.	Start of Exposure:	Use Default	Time*		
3.	Exposure Times:	0.25*	2*	6*	12*
		_____	_____	_____	_____

(1)

Screen 2 - Panel C

End Time of Met Data Buffer: _____

1.	Release Option:	☐ Manual Entry	☒ LOCA in Ctmt	☐ Back Calc	
2.	Data Source:	☒ Manual Entry	☐ Drill Space	☐ Auto Data	
3.	Event Tree:	☒ LOCA	☐ SGTR	☐ Fuel Handling	
		☐ Coolant	☐ Gap	☐ Melt	☐ Fire
		☐ Spray	☐ No Spray		
		☐ Filter	☐ No Filter		
4.	Containment:	Leakage %: _____	☐ Per Day	☐ Per Hour	

* A default is available in code or on EPI-FAP10, Attachment 4, "Reference Information."

MIDAS - Data Input Information

End Time of Met Data Buffer:_____

5. Met Data:	33'	142'	374'
Wind Speed (m/sec):	_____	_____	_____
Direction (°from):	_____	_____	_____
Delta Temp (°F):	N/A	_____	_____
Rainfall (inches)	_____		
Temp 33' (°F):	_____		

6. Rad Data: CTMNT A _____ CTMNT B _____ ☐ Unit 2 ☐ Unit 3

Screen 2 - Panel D

1. Time of Trip: Date: _____ Time: _____
2. Time of Release: Date: Use Default Time: : Use Default
3. Remaining Duration: Hours*: _____

Prepared by: _____ (Signature) _____ (Print) _____ (Date/Time)

Reviewed by: _____ (Signature) _____ (Print) _____ (Date/Time)

* A default is available in code or on EPI-FAP10, Attachment 4, "Reference Information."

MIDAS - Data Input Information

Section C: MIDAS Input Sheet - Back Calculation Based Upon Field Monitoring

Screen 1

1. Unit Affected: ☐ Unit 1 ☐ Unit 2 ☐ Unit 3

2. Run Menu: ☐ Manual Entry ☐ LOCA in Ctmt ☒ Back Calc

Screen 2 - Panel A

1. Data Source: ☒ Manual Entry

2. Release Points:
   - ☐ Site Stack _____ CFM*
   - ☐ Vent _____ CFM*
   - ☐ Steam _____ CFM*
   - ☐ Terry/Ground _____ CFM*

3. Initial Display Radius: _____ Miles*

Screen 2 - Panel B

1. Dose Calculation Mode: ☒ Projected Dose

2. Start of Exposure: Use Default Time*

3. Exposure Times: 0.25* 2* 6* 12*

   _____ _____ _____ _____

(1)

Screen 2 - Panel C

End Time of Met Data Buffer: _____

1. Release Option: ☐ Manual Entry ☐ LOCA in Ctmt ☒ Back Calc

2. Back Calc Input: ☒ Ground in Wake ☐ Elevated

3. Closed Window Data: mR/hr Dist (miles)

   _____ _____

4. Event Tree:
   - ☒ LOCA ☐ SGTR ☐ Fuel Handling
   - ☐ Coolant ☐ Gap ☐ Melt ☐ Fire
   - ☐ Spray ☐ No Spray
   - ☐ Filter ☐ No Filter

* A default is available in code or on EPI-FAP10, Attachment 4, "Reference Information."

MIDAS - Data Input Information

5. Met Data:	33'	142'	374'
Wind Speed (m/sec):			
Direction (°from):			
Delta Temp (°F):	N/A		
Rainfall (inches)			
Temp 33' (°F):			

Screen 2 - Panel D

1. Time of Trip: Date: _____ Time: _____
2. Time of Release: Date: Use Default Time: : Use Default
3. Remaining Duration: Hours*: _____

Prepared by: _____ (Signature) _____ (Print) _____ (Date/Time)

Reviewed by: _____ (Signature) _____ (Print) _____ (Date/Time)

* A default is available in code or on EPI-FAP10, Attachment 4, "Reference Information."

Docket Nos. 50-245
50-336
50-423
B18353

Attachment 6

Millstone Nuclear Power Station, Unit Nos. 1, 2, and 3

Emergency Plan Procedures
Emergency Procedures Implementing (EPI) Functional Administrative Procedure (FAP)
MP-26-EPI-FAP10-004, "Thyroid CDE Calculation Based on Field Air Sample Worksheet," Major Revision 0, Minor Revision 1

6/27/00
Approval Date

6/30/00
Effective Date

Document Action Request

SPG# 010129-10345

A

Initiated By: P. Luckey Date: 1/3/01 Department: EPSD Ext.: 5474

Document No.: MP-26-EPI-FAP10 Rev. No.: 001 Minor Rev.:

Title: Dose Assessment

B

Reason for Request (attach commitments, CRs, ARs, OEs etc)

Revised with new information on MP2 Wide Range Gas Monitor and MP3 SLCRs. Rev 000-01

This DAR documents the review and approval of MP-26-EPI-FAP10-001 and MP-26-EPI-FAP10-002, MP-26-EPI-FAP10-004.

Continued ☐

C

Instructions: Rev 000-01 Rev. 000-01

Continued ☐

D

TPC Interim Approval (1) Plant Mngt Staff Member Print/Sign/Date (2) SM/SRO/CFH on Unit Print/Sign/Date

E

Procedure Request/Feedback Disposition

Priority: ☒ Perform Now ☐ Perform Later - See Comments ☐ Rejected - See Comments

Activity: ☒ *Revision* ☐ *Minor Revision* ☐ Cleanup Rev ☐ Biennial Review ☐ Cancellation ☐ Supersedure

See DC-GDL01 for guidance

☐ TPC ☐ OTC ☐ Place in VOID ☐ Edit Corr.:⇒

Plant Mngt Staff Member - Approval

Comments:

RI/DPC Print Name and Date Continued ☐

F

Reviews		Print	Sign	Date	SQR Qualified Yes	SQR Qualified No	SQR Qualified Dept.	✓ If Comments
	☐				☐	☐		
	☐				☐	☐		
	☐				☐	☐		
Writer's Guide	☒	B. Tarallo	B. Tarallo	1/29/01	☐	☑	Unit 1	✓
Validation	☒	~~W. Eakin~~ K8 1/29/01 M. White	M. White	1/29/01	☒	☐	EPSI	✓
RCD	☒	K. Burgess	K Burgess	1/9/01			EPSD	
Independent	☒	J. Doroski	John D. Doroski	1/24/01	☒	☐	Chem	✓

G

Safety Evaluation Required ☐ Yes ☒ No **Environmental Review Required** ☐ Yes ☒ No

H

1. ☒ **SQR Program Final Review and Approval**

Approval ☒ Disapproval ☐

K Burgess 1/31/01
SQR Qualified Independent Reviewer / Date

Paul A. Flaherty
Department Head/Responsible Individual

2/5/01
Approval Date

2. ☐ **SORC/PORC/RI/DH Final Review and Approval**

Department Head/Responsible Individual / Date

Meeting No.:

Approval Signature

Approval Date

Effective Date: 2/27/01

2/5/01
Approval Date

2/27/01
Effective Date

Thyroid CDE Calculation Based on Field Air Sample Worksheet

Field Data

Field Location: RMP _____ OR

Downwind Distance _____ Direction _____

Time of Sample: _____ Corrected Counts (ccpm): _____

Calculation

1) I-131 DEQ using Field Counts:

For 1 hour ≤ H* ≤ 168 hours

Conversion (1.15×10^{-11})		Decay Correction* ($H^{0.66}$)		Corrected Counts (ccpm)		I-131 DEQ (µCi/cc)
_____	x	_____	x	_____	=	_____

For H* > 168 hours

Conversion (3.3×10^{-10})		Corrected Counts (ccpm)		I-131 DEQ (µCi/cc)
_____	x	_____	=	_____

2.) I-131 DEQ from Ge Gamma Spectrum analysis:

Activity ($\mu Ci/cc_{I-131}$)		($\mu Ci/cc_{I-133} \times 0.18$)		($\mu Ci/cc_{I-135} \times 0.03$)	I-131 DEQ (µCi/cc)
_____	+	_____	+	_____	= _____

3) Thyroid CDE for 1 hour of inhalation:

I-131 DEQ (µCi/cc)		Conversion (mRem cc/µCi)		Thy CDE for 1 hour of inhalation (mRem/hour of inhalation)
_____	x	1.79×10^{9}	=	_____

1

Prepared by: _____ (Signature) _____ (Print) _____ (Date/Time)

Reviewed by: _____ (Signature) _____ (Print) _____ (Date/Time)

*Note: H is time between reactor shutdown and time of measurement in hours.

Docket Nos. 50-245
50-336
50-423
B18353

Attachment 7

Millstone Nuclear Power Station, Unit Nos. 1, 2, and 3

Emergency Plan Procedures
Emergency Procedures Implementing (EPI) Functional Administrative Procedure (FAP)
MP-26-EPI-FAP10-005, "Unit 1 Dose Calculation for Fuel Handling Accident,"
Major Revision 0

6/27/00
Approval Date

6/30/00
Effective Date

Document Action Request

SPG# 010123-095243

Initiated By: P. Luckey Date: 1/23/01 Department: EPSD Ext.: 5474

Document No.: MP-26-EPI-FAP10 Rev. No.: 000 Minor Rev.: 02

Title: Dose Assessment

Reason for Request (attach commitments, CRs, ARs, OEs etc)

This DAR documents the review and approval of mp-26-EPI-FAP10-005 Rev 000

Continued ☐

Instructions:

Continued ☐

TPC Interim Approval (1) Plant Mngt Staff Member Print/Sign/Date (2) SM/SRO/CFH on Unit Print/Sign/Date

Procedure Request/Feedback Disposition

Priority: ☒ Perform Now ☐ Perform Later - See Comments ☐ Rejected - See Comments

Activity: ☐ *Revision* ☒ *Minor Revision* ☐ Cleanup Rev ☐ Biennial Review ☐ Cancellation ☐ Supersedure

See DC-GDL01 for guidance

☐ TPC ☐ OTC ☐ Place in VOID ☐ Edit Corr.:⇒ Plant Mngt Staff Member - Approval

Comments:

RI/DPC Print Name and Date Continued ☐

Reviews		Print	Sign	Date	SQR Qualified Yes	SQR Qualified No	SQR Qualified Dept.	✓ If Comments
	☐				☐	☐		
	☐				☐	☐		
	☐				☐	☐		
Technical	☒	William J Eakin	W J Eak	1/24/01	☐	☒	NFSA	
Cross Disc.	☒	Leslie C Banks	Leslie Banks	1/24/01	☐	☒	IT	✓
RCD	☒	K. Burgess	K Burgess	1/24/00			EPSD	
Independent	☒	K. Burgess	K Burgess	1/24/01	☒	☐	EPSD	✓

Safety Evaluation Required ☐ Yes ☒ No **Environmental Review Required** ☐ Yes ☒ No

1. ☒ **SQR Program Final Review and Approval**

Approval ☒ Disapproval ☐

K Burgess 1/25/01
SQR Qualified Independent Reviewer / Date

Paul G. Blaisdell
Department Head/Responsible Individual

1/30/01
Approval Date

2. ☐ **SORC/PORC/RI/DH Final Review and Approval**

Department Head/Responsible Individual / Date

Meeting No.:

Approval Signature

Approval Date

Effective Date: FEB 24 2001

1/30/01	FEB 24 2001
Approval Date	Effective Date

Unit 1 Dose Calculation for Fuel Handling Accident

Control Room Data

Obtain the following:

RM-SFPI-01 Channel 1 (mR/hr)	RM-SFPI-01 Channel 2 (mR/hr)	RM-SFPI-01 Channel 3 (mR/hr)

Calculation

Perform the following:

1) _____ (RM-SFPI-01 Channel 3 (mR/hr)*) x 2 (Factor A) = _____ (# Fuel Assemblies Damaged)

*Note: If Channel 3 is inoperative, the higher value between Channels 1 and 2 must be used and Factor A in step 1 changed from 2 to 0.25.

2) _____ (# Fuel Assemblies Damaged) x 0.2 = _____ (TEDE) mRem

3) _____ (# Fuel Assemblies Damaged) x 10 = _____ (Skin) mRem

4) Notify CR-DSEO of results.

	Signature	Print	Date/Time
Prepared by:			
Reviewed by:			

Docket Nos. 50-245
50-336
50-423
B18353

Attachment 8

Millstone Nuclear Power Station, Unit Nos. 1, 2, and 3

Emergency Plan Procedures
Emergency Procedures Implementing (EPI) Functional Administrative Procedure (FAP)
MP-26-EPI-FAP11, "Core Damage Assessment," Major Revision 1

6/27/00
Approval Date

6/30/00
Effective Date

Document Action Request

SPG# 010123-141538

A

Initiated By: P. Luckey Date: 1/23/01 Department: EPSD Ext.: 5474

Document No.: MP-26-EPI-FAP11 Rev. No.: 001 Minor Rev.: ____

Title: Core Damage Assessment

B

Reason for Request (attach commitments, CRs, ARs, OEs etc)

The DAR documents the review and approval of MP-26-EPI-FAP11-010 and MP-26-EPI-FAP11-012.
Rev.000-01 Rev. 000-01

Continued ☐

C

Instructions:

Continued ☐

D

TPC Interim Approval (1) Plant Mngt Staff Member Print/Sign/Date ____ (2) SM/SRO/CFH on Unit Print/Sign/Date ____

E

Procedure Request/Feedback Disposition

Priority: ☒ Perform Now ☐ Perform Later - See Comments ☐ Rejected - See Comments

Activity: ☒ *Revision* ☐ *Minor Revision* (See DC-GDL01 for guidance) ☐ Cleanup Rev ☐ Biennial Review ☐ Cancellation ☐ Supersedure

☐ TPC ☐ OTC ☐ Place in VOID ☐ Edit Corr.:⇒ ____ Plant Mngt Staff Member - Approval

Comments:

RI/DPC Print Name and Date Continued ☐

F

Reviews	Print	Sign	Date	SQR Qualified Yes	SQR Qualified No	Dept.	✓ If Comments
☐				☐	☐		
☐				☐	☐		
Writer's Guide ☒	B. Taralbo	B. Taralbo	1/25/01	☐	☒	UNIT 1	✓
Validation ☒	T. Rigney	T. Rigney	1/23/01	☐	☒	EPSD	✓
Cross Disc. ☒	John Dorosky	John W. Dorosky	1/24/01	☒	☐	Chem	✓
RCD ☒	K. Burgess	K Burgess	1/25/01			EPSD	
Independent ☒	K. Burgess	K Burgess	1/25/01	☒	☐	EPSD	✓

G Safety Evaluation Required ☐ Yes ☒ No Environmental Review Required ☐ Yes ☒ No

H

1. ☒ **SQR Program Final Review and Approval**

Approval ☒ Disapproval ☐

K Burgess 1/30/01
SQR Qualified Independent Reviewer / Date

Paul A. Blaisdell
Department Head/Responsible Individual

2/5/01
Approval Date

2. ☐ **SORC/PORC/RI/DH Final Review and Approval**

____
Department Head/Responsible Individual / Date

Meeting No.: ____

____
Approval Signature

____
Approval Date

I **Effective Date:** 2/27/01

Functional Administrative Procedure

Millstone Station

Core Damage Assessment

MP-26-EPI-FAP11

Rev. 001

Approval Date: 2/5/01

Effective Date: 2/27/01

STOP THINK ACT REVIEW

TABLE OF CONTENTS

1. PURPOSE

1.1 Objective

This procedure provides sampling and analysis guidance and instructions for estimating core damage under accident conditions.

1.2 Applicability

This procedure is applicable when the following occurs:

- An emergency has been declared and the SERO has been activated
- There are indications of core damage
- Events require the estimation of the type and amount of core damage

1.3 Supporting Documents

1.3.1 CP 2804L, "Unit 2 Reactor Coolant and Liquid Radwaste PASS"

1.3.2 CP 2804M, "Unit 2 Vent and Containment Air PASS"

1.3.3 CP 3804K, "PASS RCS/RSS Sample"

1.3.4 CP 3804L, "PASS Containment Air Sample"

1.3.5 CP 3804M, "PASS Ventilation Samples"

1.4 Discussion

The time for taking and analyzing PASS samples shall be 3 hours or less from the time the decision is made to sample, except for chloride, which shall be within 24 hours.

Core Damage estimates are used to provide the following:

- Confirm whether fuel barriers are breached
- Determine the potential quality (type) or quantity (%) of source term available for release in support of projected offsite doses
- Support the determination of radiological protection actions that should be considered for long term recovery activities
- Satisfy inquiries from local and federal government agencies and provide evidence that the utility understands the plant conditions

An overall estimation of the extent of core damage can be made when information accumulated from all available sources and methods is evaluated. The NRC defines the overall condition of the core using a matrix of 10 categories as shown below:

NRC Criteria for Determining Condition of Core			
Degree of Degradation	**Minor (<10%)**	**Intermediate (10%-50%)**	**Major (>50%)**
No Fuel Damage	1	1	1
Cladding Failure	2	3	4
Fuel Overheat	5	6	7
Fuel Melt	8	9	10

The NRC recognizes four general classifications with three degrees of core damage within each (excepting the "No Fuel Damage" classification). It is important to recognize that different methodologies may provide indications that point to several degrees if not several classifications, simultaneously.

2. INSTRUCTIONS

2.1 Core Damage Assessment

NOTE

1. The magnitude and type of event, transport mechanism, and time after shutdown will be influencing factors on the method(s) used to determine the extent of core damage.
2. Plant operating parameters are usually the first type of information available for core damage evaluation. Generally, they can only provide a low confidence numerical value, but do help to determine the type of core damage resulting from the accident. Methods include:
   - Core Exit Temperatures
   - Core Uncovery Time
   - Containment Radiation
   - Main Steam Line Radiation
   - Containment Hydrogen

2.1.1 IF current core conditions are appropriate for the plant parameter methods, Go To Section 2.2.

NOTE

System activity results are not usually available in the early stages of an emergency. Assessment involving isotopic ratio comparisons and the presence of abnormal isotopes are valid as soon as a sample can be taken following an accident, but provide only an indication of the *type* of core damage. Concentration evaluations will normally provide the most accurate assessment, but require a stable steady state condition to be valid. Methods include:

- Isotopic Ratio Comparison
- Presence of Abnormal Isotopes
- Isotopic Concentration

2.1.2 IF current plant conditions produce a representative reactor coolant or containment sample, Go To Section 2.3.

2.1.3 IF samples are needed for operational or source term adjustment, Go To Section 2.4.

2.2 Plant Parameter Evaluation Method

2.2.1 IF necessary, contact the Accident Management Team in the TSC for assistance with core temperatures or uncovery times.

2.2.2 Obtain plant parameters from the following, as applicable:

- Off-Site Facilities Information System (OFIS)
- Technical Information Coordinator
- Control Room Data Coordinator

2.2.3 WHEN plant data becomes available, perform the following, as applicable:

NOTE

Containment radiation, main steam line radiation, and containment hydrogen methods assume a significant reactor coolant leak (LOCA) has occurred into containment.

- Evaluate all methods using the DAMAGE computer application.
- Refer To and complete the following forms, as applicable:
  - EPI-FAP11-001, "Core Damage Estimate: Core Exit Temperatures"
  - EPI- FAP11-002, "Core Damage Estimate: Core Uncovery Time"
  - EPI- FAP11-003, "Core Damage Estimate: Containment Radiation Monitors"
  - EPI- FAP11-004, "Core Damage Estimate: Main Steam Line Radiation Monitors"
  - EPI- FAP11-005, "Core Damage Estimate: Containment Hydrogen"

NOTE

The following attachments are provided as additional information for use in estimating core damage:

- Attachment 3, "Common Conditions of Core Damage'
- Attachment 4, "Isotopes in Core Fission Products'
- Attachment 5, " Indicators of core Damage"

2.2.4 Record the overall damage estimation by performing one of the following:

- Print the DAMAGE application summary report.
- Refer To and complete EPI-FAP11-008, "Core Damage Estimate: Summary Analysis."

2.2.5 IF additional information becomes available OR is revised throughout the course of the accident, provide an overall estimation of the extent of core damage to the ADEOF.

2.3 System Activity Evaluation Method

2.3.1 Determine the most representative sample points (location of the activity released from the core) based on current system conditions as shown in Table 1.

Table 1 Sampling Point Determination Criteria

Sampling Points		Limitations
Unit 2	**Unit 3**	
Loop 1 Hot Leg	Loop 1 or 3 Hot Leg	Break should not be upstream of the sample point
Liquid Waste	Liquid Waste	Not used for core damage estimates
Containment Sump via: • HPSI Pumps • LPSI Pumps • Containment Spray Pumps	Containment Sump via Containment Spray System	System in operation and sump recirculation actuation signal in effect prior to sampling
Containment Air	Containment Air	Accident must involve a release into containment
Vent Air	Vent Air	Not used for core damage estimates
WRGM Air	SLCRS Air	Not used for core damage estimates

2.3.2 Contact the MRCA to discuss the following:

- In-plant radiological conditions
- Priority for obtaining samples
- Sampling sequence if multiple locations are available

NOTE

A three hour sample and analysis time requirement exists once the decision to obtain a PASS sample is made. The ADTS controls the on-site response resources and is the individual responsible for the decision to initiate sampling for core damage assessment.

2.3.3 Inform the ADTS of the selected sample points.

2.3.4 Request the ADTS assemble a sample team for core damage assessment purposes.

2.3.5 WHEN sample results become available, perform the following, as applicable:

- Evaluate all methods using the DAMAGE computer application.
- Refer To and complete the following forms, as applicable:
  - EPI-FAP11-006, "Core Damage Estimate: Ratio Comparison/Abnormal Isotopes"
  - EPI-FAP11-007, " Core Damage Estimate: Isotopic Concentrations"

NOTE

The following attachments are provided as additional information for use in estimating core damage:

- Attachment 3, "Common Conditions of Core Damage'
- Attachment 4, "Isotopes in Core Fission Products'
- Attachment 5, " Indicators of core Damage"

2.3.6 Record the overall damage estimation by performing one of the following:

- Print the DAMAGE application summary report.
- Refer To and complete EPI-FAP11-008, "Core Damage Estimate: Summary Analysis."

2.3.7 IF additional information becomes available OR is revised throughout the course of the accident, provide an overall estimation of the extent of core damage to the ADEOF.

2.4 Sample Location Determination

2.4.1 Discuss normal sample or PASS preparations with the MRCA.

2.4.2 Determine sampling and analysis requirements using one of the following forms, as applicable:

- EPI-FAP11-009, "Unit 2 RX Coolant and Liquid Waste Sample Worksheet"
- EPI-FAP11-010, "Unit 2 Vent and Containment Air Sample Worksheet"
- EPI-FAP11-011, "Unit 3 RX Coolant and Liquid Waste Sample Worksheet"
- EPI-FAP11-012, "Unit 3 Vent and Containment Air Sample Worksheet"

2.4.3 Fax completed forms to the ADTS for review.

2.4.4 IF required, request additional Chemistry Technician support from the MOR.

3. SUMMARY OF CHANGES

3.1.1 Added Wide Range Gas Monitor Air and Supplemental Leak Collection and Release System Air to the sampling points in Table 1.

3.1.2 Added the definition of Wide Range Gas Monitor to Attachment 1.

3.1.3 Changed Primary Vent Stack to Wide Range Gas Monitor in MP-26-EPI-FAP11-010, "Unit 2 Vent and Containment Air Sample Worksheet."

3.1.4 Deleted reference to Primary Vent Stack in MP-26-EPI-FAP11-012.

3.1.5 Performed Writer's Guide modifications for compliance with the administrative format contained in MM-05.

Attachment 1
Definitions and Abbreviations

(Sheet 1 of 1)

Definitions

PASS Team - SERO personnel designated for sampling and analysis of reactor coolant or liquid waste at the affected unit. The PASS Team shall be comprised of at least 2 Chemistry Technicians and 1 HP Technician.

Abbreviations

ADEOF - Assistant Director EOF

ADTS - Assistant Director Technical Support Center

AMRDA - Assistant Manager of Radiological Dose Assessment

DSEO - Director of Station Emergency Operations

ESF - Engineered Safety Features

MOSC - Manager of Operational Support Center

MRCA - Manager of Radiological Consequence Assessment

MRDA - Manager of Radiological Dose Assessment

PASS - Post Accident Sampling System

RSS - Recirculation Spray System

SERO - Station Emergency Response Organization

SLCRS - Supplementary Leak Collection and Release System

TSC - Technical Support Center

WRGM - Wide Range Gas Monitor

Attachment 2
Responsibilities

(Sheet 1 of 1)

1. The PASS Team performs the required sampling and analysis.
2. The ADTS shall make the decision to obtain a sample using PASS.
3. The Manager of Operational Support Center designates, assembles, and briefs the PASS Team.
4. The Manager of Radiological Consequence Assessment specifies PASS Team radiological controls.
5. The Operational Support Center Assistant Radiological Protection Supervisor assigns HP technicians and briefs the PASS Team on radiological conditions.
6. The Manager of Radiological Dose Assessment or the Assistant Manager of Radiological Dose Assessment specify PASS Team sampling and analysis requirements.
7. The Assistant Manager of Radiological Dose Assessment is responsible for performing the calculations and evaluations required for determining core damage estimates.

Attachment 3
Common Conditions of Core Damage

(Sheet 1 of 1)

The types of damage sustained, as well as their severity, depend upon fission rate, power, and temperature of the reactor. During an accident, clad damage would occur first, followed by fuel overheating, and finally fuel melt as conditions become more severe.

Common conditions of core damage are shown below:

Indicators of Core Damage	
Damage Type	**Conditions**
Clad Damage	An increasing potential for inadequate core cooling exists Loose part indication is observed No significant overheating has been observed at this point
Fuel Overheat	The fuel is suspected to be at least partially uncovered for a period of time greater than a few minutes Loss of inventory in the pressurizer is observed Hot leg temperatures are increasing Voiding in the core is detected Ex-core count rate is increasing (occurs when uncovered core is no longer shielded by water) High in-core thermocouple readings are observed Fuel clad oxidation is detected by excess hydrogen in the containment (>10%)
Fuel Melt	The core has been uncovered for an appreciable period of time In-core thermocouples are off-scale In-core and ex-core instrumentation display erratic readings

The presence of specific isotopes within the core fission product inventory are indicative of the type(s) of core damage that exist. Although each type of core damage exhibits the presence of certain isotopes, the isotopes related to each damage type build up as accident severity increases. Thus, when determining the type of core damage, the presence and amounts of some isotopes and the absence of others is usually a good indicator.

Most of the noble gases will be detected in containment air samples unless the accident does not involve a break inside the containment.

Attachment 4
Isotopes in Core Fission Products

Fission products are grouped with respect to their relative volatility. The categories of isotopes as shown below, are grouped in order of decreasing volatility:

Isotopes in Core Fission Products			
Group	**Fission Product Type**	**Group**	**Fission Product Type**
I	Noble Gases (Xe, Kr)	V	Alkaline Earths (Sr, Br)
II	Halogens (I, Br)	VI	Noble Metals (Ru, Rh, Pd, Mo, Tc)
III	Alkali Metals (Cs, Rb)	VII	Rare Earths and Actinides (Y, La, Ce)
IV	Tellurium (Te, Se, Sb)	VIII	Refractory Oxides of Zr and Nb

Isotopes with longer half-lives will serve as a better basis for analysis in long-term sampling. Note that any sample taken soon after shutdown will be difficult to analyze due to the large amount of short-lived isotopes in the sample. There may be many isotopes with similar peaks which makes it difficult to distinguish one from another. Some isotopes may have peaks near the annihilation radiation level (511KeV). Also, Compton edges could lead to difficulties in the sample analysis. Therefore, it is recommended that confirming peaks are used in the isotopic analysis. Any other quantifying techniques, such as iodine cartridge analysis, if available for analysis in long-term sampling, are recommended.

Attachment 4
Isotopes in Core Fission Products

(Sheet 2 of 2)

The isotopes as shown below, reflect a best choice in terms of measurement and effect from in-growth of daughter products. It is important to recognize that halogens, and to some degree other particulate radioisotopes, may not be a good measure of the extent of core damage when identified as part of a gaseous sample.

Isotopes Indicative of Core Damage			
Core Damage State	**Nuclide**	**Group**	**Half-Life (hrs)**
Clad Failure	Kr-85m	I	4.48E+00
	Kr-87	I	1.27E+00
	Kr-88	I	2.84E+00
	Xe-131m	I	2.86E+02
	Xe-133	I	1.26E+02
	Xe-133m	I	5.25E+01
	Xe-135	II	9.09E+00
	I-131	II	1.93E+02
	I-132	II	2.30E+00
	I-133	II	2.08E+01
	I-135	II	6.61E+00
	Rb-88	III	2.97E-01
Fuel Overheat	Cs-134	III	1.81E+04
	Cs-137	III	2.63E+05
	Te-129	IV	1.16E+00
	Te-132	IV	7.82E+01
Fuel Meltdown	Sr-89	V	1.21E+03
	Sr-90	V	2.55E+05
	Ba-140	V	3.06E+02
	La-140	VII	4.03E+01
	La-142	VII	1.54E+00
	Pr-144	VII	2.88E-01
Combination	Xe-135m	I	4.32E+00
(Related Parent Nuclides)	Sb-129	IV	8.06E+02
	Te-129m	IV	2.55E-01
	Ba-142	V	1.77E-01
	Ce-144	VII	6.82E+03

Attachment 5
Indicators of Core Damage

(Sheet 1 of 3)

The following are indicators of core damage:

Clad Damage

- The presence of noble gases and iodines in reactor coolant or containment air without the presence of other fission products is a fair indication of clad damage and perhaps some degree of fuel overheat.
- Iodines may be detected in both reactor coolant and containment air, depending upon the accident scenario and upon the physical and chemical form of the radioactive release.

Fuel Overheat Damage

- No significant quantity of cesiums (i.e., greater than 30 percent of the inventory) should be found if core temperatures remain below 2300° F or if the core has not been at least partially uncovered for an appreciable amount of time. Therefore, the presence of a significant amount of cesium is indicative of a fuel overheat condition. The amount of hydrogen in the containment air and reactor coolant samples can serve as confirmation. It should also be noted that just as in the case of iodines, the cesiums from both containment air and reactor coolant samples should be taken together.
- Over 50 percent of the core inventory of noble gases, iodines, and cesiums may be released from extensively damaged fuel clad (i.e., fuel overheating) even if fuel temperatures remain below the melting point.
- As the fuel temperature increases and fuel melting is suspected to have occurred, the possibility of finding significant quantities of other core solids (e.g., groups IV through VIII) above the baseline increases. However, these fission products will not be found in reactor coolant samples unless the core has been covered and a recirculation mode has been established. Many of the fission products and most of the actinides which occur as refractory oxides are released only in relatively small amounts even at elevated temperatures. However, if damaged fuel pellets are rewetted, some of the more refractory radioactive material will be leached out.

Fuel Melt Damage

- Significant releases of tellurium, ruthenium, and more refractory materials will occur only if the temperature approaches the fuel melting point (5200° F). However, the presence of ruthenium and tellurium does not prove melting, but their absence in long-term sampling analysis is a good indication that fuel meltdown has not occurred.

Attachment 5
Indicators of Core Damage

Assuming equilibrium conditions have been reached, a fixed inventory of radioisotopes exists within the fuel pellet. The relative ratios of the isotopes which have reached equilibrium can be considered a constant value. The distribution of isotopes in the fuel gap are not in the same proportion as in the fuel pellet. This is due to the differing diffusion rates of the isotopes from the fuel pellet to the fuel gap. During an accident, the ratios of isotopic activities obtained from samples can be compared to the expected ratios for a gap and melt type mix.

The following methods and indications can be used to estimate the amount or type of core damage under accident conditions:

- Core Parameters: An indirect method which is immediately available and is used to indicate the potential for core damage. Indications are provided by core exit thermocouples and the time of core uncovery and are applicable for all types of accidents. This method does not provide numerical estimations, but rather can be used to determine the type of damage.
- Containment Radiation: An indirect method which is used to determine the amount of core damage. Indications are provided by containment high range or main steam line radiation monitors. This method is only applicable for a loss of coolant accident and is based upon an end-of-life source term and static nuclide ratio assumptions.
- Containment Hydrogen: An indirect method which is used to determine the amount of fuel melt. This method assumes all the hydrogen generated by the metal-water reaction is released into containment (LOCA).
- System Activity - Isotopic Ratio Comparison: A direct method which is used to help establish the type of core damage (clad failure or fuel melt). This method is applicable under all types of accidents and is valid any time following an accident although accuracy will decrease over time.
- System Activity - Presence of Abnormal Isotopes: A direct method which is used to indicate some degree of fuel melt by the presence of unusually high concentrations of any of the less volatile fission products.
- System Activity - Isotopic Concentration Evaluation: A direct method which can yield numeric estimations. This method is applicable for all types of accidents and requires the sampled system(s) to be in a steady state which usually prevents its use until the plant is in a stable shutdown condition.

Attachment 5
Indicators of Core Damage

(Sheet 3 of 3)

Precise damage estimates are based upon accounting for all of the radioactivity released from the core. Methods which provide a numerical estimation of the extent of core damage should be evaluated to ensure all activity has been accounted for. If reactor coolant and containment air samples are available, then the total activity should be determined from the sum of both types of samples.

Iodine should not be used as the sole means of determining an estimate of core damage since it is difficult to determine the extent to which iodine will plate-out on containment walls, other surfaces, and piping. Spiking due to power excursions can also lead to inaccurate results in the iodine analysis.

No single method should be relied upon for a definitive damage estimation. All available data and sound engineering principles should be used to compile the best overall estimation.

Docket Nos. 50-245
50-336
50-423
B18353

Attachment 9

Millstone Nuclear Power Station, Unit Nos. 1, 2, and 3

Emergency Plan Procedures
Emergency Procedures Implementing (EPI) Functional Administrative Procedure (FAP)
MP-26-EPI-FAP11-010, "Unit 2 Vent and Containment Air Sample Worksheet,"
Major Revision 0, Minor Revision 1

6/27/00
Approval Date

6/30/00
Effective Date

Document Action Request

SPG# 010123-141538

A

Initiated By: P. Luckey Date: 1/23/01 Department: EPSD Ext.: 5474

Document No.: MP-26-EPI-FAP11 Rev. No.: 001 Minor Rev.:

Title: Core Damage Assessment

B

Reason for Request (attach commitments, CRs, ARs, OEs etc)

The DAR documents the review and approval of MP-26-EPI-FAP11-010 and MP-26-EPI-FAP11-012.
Rev.000-01 Rev. 000-01

Continued ☐

C

Instructions:

Continued ☐

D

TPC Interim Approval (1) Plant Mngt Staff Member Print/Sign/Date (2) SM/SRO/CFH on Unit Print/Sign/Date

E

Procedure Request/Feedback Disposition

Priority: ☒ Perform Now ☐ Perform Later - See Comments ☐ Rejected - See Comments

Activity: ☒ *Revision* ☐ *Minor Revision* ☐ Cleanup Rev ☐ Biennial Review ☐ Cancellation ☐ Supersedure

See DC-GDL01 for guidance

☐ TPC ☐ OTC ☐ Place in VOID ☐ Edit Corr.:⇒ Plant Mngt Staff Member - Approval

Comments:

RI/DPC Print Name and Date Continued ☐

F

Reviews		Print	Sign	Date	SQR Qualified Yes	SQR Qualified No	Dept.	✓ If Comments
	☐				☐	☐		
	☐				☐	☐		
Writer's Guide	☒	B. Taralla	B. Taralla	1/25/01	☐	☑	UNIT 1	✓
Validation	☒	T. Rigney	T. Rigney	1/23/01	☐	☑	EPSD	✓
Cross Disc.	☒	John Doroski	John W. Doroski	1/24/01	☒	☐	Chem	✓
RCD	☒	K. Burgess	K Burgess	1/25/01			EPSD	
Independent	☒	K. Burgess	K Burgess	1/25/01	☒	☐	EPSD	✓

G

Safety Evaluation Required ☐ Yes ☒ No Environmental Review Required ☐ Yes ☒ No

H

1. ☒ **SQR Program Final Review and Approval**

Approval ☒ Disapproval ☐

K Burgess 1/30/01
SQR Qualified Independent Reviewer / Date

Paul A. Blaisdell
Department Head/Responsible Individual

2/5/01
Approval Date

2. ☐ **SORC/PORC/RI/DH Final Review and Approval**

Department Head/Responsible Individual / Date

Meeting No.:

Approval Signature

Approval Date

I

Effective Date: 2/27/01

2/5/01
Approval Date

2/27/01
Effective Date

Unit 2 Vent and Containment Air Sample Worksheet

INSTRUCTIONS:

Circle desired Sample, Sample Location, Sample Type, and Analysis.

SAMPLE	LOCATION	TYPE	ANALYSIS
PASS Containment Air	Hydrogen Analyzer Train "A"	Gas	Gas Isotopic Gas Composition
PASS Containment Air	Hydrogen Analyzer Train "B"	Gas	Gas Isotopic Gas Composition
Vent (High Range)	38'6" East Penetration Room	Gas Particulate Iodine	Gas Isotopic Particulate Isotopic Iodine Isotopic
Vent (Normal Range)	38'6" East Penetration Room	Gas Particulate Iodine	Gas Isotopic Particulate Isotopic Iodine Isotopic
WRGM	Stack Sample Room	Gas Particulate Iodine	Gas Isotopic Particulate Isotopic Iodine Isotopic

1

Completed by: _____ Date: _____ Time: _____
(MRDA/AMRDA)

ADTS Approval: _____ Date: _____ Time: _____

Docket Nos. 50-245
50-336
50-423
B18353

Attachment 10

Millstone Nuclear Power Station, Unit Nos. 1, 2, and 3

Emergency Plan Procedures
Emergency Procedures Implementing (EPI) Functional Administrative Procedure (FAP)
MP-26-EPI-FAP11-012, "Unit 3 Vent and Containment Air Sample Worksheet,"
Major Revision 0, Minor Revision 1

6/27/00
Approval Date

6/30/00
Effective Date

Document Action Request

SPG# 010123-141538

A

Initiated By: P. Luckey Date: 1/23/01 Department: EPSD Ext.: 5474

Document No.: MP-26-EPI-FAP11 Rev. No.: 001 Minor Rev.:

Title: Core Damage Assessment

B

Reason for Request (attach commitments, CRs, ARs, OEs etc)

The DAR documents the review and approval of MP-26-EPI-FAP11-010 and MP-26-EPI-FAP11-012.
Rev. 000-01 Rev. 000-01

Continued ☐

C

Instructions:

Continued ☐

D

TPC Interim Approval (1) Plant Mngt Staff Member Print/Sign/Date (2) SM/SRO/CFH on Unit Print/Sign/Date

E

Procedure Request/Feedback Disposition

Priority: ☒ Perform Now ☐ Perform Later - See Comments ☐ Rejected - See Comments

Activity: ☒ *Revision* ☐ *Minor Revision* (See DC-GDL01 for guidance) ☐ Cleanup Rev ☐ Biennial Review ☐ Cancellation ☐ Supersedure

☐ TPC ☐ OTC ☐ Place in VOID ☐ Edit Corr.:⇒ Plant Mngt Staff Member - Approval

Comments:

RI/DPC Print Name and Date Continued ☐

F

Reviews		Print	Sign	Date	SQR Qualified Yes	SQR Qualified No	Dept.	✓ If Comments
	☐				☐	☐		
	☐				☐	☐		
Writer's Guide	☒	B. Tarallo	B. Tarallo	1/25/01	☐	☑	UNIT 1	✓
Validation	☒	T. Rigney	T. Rigney	1/23/01	☐	☑	EPSD	✓
Cross Disc.	☒	John Dorosko	John W. Dorosko	1/24/01	☒	☐	Chem	✓
RCD	☒	K. Burgess	K Burgess	1/25/01			EPSD	
Independent	☒	K. Burgess	K Burgess	1/25/01	☒	☐	EPSD	✓

G Safety Evaluation Required ☐ Yes ☒ No Environmental Review Required ☐ Yes ☒ No

H

1. ☒ **SQR Program Final Review and Approval**
   Approval ☒ Disapproval ☐
   K Burgess 1/30/01
   SQR Qualified Independent Reviewer / Date
   Paul A. Braatz
   Department Head/Responsible Individual
   2/5/01
   Approval Date

2. ☐ **SORC/PORC/RI/DH Final Review and Approval**
   Department Head/Responsible Individual / Date
   Meeting No.:
   Approval Signature
   Approval Date

I **Effective Date:** 2/27/01

2/5/01
Approval Date

2/27/01
Effective Date

Unit 3 Vent and Containment Air Sample Worksheet

INSTRUCTIONS;

Circle desired Sample, Sample Location, Sample Type, and Analysis.

SAMPLE	LOCATION	TYPE	ANALYSIS
PASS Containment Air	Hydrogen Recombiner Train "A"	Gas	Gas Isotopic Gas Composition
PASS Containment Air	Hydrogen Recombiner Train "B"	Gas	Gas Isotopic Gas Composition
Vent (High Range)	3HVR*RE10A Aux. Bldg. 66'6	Gas Particulate Iodine	Gas Isotopic Particulate Isotopic Iodine Isotopic
Vent (Normal Range)	"3HVR*RE10B Aux. Bldg. 66'6"	Gas Particulate Iodine	Gas Isotopic Particulate Isotopic Iodine Isotopic
SCLRS (High Range)	3HVR*RE19A Aux. Bldg. 66'6"	Gas Particulate Iodine	Gas Isotopic Particulate Isotopic Iodine Isotopic
SCLRS (Normal Range)	3HVR*RE19B Aux. Bldg. 66'6"	Gas Particulate Iodine	Gas Isotopic Particulate Isotopic Iodine Isotopic
ESF Vent	3HVQ*RE49 ESF Bldg. 36'6"	Gas Particulate Iodine	Gas Isotopic Particulate Isotopic Iodine Isotopic

Completed by: _____ Date: _____ Time: _____
(MRDA/AMRDA)

ADTS Approval: _____ Date: _____ Time: _____

Docket Nos. 50-245
50-336
50-423
B18353

Attachment 11

Millstone Nuclear Power Station, Unit Nos. 1, 2, and 3

Emergency Plan Procedures
Emergency Procedures Implementing (EPI) Functional Administrative Procedure (FAP)
MP-26-EPI-FAP15-006, "OFIS Instruction," Major Revision 0, Minor Revision 1

6/27/00
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Effective Date

Document Action Request

SPG# 010123-094710

A

Initiated By: P. Luckey Date: 1/23/01 Department: EPSD Ext.: 5474

Document No.: MP-26-EPI-FAP15-006 Rev. No.: 000 Minor Rev.: 01

Title: OFIS Instructions

B

Reason for Request (attach commitments, CRs, ARs, OEs etc)

Add instructions for accessing R* Time OFIS from a personal computer.

Continued ☐

C

Instructions:

Continued ☐

D

TPC Interim Approval (1) Plant Mngt Staff Member Print/Sign/Date (2) SM/SRO/CFH on Unit Print/Sign/Date

E

Procedure Request/Feedback Disposition

Priority: ☒ Perform Now ☐ Perform Later - See Comments ☐ Rejected - See Comments

Activity: ☐ *Revision* ☒ *Minor Revision* ☐ Cleanup Rev ☐ Biennial Review ☐ Cancellation ☐ Supersedure

See DC-GDL01 for guidance

☐ TPC ☐ OTC ☐ Place in VOID ☐ Edit Corr.:⇒ Plant Mngt Staff Member - Approval

Comments:

RI/DPC Print Name and Date Continued ☐

F

Reviews		Print	Sign	Date	SQR Qualified Yes	SQR Qualified No	Dept.	✓ If Comments
	☐				☐	☐		
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	☐				☐	☐		
Cross Disc.	☒	Leslie C Banks	Leslie C Banks	1/24/01	☐	☒	IT	✓
RCD	☒	K. Burgess	K Burgess	1/24/01			EPSD	
Independent	☒	K. Burgess	K Burgess	1/24/01	☒	☐	EPSD	✓

G

Safety Evaluation Required ☐ Yes ☒ No **Environmental Review Required** ☐ Yes ☒ No

H

1. ☒ **SQR Program Final Review and Approval**

Approval ☒ Disapproval ☐

K Burgess 1/25/01
SQR Qualified Independent Reviewer / Date

Paul A. Blaisdell
Department Head/Responsible Individual

1/30/01
Approval Date

2. ☐ **SORC/PORC/RI/DH Final Review and Approval**

Department Head/Responsible Individual / Date

Meeting No.:

Approval Signature

Approval Date

I

Effective Date: FEB 24 2001

1/30/01
Approval Date

FEB 24 2001
Effective Date

OFIS Instructions

Section A: TSO Equipment Start Up Steps

❑ Access TSO from LAN based Personal Computer

1. Ensure the computer and monitor are on.
2. At the "Novell Netware" screen, enter your identification and password.
3. At the initial Windows screen, locate and open either the "IBM Extra" or the "Connect to the Mainframe" icon.
4. Navigate to the "Application" entry.
5. Enter **CICSNPRX**.
6. Press the ENTER key.
7. Refer to Section B and perform the following for the assigned SERO position:
   a) At the log-on prompt (LOGONID) enter the logon ID.
   b) Press the TAB key.
   c) At the password prompt (PASSWORD) enter the password.
   d) Press the ENTER key.
8. Press the "Pause/Break" key to clear the screen.
9. Type "OFIS," and press the ENTER key.
10. Press the function key for the appropriate Unit:
    F1 - Unit 1 F2 - Unit 2 F3 - Unit 3

❑ Access TSO from Mainframe Terminal

1. Ensure the terminal and monitor are on.
2. Enter **CICSOFIS**.
3. Press the ENTER key.
4. Refer to Section B and perform the following for the assigned SERO position:
   a) Enter the logon ID.
   b) Press the ENTER key.
   c) Enter the password.
   d) Press the ENTER key.
5. Press the "Clear" key to clear the screen.
6. Type "OFIS," and press the ENTER key.
7. Press the "PF" key for the appropriate Unit:
   PF-1 - Unit 1 PF-2 - Unit 2 PF-3 - Unit 3

❑ Access R*TIME OFIS from Personal Computer

1. Open the "OFIS" icon.
2. Select "Connect to the Millstone LAN" from the "Millstone OFIS Connection Menu."
3. Select "MP3 OFIS" or "MP2 OFIS" from the "Millstone Station PPC Top Menu."
4. If the connection is *not* successful, perform the following:
   a) Open the "OFIS" icon.
   b) Select "Connect to Unit 3 PPC or Unit 2 PPC" from the "Millstone OFIS Connection Menu."
   c) Select "OFIS" from the "Unit 3 PPC" or "Unit 2 PPC" Top Menu.

(1)

Section B: TSO Equipment Log On Identification and Passwords

The following computer IDs and Passwords are only for use when supporting Millstone Emergency Plan functions.

Emergency Function	Computer ID and Password
Director of Station Emergency Operations	MP840ZA - OPERAT
Manager of On-site Resources	MP840ZB - RESOUR
Manager of Communications	MP840ZD - COMMUN
Manager of Rad Consequences Assessment	MP840ZE - RADIOL
Manager of Security	MP840ZF - SECURI
Technical Assistant (JMC)	later
U1 Manager of Control Room Ops/STA	MP840ZG - OPERAT
U2 Manager of Control Room Ops/STA	MP840ZH - OPERAT
U3 Manager of Control Room Ops/STA	MP840ZP - OPERAT
U2 Manager of Tech Support/TSC Staff	MP840ZJ - SUPPOR
U3 Manager of Tech Support/TSC Staff	MP840ZQ - SUPPOR
General Use	MP840ZK - STASTA
General Use	MP840ZL - STASTA
General Use	MP840ZR - STASTA
U2 Control Room Data Coordinator	MP840ZN - MP2DATA
U3 Control Room Data Coordinator	MP840ZS -MP3DATA
Manager of Rad Dose Assessment	MP840ZO -DRAGON
Chemistry Technicians	BE091DZ or BE091EZ - DRAGON

Docket Nos. 50-245
50-336
50-423
B18353

Attachment 12

Millstone Nuclear Power Station, Unit Nos. 1, 2, and 3

Emergency Plan Procedures
Emergency Procedures Implementing (EPI) Functional Administrative Procedure (FAP)
MP-26-EPI-FAP15-007, "Critical Parameter Data Sheet - MP1,"
Major Revision 0, Minor Revision 1

6/27/00
Approval Date

6/30/00
Effective Date

Document Action Request

SPG# 010125-092600

A

Initiated By: P. Luckey Date: 1/25/01 Department: EPSD Ext.: 5474

Document No.: MP-26-EPI-FAP15-007 Rev. No.: 000 Minor Rev.: 01

Title: Critical Parameter Data Sheet - MP1

B

Reason for Request (attach commitments, CRs, ARs, OEs etc)

Add Computer ID for MP1 Spent Fuel Pool Island ARM

Continued ☐

C

Instructions:

Continued ☐

D

TPC Interim Approval (1) Plant Mngt Staff Member Print/Sign/Date (2) SM/SRO/CFH on Unit Print/Sign/Date

E

Procedure Request/Feedback Disposition

Priority: ☒ Perform Now ☐ Perform Later - See Comments ☐ Rejected - See Comments

Activity: ☐ *Revision* ☒ *Minor Revision* ☐ Cleanup Rev ☐ Biennial Review ☐ Cancellation ☐ Supersedure

See DC-GDL01 for guidance

☐ TPC ☐ OTC ☐ Place in VOID ☐ Edit Corr.:⇒ Plant Mngt Staff Member - Approval

Comments:

RI/DPC Print Name and Date Continued ☐

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Reviews		Print	Sign	Date	SQR Qualified Yes	SQR Qualified No	SQR Qualified Dept.	✓ If Comments
	☐				☐	☐		
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	☐				☐	☐		
RCD	☒	K. Burgess	K Burgess	1/25/01			EPSD	
Independent	☒	K. Burgess	K Burgess	1/25/01	☒	☐	EPSD	✓

G

Safety Evaluation Required ☐ Yes ☒ No **Environmental Review Required** ☐ Yes ☒ No

H

1. ☒ **SQR Program Final Review and Approval**

Approval ☒ Disapproval ☐

K Burgess 1/31/01
SQR Qualified Independent Reviewer / Date

Paul A. Boehm
Department Head/Responsible Individual

2/5/01
Approval Date

2. ☐ **SORC/PORC/RI/DH Final Review and Approval**

Department Head/Responsible Individual / Date

Meeting No.:

Approval Signature

Approval Date

I

Effective Date: 2/27/01

2/5/01
Approval Date

2/27/01
Effective Date

Critical Parameter Data Sheet - MP1

PARAMETER (EAL Threshold)		TIME								
Barrier Affected	**ID***									
MP1 Spent Fuel Pool Island ARM	RM-SFPI-01									
SFP Level										
SFP Temperature										

(1)

*Note: If these specific data points are not available, others that measure an equivalent parameter may be used.

Docket Nos. 50-245
50-336
50-423
B18353

Attachment 13

Millstone Nuclear Power Station, Unit Nos. 1, 2, and 3

Emergency Plan Procedures
Emergency Procedures Implementing (EPI) Functional Administrative Procedure (FAP)
MP-26-EPI-FAP15-008, "Critical Parameter Data Sheet - MP2,"
Major Revision 0, Minor Revision 1

6/27/00
Approval Date

6/30/00
Effective Date

Document Action Request

SPG# 010125-092826

A

Initiated By: P. Luckey Date: 1/25/01 Department: EPSD Ext.: 5474

Document No.: MP-26-EPI-FAP15-008 Rev. No.: 000 Minor Rev.: 01

Title: Critical Parameter Data Sheet - MP2

B

Reason for Request (attach commitments, CRs, ARs, OEs etc)

Add Computer ID for MP2 WRGM Site Stack Effluent Activity

Continued ☐

C

Instructions:

Continued ☐

D

TPC Interim Approval (1) Plant Mngt Staff Member Print/Sign/Date (2) SM/SRO/CFH on Unit Print/Sign/Date

E

Procedure Request/Feedback Disposition

Priority: ☒ Perform Now ☐ Perform Later - See Comments ☐ Rejected - See Comments

Activity: ☐ *Revision* ☒ *Minor Revision* ☐ Cleanup Rev ☐ Biennial Review ☐ Cancellation ☐ Supersedure

See DC-GDL01 for guidance

☐ TPC ☐ OTC ☐ Place in VOID ☐ Edit Corr.:⇒ Plant Mngt Staff Member - Approval

Comments:

RI/DPC Print Name and Date Continued ☐

F

Reviews		Print	Sign	Date	SQR Qualified Yes	SQR Qualified No	SQR Qualified Dept.	✓ If Comments
	☐				☐	☐		
	☐				☐	☐		
	☐				☐	☐		
	☐				☐	☐		
	☐				☐	☐		
RCD	☒	K. Burgess	K. Burgess	1/25/01			EPSD	
Independent	☒	K. Burgess	K. Burgess	1/25/01	☒	☐	EPSD	✓

G

Safety Evaluation Required ☐ Yes ☒ No **Environmental Review Required** ☐ Yes ☒ No

H

1. ☒ **SQR Program Final Review and Approval**

Approval ☒ Disapproval ☐

K Burgess 1/31/01
SQR Qualified Independent Reviewer / Date

Paul A. Fiorelli
Department Head/Responsible Individual

2/5/01
Approval Date

2. ☐ **SORC/PORC/RI/DH Final Review and Approval**

Department Head/Responsible Individual / Date

Meeting No.:

Approval Signature

Approval Date

Effective Date: 2/27/01

2/5/01
Approval Date

Critical Parameter Data Sheet - MP2

2/27/01
Effective Date

PARAMETER (EAL Threshold)		TIME								
Barrier Affected	**Computer ID***									
RCS Subcooling (30° F) - RCS	CETHSUB									
RVLMS Reading (0%) - Fuel	RXLVL-A									
	RXLVL-B									
Core Exit Thermocouple Reading (800°/1300° F) - Fuel, CTMT	INTAMX									
RM-8240/8241 (300/5/1200 R/hr) - Fuel, RCS, CTMT	R8240									
	R8241									
CTMT Pressure (10 psig) - CTMTPTR *Offsite Releases*	CTMTPR									
MP2 Kaman Vent Monitor Reading (0.02/0.2/2 µCi/cc) - *Offsite Releases*	RIC8168									
MSL Monitor (RM-4299A/B/C) Reading (0.03/0.3/2R/hr) * (R4299A, B, C - 1012, 1013, 1014) - *Offsite Releases*	R4299A									
	R4299B									
	R4299C									
MP2 WRGM Site Stack Effluent Activity Reading (≥ 1/10/30 µCi/cc) Offsite Releases	R8169 or RU1									

(1)

*Note: If these specific data points are not available, others that measure an equivalent parameter may be used.

Docket Nos. 50-245
50-336
50-423
B18353

Attachment 14

Millstone Nuclear Power Station, Unit Nos. 1, 2, and 3

Emergency Plan Procedures
Emergency Procedures Implementing (EPI) Functional Administrative Procedure (FAP)
MP-26-EPI-FAP15-009, "Critical Parameter Data Sheet - MP3,"
Major Revision 0, Minor Revision 1

6/27/00
Approval Date

6/30/00
Effective Date

Document Action Request

SPG# 010125-093058

A

Initiated By: P. Luckey Date: 1/25/01 Department: EPSD Ext.: 5474

Document No.: MP-26-EPI-FAP15-009 Rev. No.: 000 Minor Rev.: 01

Title: Critical Parameter Data Sheet - MP3

B

Reason for Request (attach commitments, CRs, ARs, OEs etc)

Add Computer ID for MP3 SLCRS Gas Monitoring Reading

Continued ☐

C

Instructions:

Continued ☐

D

TPC Interim Approval (1) Plant Mngt Staff Member Print/Sign/Date (2) SM/SRO/CFH on Unit Print/Sign/Date

E

Procedure Request/Feedback Disposition

Priority: ☒ Perform Now ☐ Perform Later - See Comments ☐ Rejected - See Comments

Activity: ☐ *Revision* ☒ *Minor Revision* ☐ Cleanup Rev ☐ Biennial Review ☐ Cancellation ☐ Supersedure

See DC-GDL01 for guidance

☐ TPC ☐ OTC ☐ Place in VOID ☐ Edit Corr.:⇒ Plant Mngt Staff Member - Approval

Comments:

RI/DPC Print Name and Date Continued ☐

F

Reviews		Print	Sign	Date	SQR Qualified Yes	SQR Qualified No	SQR Qualified Dept.	✓ If Comments
	☐				☐	☐		
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	☐				☐	☐		
	☐				☐	☐		
RCD	☒	K. Burgess	K. Burgess	1/25/01			EPSD	
Independent	☒	K. Burgess	K. Burgess	1/25/01	☒	☐	EPSD	✓

G

Safety Evaluation Required ☐ Yes ☒ No **Environmental Review Required** ☐ Yes ☒ No

H

1. ☒ **SQR Program Final Review and Approval**

Approval ☒ Disapproval ☐

K Burgess 1/31/01
SQR Qualified Independent Reviewer / Date

Paul A. Blaisdell
Department Head/Responsible Individual

2/5/01
Approval Date

2. ☐ **SORC/PORC/RI/DH Final Review and Approval**

Department Head/Responsible Individual / Date

Meeting No.:

Approval Signature

Approval Date

Effective Date: 2/27/01

2/5/01
Approval Date

2/27/01
Effective Date

Critical Parameter Data Sheet - MP3

PARAMETER (EAL Threshold)		TIME								
Barrier Affected	**Computer ID***									
RCS Subcooling (32° F/115° F Adverse CTMT) - RCS	CVSUBCOOL									
RVLMS (19%) Plenum - Fuel	CVPLENLVLA/B									
Core Exit TC Temperature (718°/1200° F) - Fuel	CVCETMX									
RE-04A/05A Reading (500/5/2000 R/hr) - Fuel, RCS, CTMT	RMS-R04A/R05A									
CTMT Pressure (60 PSIA) - CTMT	CVCTPRESS									
MP3 Kaman Vent Mon (RE-10A) Reading (.01/.1/.8 µCi/cc) - *Offsite Releases*	CVHVR 10A1/10B									
MP3 SLCRS Gas Monitoring Reading (≥ 1/10/30 µCi/cc) Offsite Releases	CVHVR19A1									

(1)

*Note: If these specific data points are not available, others that measure the parameter may be used.