

Callaway Plant
Post Office Box 620
Fulton, Missouri 65251



April 21, 1994

Document Control Desk
Office of Nuclear Reactor Regulation
U.S. Nuclear Regulatory Commission
Mail Stop P1-137
Washington, DC 20555

ULNRC-2998

Gentlemen:

**DOCKET 50-483
CALLAWAY PLANT
NUMARC/NESP-007 EAL SUBMITTAL
REQUEST FOR ADDITIONAL INFORMATION**

You will find attached one (1) copy of our response to your **Request for Additional Information (RAI)** associated with our submittal. Your RAI was transmitted to us in your letter TAC M88479 dated April 7, 1994.

If you have any questions regarding these responses please call me at (314) 676-8212 or Mr. Mark Hicks at (314) 676-8705.

Very Truly Yours,

Milton A. Stiller
Manager, Nuclear Safety and
Emergency Preparedness

M/A/MWH:alr

Enclosure

cc: J. B. O'Brien, EP Specialist, U.S. Nuclear Regulatory Commission, w/a
L. R. Wharton, Licensing Project Manager, Callaway Plant, w/a
J. B. Martin, USNRC Regional Administrator, Region III, w/a
B. A. Bartlett, USNRC Resident Inspector, Callaway Plant, w/a
L. R. Greger, USNRC Region III - Chief, Reactor Projects Section III A, w/a
Manager, Electric Department, Missouri Public Service Commission, w/a
Shaw, Pittman, Potts & Trowbridge, w/a

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**RESPONSE
TO
REQUEST
FOR
ADDITIONAL
INFORMATION
(RAI)**

DOCKET 50-483

**UNION ELECTRIC
CALLAWAY PLANT**

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EMERGENCY ACTION LEVELS

Group 1 ABNORMAL RADIATION EVENTS
Offsite Events

<u>UNUSUAL EVENT</u>	<u>ALERT</u>	<u>SITE EMERGENCY</u>	<u>GENERAL EMERGENCY</u>
<p>A. Any Unplanned Release of Radioactivity to the Environment That Exceeds 2 Times the Radiological Effluent Control Limits in the ODCM, (APA-ZZ-01003) for ≥ 60 minutes.</p> <p>MODES: At All Times</p>	<p>B. Any Unplanned Release of Radioactivity to the Environment That Exceeds 200 Times the Radiological Effluent Control Limits in the ODCM, (APA-ZZ-01003) for ≥ 15 minutes.</p> <p>MODES: At All Times</p>	<p>C. EAB Dose Resulting From an Actual or Imminent Release of Gaseous Radioactivity Exceeds 100 mrem TEDE or 500 mrem CDE Thyroid for the Actual or Projected Duration of the Release.</p> <p>MODES: At All Times</p>	<p>D. EAB Dose Resulting From an Actual or Imminent Release of Gaseous Radioactivity Exceeds 1000 mrem TEDE or 5000 mrem CDE Thyroid for the Actual or Projected Duration of the Release.</p> <p>MODES: At All Times</p>
<p>Indicators</p> <p>1. <u>All</u> of the following:</p> <p>a. A valid alarm and reading on <u>any</u> effluent monitor:</p> <p>HB-RE-18 (Channel 186) GT-RE-21B (Channel 213) GH-RE-10B (Channel 103)</p> <p>b. The valid reading is 2 times the Hi Hi alarm setpoint (trip setpoint) value.</p> <p>c. The release cannot be terminated within 60 minutes of the alarm actuation.</p> <p><u>OR</u></p> <p>2. <u>Both</u> of the following:</p> <p>a. Confirmed sample analysis indicates that a release exceeding 2 times the applicable values of the ODCM (APA-ZZ-01003), has occurred.</p> <p>b. The release cannot be terminated within 60 minutes.</p>	<p>Indicators</p> <p>1. <u>All</u> of the following:</p> <p>a. A valid alarm and reading on <u>any</u> effluent monitor:</p> <p>HB-RE-18 (Channel 186) GT-RE-21B (Channel 213) GH-RE-10B (Channel 103)</p> <p>b. The valid reading is 200 times the Hi Hi alarm setpoint (trip setpoint) value.</p> <p>c. The release cannot be terminated within 15 minutes of the alarm actuation.</p> <p><u>OR</u></p> <p>2. <u>Both</u> of the following:</p> <p>a. Confirmed sample analysis indicates that a release exceeding 200 times the applicable values of the ODCM (APA-ZZ-01003), has occurred.</p> <p>b. The release cannot be terminated within 15 minutes.</p>	<p>Indicators</p> <p><u>Any</u> of the following:</p> <p>*1. A valid reading on the Unit Vent monitor, GT-RE-21B (Channel 213) $> 8.1E+5 \mu\text{Ci/sec}$ for 15 minutes.</p> <p>2. A valid dose projection indicates >100 mrem TEDE or >500 mrem CDE thyroid dose at the EXCLUSION AREA BOUNDARY using inplant rad data or field monitoring team survey results.</p> <p>3. Field survey results at the EAB corresponding to > 100 mrem/hr TEDE for 1 hour (or expected to continue for 1 hour) or > 500 mrem/hr CDE thyroid for 1 hour of inhalation.</p> <p>*Declare the event using this indicator <u>only</u> if an actual dose assessment per Indicator 2 cannot be performed in 15 minutes.</p>	<p>Indicators</p> <p><u>Any</u> of the following:</p> <p>*1. A valid reading on the Unit Vent monitor GT-RE-21B (Channel 213) $> 8.1E+6 \mu\text{Ci/sec}$ for 15 minutes.</p> <p>2. A valid dose projection indicates >1000 mrem TEDE or >5000 mrem CDE thyroid dose at the EXCLUSION AREA BOUNDARY using inplant rad data or field monitoring team survey results.</p> <p>3. Field survey results at the EAB corresponding to $> 1,000$ mrem/hr TEDE for 1 hour (or expected to continue for 1 hour) or $> 5,000$ mrem/hr CDE thyroid for 1 hour of inhalation.</p> <p>*Declare the event using this indicator <u>only</u> if an actual dose assessment per Indicator 2 cannot be performed in 15 minutes.</p>

EMERGENCY ACTION LEVELS

Group 1 ABNORMAL RADIATION EVENTS

Onsite Events

<u>UNUSUAL EVENT</u>	<u>ALERT</u>	<u>ALERT</u>								
<p>E.* An Unexpected Increase in Plant Radiation.</p> <p>MODES: At All Times</p> <p><u>Indicators</u> Any of the following:</p> <ol style="list-style-type: none"> Spent Fuel Pool level is decreasing on EC-LI-0039A with Normal makeup being added, and all irradiated fuel assemblies remain covered. Refueling Pool level is decreasing on BB-LI-0053A or B with Normal makeup being added, and all irradiated fuel assemblies remain covered. Any valid (Confirmed by HP survey) ARM (other than a Group 1, G. Safe Shutdown ARM) >1000 times normal. (Normal levels can be considered as the monitor reading prior to the noticed increase.) <p>* This Initiating Condition is not meant to apply to anticipated temporary increases due to planned events (e.g., incore detector movement, radwaste container movement, depleted resin transfers, upper internal movements, etc.)</p>	<p>F.* Major Damage to Irradiated Fuel or Loss of Water Level That Has or Will Result in the Uncovering of Irradiated Fuel Outside the Reactor Vessel.</p> <p>MODES: At All Times</p> <p><u>Indicators</u> Any of the following:</p> <ol style="list-style-type: none"> A VALID Hi-Hi Alarm on Fuel Building exhaust monitors GG-RE-27 or 28 (Channel 273 or 283) of $1.46 \text{ E-3 } \mu\text{Ci/cc}$. Containment refueling bridge area radiation monitor (SD-41) $\geq 150 \text{ m/hr}$. Fuel building area radiation monitor (SD-37 or 38) $> 70 \text{ m/hr}$. Report of visual observation of loss of water level resulting in irradiated fuel being uncovered. <p>* This Initiating Condition is not meant to apply to anticipated temporary increases due to planned events (e.g., incore detector movement, radwaste container movement, depleted resin transfers, upper internal movements, etc.)</p>	<p>G.* Release of Rad Material, or an Increase in Rad Level that <u>Either</u> Impedes Safe Operations or the Ability to Establish or Maintain Cold Shutdown.</p> <p>MODES: At All Times</p> <p><u>Indicators</u> Any of the following:</p> <ol style="list-style-type: none"> Valid (confirmed by HP) reading on SD-33 (Control Room) $>15 \text{ m/hr}$. Valid (confirmed by HP) reading on the following Safe Shutdown Area ARMs: <table border="0" style="margin-left: 40px;"> <tr> <td>SD-26</td> <td>PC Changeout Area</td> </tr> <tr> <td>SD-23</td> <td>RHR Hx Area Corr.</td> </tr> <tr> <td>SD-15</td> <td>Door to HPACA Area</td> </tr> <tr> <td>SD-16</td> <td>Fire Brigade Locker Area</td> </tr> </table> > 1000 times normal (normal levels can be considered as the monitor reading prior to the noticed increase). <p>* This Initiating Condition is not meant to apply to anticipated temporary increases due to planned events (e.g., incore detector movement, radwaste container movement, depleted resin transfers, upper internal movements, etc.)</p>	SD-26	PC Changeout Area	SD-23	RHR Hx Area Corr.	SD-15	Door to HPACA Area	SD-16	Fire Brigade Locker Area
SD-26	PC Changeout Area									
SD-23	RHR Hx Area Corr.									
SD-15	Door to HPACA Area									
SD-16	Fire Brigade Locker Area									

EMERGENCY ACTION LEVELS

Group 2 FISSION PRODUCT BARRIERS

A. UNUSUAL EVENT	B. ALERT	C. SITE EMERGENCY	D. SITE EMERGENCY	E. GENERAL EMERGENCY
Any <u>CONTAINMENT BARRIER</u> Indicator	Any <u>RCS BARRIER</u> Indicator or Any <u>FUEL CLAD BARRIER</u> Indicator	Any <u>FUEL CLAD BARRIER</u> Indicator and Any <u>RCS BARRIER</u> Indicator	A <u>CTMT BARRIER</u> <u>Loss</u> Indicator and Any <u>RCS</u> or <u>FUEL CLAD BARRIER</u> Indicator	A <u>Loss</u> Indicator from any two barriers and Any Indicator from the third

CONTAINMENT BARRIER MODES: 1-4	RCS BARRIER MODES: 1-4	FUEL CLAD BARRIER MODES: 1-4										
<p><u>Loss indicators:</u></p> <ol style="list-style-type: none"> <u>Containment Pressure</u> <ol style="list-style-type: none"> A rapid unexplained loss of CTMT pressure following an initial increase in pressure. or CTMT pressure or sump level not increasing with a LOCA. <u>Containment Isolation Valve Status</u> Incomplete CTMT isolation allowing a direct release to the environment, following a valid CTMT isolation signal (CISA, CISB, CPIS). <u>SG Release with Primary-Secondary Leakage</u> <ol style="list-style-type: none"> Pri-to-sec leakage greater than Tech Spec allowable and either of the following: <ol style="list-style-type: none"> The leaking SG pressure is decreasing in an uncontrolled manner or completely depressurized. Manual use of the leaking SG PORV for cool down. <p><u>Potential Loss indicators:</u></p> <ol style="list-style-type: none"> <u>Critical Safety Function Status</u> Meet the entry requirements for FRZ.1, Red Path Summary for CTMT. <u>Containment Pressure</u> <ol style="list-style-type: none"> H2 concentration in containment >4% or Less than 1 full train of Cmtt spray and Cmtt cooling fans, with Cmtt pressure greater than 27 psig. <u>Significant Radioactive Inventory in Cmtt</u> GT-RE-59/60 (Channels 591/601) reading >15 E+3 R/hr <u>Core Exit Thermocouples</u> <ol style="list-style-type: none"> Core exit TCs >1200°F and restoration procedures not effective in 15 minutes. or Core exit TCs >700°F and RVLIS (pumps off) <40% and restoration procedures not effective in 15 minutes. 	<p><u>Loss indicators:</u></p> <ol style="list-style-type: none"> <u>RCS Leak Rate</u> Safety Injection initiated with a loss of subcooling (less than instrument error) using Attachment 2 or 3 of Emerg. Procedure E-0. <u>SG Tube Rupture</u> <ol style="list-style-type: none"> Any of the following: <ol style="list-style-type: none"> GE-RE-92 (Channel 925) >2.0E-5 $\mu\text{Ci/cc}$ BM-RE-25 (Channel 256) >1.0E-4 $\mu\text{Ci/cc}$ SJ-RE-02 (Channel 026) >1.0E-4 $\mu\text{Ci/cc}$ Narrow range level in any SG continues to increase in an uncontrolled manner and either of the following: <ol style="list-style-type: none"> The ruptured SG pressure is decreasing in an uncontrolled manner or completely depressurized. Manual use of the ruptured SG PORV for cool down. <u>Containment Radiation Monitoring</u> GT-RE-59/60 (Channels 591/601) reading >1 E+3 R/hr. <p><u>Potential Loss indicators:</u></p> <ol style="list-style-type: none"> <u>Critical Safety Function Status</u> Meet the entry requirement for FRZ.1, Red Path Heat Sink or FRP.1, Red Path for Integrity. <u>RCS Leak Rate</u> RCS leakage >50 gpm. <u>SG Tube Rupture</u> <ol style="list-style-type: none"> Any of the following: <ol style="list-style-type: none"> GE-RE-92 (Channel 925) >2.0 E-5 $\mu\text{Ci/cc}$ BM-RE-25 (Channel 256) >1.0 E-4 $\mu\text{Ci/cc}$ SJ-RE-02 (Channel 026) >1.0 E-4 $\mu\text{Ci/cc}$ Narrow range level in any SG continues to increase in an uncontrolled manner. and the primary-to-secondary leak rate exceeds 50 gpm. 	<p><u>Loss indicators:</u></p> <ol style="list-style-type: none"> <u>Critical Safety Function Status</u> Meet the entry requirements for FRC.1, Red Path for Core cooling. <u>Primary Coolant Activity Level</u> RCS coolant activity >300 $\mu\text{Ci/cc}$ dose equivalent I-131. <u>Containment Radiation Monitoring</u> GT-RE-59/60 (Channels 591/601) reading >3 E+3 R/hr. <p><u>Potential Loss indicator:</u></p> <ol style="list-style-type: none"> <u>Critical Safety Function Status</u> Meet the entry requirements for FRC.2, Orange Path for Core Cooling or FRH.1, Red Path for Heat Sink. <u>Core Exit Thermocouples</u> Core exit TCs >700°F. <u>Reactor Vessel Water Level</u> <ol style="list-style-type: none"> RVLIS (Pumps Off) less than 40% or RVLIS (Pumps On) less than minimum <table border="1"> <thead> <tr> <th>RCPs on</th> <th>Minimum</th> </tr> </thead> <tbody> <tr> <td>4</td> <td>44</td> </tr> <tr> <td>3</td> <td>30</td> </tr> <tr> <td>2</td> <td>20</td> </tr> <tr> <td>1</td> <td>13</td> </tr> </tbody> </table> 	RCPs on	Minimum	4	44	3	30	2	20	1	13
RCPs on	Minimum											
4	44											
3	30											
2	20											
1	13											

EMERGENCY ACTION LEVELS

Group 3 HAZARDS AFFECTING PLANT SAFETY
Security Events

<u>UNUSUAL EVENT</u>	<u>ALERT</u>	<u>SITE EMERGENCY</u>	<u>GENERAL EMERGENCY</u>
<p>A. Confirmed Security Event Which Indicates a Potential Degradation in the Level of Safety of the Plant.</p> <p>MODES: At All Times</p>	<p>B. Security Event in the Plant Protected Area.</p> <p>MODES: At All Times</p>	<p>C. Security Event in a Safe Shutdown Area.</p> <p>MODES: At All Times</p>	<p>D. Security Event Resulting in a Loss of the Ability to Reach and Maintain Cold Shutdown.</p> <p>MODES: At All Times</p>
<p>Indicators <u>Any</u> of the following:</p> <ol style="list-style-type: none"> 1. Bomb device discovered within the plant Protected Area and outside the following Safe Shutdown Areas: <ol style="list-style-type: none"> a. Area 5 b. Containment c. Aux Feed Pump Rooms d. Aux Building e. Diesel Generator Building f. UHS Cooling Tower g. ESW Pumphouse h. Control Building i. RWST j. Fuel Building 2. Confirmed report from the Shift Security Supervisor of an attempted entry, sabotage or security threat that cannot be properly compensated for within 10 minutes. 	<p>Indicators Confirmed report by the Shift Security Supervisor of an intrusion by a hostile force into the plant Protected Area.</p>	<p>Indicators <u>Any</u> of the following</p> <ol style="list-style-type: none"> 1. Bomb device discovered within <u>any</u> of the following areas: <ol style="list-style-type: none"> a. Area 5 b. Containment c. Aux Feed Pump Rooms d. Aux Building e. Diesel Generator Building f. UHS Cooling Tower g. ESW Pumphouse h. Control Building i. RWST j. Fuel Building 2. Confirmed report from the Shift Security Supervisor of an intrusion by a hostile force into <u>any</u> of the following areas: <ol style="list-style-type: none"> a. Area 5 b. Containment c. Aux Feed Pump Rooms d. Aux Building e. Diesel Generator Building f. UHS Cooling Tower g. ESW Pumphouse h. Control Building i. RWST j. Fuel Building 	<p>Indicators <u>Any</u> of the following:</p> <ol style="list-style-type: none"> 1. Occupation of the Control Room by a hostile force. 2. Occupation of the Aux Shutdown Panel by a hostile force.

EMERGENCY ACTION LEVELS

Group 3 HAZARDS AFFECTING PLANT SAFETY

Fires

UNUSUAL EVENT	ALERT
<p>E. Fire Within Protected Area Boundary Not Extinguished Within 15 Minutes of Verification.</p> <p>MODES: At All Times</p> <p><u>Indicators</u></p> <p>1. Fire in or <u>adjacent</u> to <u>any</u> of the following:</p> <ul style="list-style-type: none"> a. Area 5 b. Containment c. Aux Feed Pump Rooms d. Aux Building e. Diesel Generator Building f. UHS Cooling Tower g. ESW Pumphouse h. Control Building i. RWST j. Fuel Building <p><u>and</u></p> <p>2. Not extinguished within 15 minutes of control room verification of a fire.</p>	<p>F. Fire Affecting the Operability of Plant Safety Systems Required to Establish or Maintain Safe Shutdown.</p> <p>MODES: At All Times</p> <p><u>Indicators</u></p> <p>1. Fire in <u>any</u> of the following areas:</p> <ul style="list-style-type: none"> a. Area 5 b. Containment c. Aux Feed Pump Rooms d. Aux Building e. Diesel Generator Building f. UHS Cooling Tower g. ESW Pumphouse h. Control Building i. RWST j. Fuel Building <p><u>and</u></p> <p>2. There is visible damage to permanent structures or equipment, affecting the operability of safety related equipment.</p>

Natural Events

UNUSUAL EVENT	ALERT
<p>G. Natural and Destructive Phenomena Affecting the Protected Area.</p> <p>MODES: At All Times</p> <p><u>Indicators</u></p> <p><u>Any</u> of the following:</p> <ul style="list-style-type: none"> 1. a. Response spectrum recorder operating annunciator 98E alarms in the Control Room <u>and</u> b. Verified to be a real event per OTO-SG-00001. 2. Report of a turbine rotating component failure resulting in casing penetration or major damage to seals causing a rapid loss of lubricating oil or hydrogen. 3. Explosion, vehicle crash or tornado in or <u>adjacent</u> to <u>any</u> of the following: <ul style="list-style-type: none"> a. Area 5 b. Containment c. Aux Feed Pump Rooms d. Aux Building e. Diesel Generator Building f. UHS Cooling Tower g. ESW Pumphouse h. Control Building i. RWST j. Fuel Building 	<p>H. Natural and Destructive Phenomena Affecting a Safe Shutdown Area.</p> <p>MODES: At All Times</p> <p><u>Indicators</u></p> <p><u>Any</u> of the following:</p> <ul style="list-style-type: none"> 1. a. Operating basis earthquake annunciator 98D alarms in the Control Room <u>and</u> b. Earthquake greater than OBE levels (0.12g) in the horizontal and vertical directions as indicated by LIGHT "OSG-AE-1" or LIGHT "OSG-AE-2" 2. a. Report of a tornado, high wind, vehicle crash, explosion, or other natural or destructive phenomena to <u>any</u> of the following Safe Shutdown areas: <ul style="list-style-type: none"> 1. Area 5 2. Containment 3. Aux Feed Pump Rooms 4. Aux Building 5. Diesel Generator Building 6. UHS Cooling Tower 7. ESW Pumphouse 8. Control Building 9. RWST 10. Fuel Building <u>and</u> <ul style="list-style-type: none"> b. There is visible damage to permanent structures or equipment, affecting plant operations.

EMERGENCY ACTION LEVELS

Group 3 HAZARDS AFFECTING PLANT SAFETY

Toxic Gas

Control Room Evacuation Events

<u>UNUSUAL EVENT</u>	<u>ALERT</u>
<p>I. Release of Toxic or Flammable Gases Deemed Detrimental to Safe Operation of the Plant.</p> <p>MODES: At All Times</p> <p><u>Indicators</u> Any of the following:</p> <ol style="list-style-type: none"> 1. Report or detection of toxic or flammable gases that enter within the Exclusion Area Boundary, that have created a HAZARDOUS ATMOSPHERE per CTP-ZZ-01200. 2. Confirmed report by local, County or State Officials of potential evacuation of site personnel as determined from the DOT evacuation tables for selected hazardous materials in the DOT Emergency Response Guide for Hazardous Materials. 	<p>J. Release of Toxic or Flammable Gases Within a Facility Structure Which Jeopardizes Operation of Systems Required to Establish or Maintain Cold Shutdown.</p> <p>MODES: At All Times</p> <p><u>Indicators</u> Any of the following:</p> <ol style="list-style-type: none"> 1. Report or detection of toxic or flammable gases, not properly contained, within or adjacent to any of the following Safe Shutdown Areas, that have created a HAZARDOUS ATMOSPHERE per CTP-ZZ-01200. <ol style="list-style-type: none"> a. Area 5 b. Containment c. Aux Feed Pump Rooms d. Aux Building e. Diesel Generator Building f. UHS Cooling Tower g. ESW Pumphouse h. Control Building i. RWST j. Fuel Building

<u>ALERT</u>	<u>SITE EMERGENCY</u>
<p>K. Control Room Evacuation Has Been Initiated.</p> <p>MODES: At All Times</p> <p><u>Indicators</u> Entry into OTO-ZZ-00001, Control Room evacuation is required.</p>	<p>L. Control Room Evacuation Has Been Initiated and Plant Control Cannot Be Established.</p> <p>MODES: At All Times</p> <p><u>Indicators</u> 1. Entry into OTO-ZZ-00001, Control Room evacuation is required.</p> <p>and</p> <ol style="list-style-type: none"> 2. Control of the Aux Feed System and a SG PORV for cooldown cannot be established within 15 minutes.

EMERGENCY ACTION LEVELS

Group 4 SYSTEM MALFUNCTIONS
Annunciator Events

<u>UNUSUAL EVENT</u>	<u>ALERT</u>	<u>SITE EMERGENCY</u>
<p>A. Unplanned Loss of Most or All Alarms (Annunciators) for Greater Than 15 Minutes.</p> <p>MODES: 1-4</p>	<p>B. Unplanned Loss of All Annunciators With Either a Transient In Progress, or the Plant Computer is Unavailable.</p> <p>MODES: 1-4</p>	<p>C. Inability to Monitor a Significant Transient in Progress.</p> <p>MODES: 1-4</p>
<p><u>Indicators</u></p> <p>1. <u>Either</u> of the following:</p> <p>a. 3 of 4 field power supplies have failed for greater than 15 minutes (loss of all annunciators) and not a result of planned action.</p> <p>b. All thirteen logic power supplies have failed for greater than 15 minutes (loss of all annunciators) and not a result of planned action.</p> <p><u>or</u></p> <p><u>All</u> of the following:</p> <p>c. Any combination of power supplies (including Optical Isolators) have failed for greater than 15 minutes.</p> <p>d. Any failed power supply's <u>minimum compensatory actions</u>, per OTO-RK-00001, cannot be maintained.</p> <p>e. The loss does not result from planned action.</p>	<p><u>Indicators</u></p> <p>1. <u>Either</u> of the following:</p> <p>a. 3 of 4 field power supplies have failed for greater than 15 minutes (loss of all annunciators) and not a result of planned action.</p> <p>b. All thirteen logic power supplies have failed for greater than 15 minutes (loss of all annunciators) and not a result of planned action.</p> <p><u>or</u></p> <p><u>All</u> of the following:</p> <p>c. Any combination of power supplies (including Optical Isolators) have failed for greater than 15 minutes.</p> <p>d. Any failed power supply's <u>minimum compensatory actions</u>, per OTO-RK-00001, cannot be maintained.</p> <p>e. The loss does not result from planned action.</p> <p><u>and</u></p> <p>2. <u>Any</u> of the following:</p> <p>a. A change in reactor power greater than \pm 10%.</p> <p>b. Safety injection initiation.</p> <p>c. The plant computer is unavailable.</p>	<p><u>Indicators</u></p> <p><u>All</u> of the following:</p> <p>1. a. <u>Either</u> of the following:</p> <p>1) 3 of 4 field power supplies have failed (loss of all annunciators).</p> <p>2) All thirteen logic power supplies have failed (loss of all annunciators).</p> <p><u>or</u></p> <p>b. <u>Both</u> of the following:</p> <p>1) Any combination of power supplies (including Optical Isolators) have failed.</p> <p>2) Any failed power supply's <u>minimum compensatory actions</u>, per OTO-RK-00001, cannot be maintained.</p> <p><u>and</u></p> <p>2. The plant computer is unavailable.</p> <p><u>and</u></p> <p>3. <u>Either</u> of the following:</p> <p>a. A change in reactor power greater than \pm 10%.</p> <p>b. Safety injection initiation.</p>

EMERGENCY ACTION LEVELS

Group 4 SYSTEM MALFUNCTIONS

Electrical Events (Operating)					Electrical Events (Shutdown)	
<u>UNUSUAL EVENT</u>	<u>ALERT</u>	<u>SITE EMERGENCY</u>	<u>SITE EMERGENCY</u>	<u>GENERAL EMERGENCY</u>	<u>UNUSUAL EVENT</u>	<u>ALERT</u>
D. Loss of All Offsite Power to Essential Busses for Greater Than 15 Minutes.	E. Only One AC Source to Essential Busses for >15 Minutes Such That Any Additional Single Failure Would Result in Station Blackout.	F. Loss of All Offsite Power and Loss of All Onsite AC Power to Essential Busses.	G. Loss of All Vital DC Power	H. Prolonged Loss of All Offsite Power and Prolonged Loss of All Onsite AC Power.	I. Loss of Required DC Power During Cold Shutdown or Refueling Mode for Greater Than 15 Minutes.	J. Loss of All Offsite Power and Loss of All Onsite AC Power to Essential Busses During Cold Shutdown or Refueling.
MODES: 1-6	MODES: 1-4	MODES: 1-4	MODES: 1-4	MODES: 1-4	MODES: 5, 6	MODES: 5, 6, Defueled
<u>Indicators</u> <u>All</u> of the following: 1. Loss of offsite power to NB01 and NB02. 2. NB01 and NB02 being supplied by NE01 and NE02. 3. The loss of offsite power has occurred for >15 minutes.	<u>Indicators</u> 1. Loss of <u>any</u> 3 of the following power sources: a. Offsite power to NB01 b. Offsite power to NB02 c. Emergency Diesel NE01 d. Emergency Diesel NE02 <u>and</u> 2. The loss of <u>all</u> 3 has occurred for >15 minutes.	<u>Indicators</u> 1. Loss of <u>all</u> 4 of the following power sources: a. Offsite power to NB01 b. Offsite power to NB02 c. Emergency Diesel NE01 d. Emergency Diesel NE02 <u>and</u> 2. The loss of <u>all</u> 4 has occurred for >15 minutes.	<u>Indicators</u> 1. Loss of all vital DC power as indicated by less than 106.9 VDC on vital DC busses NK01, NK02, NK03, and NK04. <u>and</u> 2. Failure to restore power to at least one DC bus within 15 minutes.	<u>Indicators</u> <u>All</u> of the following: 1. Loss of offsite power to NB01 and NB02. 2. Loss of both Emergency Diesel Generators NE01 and NE02. 3. a. Restoration of at least one emergency bus within 4 hours is <u>not</u> likely. <u>or</u> b. Meet the entry requirements for FRC.1, Red Path for Core Cooling.	<u>Indicators</u> 1. No operable (Division 1 or 2) Vital DC power source as indicated by < 106.9 VDC on NK01 or NK03 (Division 1) <u>or</u> NK02 or NK04 (Division 2). <u>and</u> 2. Failure to restore power to at least one operable Division of Vital DC power within 15 minutes.	<u>Indicators</u> 1. Loss of <u>all</u> 4 of the following power sources: a. Offsite power to NB01 b. Offsite power to NB02 c. Emergency Diesel NE01 d. Emergency Diesel NE02 <u>and</u> 2. The loss of <u>all</u> 4 has occurred for >15 minutes.

EMERGENCY ACTION LEVELS

Group 4 SYSTEM MALFUNCTIONS

Communication Events	RCS/Fuel Events		Reactor Protection System		
<u>UNUSUAL EVENT</u>	<u>UNUSUAL EVENT</u>	<u>UNUSUAL EVENT</u>	<u>ALERT</u>	<u>SITE EMERGENCY</u>	<u>GENERAL EMERGENCY</u>
<p>O. Unplanned Loss of All Onsite or Offsite Communication Capabilities</p> <p>MODES: 1-6</p> <p><u>Indicators</u></p> <p>1. <u>All</u> of the following:</p> <ol style="list-style-type: none"> Complete failure of Plant telephone systems Complete failure of Paging systems Complete failure of Plant radios Complete failure of Plant Emergency Dedicated Phones. <p>or</p> <p>2. <u>All</u> of the following:</p> <ol style="list-style-type: none"> Complete failure of ENS (Red Phone) line Complete failure of Notification and Coordination line (Blue Phone) Complete failure of Touch-tone telephone system (EPABX) Complete failure of the Sheriff's radio system. 	<p>P. Fuel Clad Degradation</p> <p>MODES: 1-6</p> <p><u>Indicators</u></p> <p>1. <u>Any</u> of the following:</p> <ol style="list-style-type: none"> >1.0 $\mu\text{Ci}/\text{gram}$ Dose Equivalent I-131 for greater than a 48 hour continuous period. Dose Equivalent I-131 activity exceeding the limits of Tech Spec Fig. 3.4-1. >100/E bar $\mu\text{Ci}/\text{gram}$ of gross radioactivity. 	<p>Q. RCS Leakage</p> <p>MODES: 1-4</p> <p><u>Indicators</u></p> <p>1. <u>Any</u> of the following:</p> <ol style="list-style-type: none"> Unidentified leakage greater than 10 gpm. Pressure boundary leakage greater than 10 gpm. Identified leakage greater than 25 gpm. 	<p>R. Failure of Reactor Protection System Instrumentation to Complete or Initiate an Automatic Reactor Trip Once a Reactor Protection System Setpoint Has Been Exceeded and Manual Trip Was Successful.</p> <p>MODES: 1, 2</p> <p><u>Indicators</u></p> <p>1. Failure of reactor protection system instrumentation to initiate an automatic trip.</p> <p>and</p> <p>2. Manual reactor trip is successful using either manual trip switch, SB-HS-1 on RL003 or SB-HS-42 on RL006.</p>	<p>S. Failure of Reactor Protection System Instrumentation to Complete or Initiate an Automatic Reactor Trip Once a Reactor Protection System Setpoint Has Been Exceeded and Manual Trip Was <u>NOT</u> Successful.</p> <p>MODES: 1, 2</p> <p><u>Indicators</u></p> <p>1. Failure of reactor protection system instrumentation to initiate an automatic trip.</p> <p>and</p> <p>2. Manual reactor trip is <u>NOT</u> successful using manual trip switches SB-HS-1 on RL003 and SB-HS-42 on RL006.</p>	<p>T. Failure of the Reactor Protection System to Complete an Automatic Trip and Manual Trip Was <u>NOT</u> Successful and There Is Indication of an Extreme Challenge to the Ability to Cool the Core.</p> <p>MODES: 1, 2</p> <p><u>Indicators</u></p> <p><u>All</u> of the following:</p> <ol style="list-style-type: none"> Failure of reactor protection system instrumentation to initiate an automatic trip. Manual reactor trip is <u>NOT</u> successful using manual trip switches SB-HS-1 on RL003 and SB-HS-42 on RL006. Meet the entry requirements for FRC.1 or FRH.1, red path summaries for core cooling and heat sink.