Union Electric
Callaway Plant

Garry L. Randolph
Vice President and
Chief Nuclear Officer

PO Box 620
Fulton, MO 65251
573.676.8245
573.676.4056 fax

September 1, 2000

U. S. Nuclear Regulatory Commission
Attn: Document Control Desk
Mail Stop P1-137
Washington, DC 20555-0001

ULNRC-4299

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Gentlemen:

EMERGENCY PREPAREDNESS
RADIOLOGICAL EMERGENCY RESPONSE PLAN
CALLAWAY PLANT, DOCKET NUMBER 50-483
UNION ELECTRIC CO.

Ref: 1) NRC Inspection 50-483/00-04
2) NRC Inspection 50-483/00-11

Enclosed is one copy of Change Notice 00-002 to Revision 23 of the Callaway Plant Radiological Emergency Response Plan (RERP), Attachment 1. Also enclosed is a description of the changes, Attachment 2.

This Change Notice revises Group 1 Emergency Action Levels (EALs). It changes EAL indicator values for Group 1B, 1C, and 1D. This was a result of NRC Inspection Report 2000-04-02 Unresolved Item.

This Change Notice does not decrease the effectiveness of emergency preparedness for the Callaway Plant. The RERP continues to meet the standards of 10CFR50.47(b) and the requirements of 10CFR50.54(q).

Sincerely,

Garry L. Randolph
Vice President &
Chief Nuclear Officer

GLR/alr
Enclosures (2)

A045

cc: Mr. Ellis W. Merschoff (2 copies w/a)
Regional Administrator
U.S. Nuclear Regulatory Commission
Region IV
611 Ryan Plaza Drive, Suite 400
Arlington, TX 76011-8064

Mr. Vince Gaddy (1 copy w/a)
Senior Resident Inspector
Callaway Resident Office
U.S. Nuclear Regulatory Commission
8201 NRC Road
Steedman, MO 65077

Mr. Jack N. Donohew (2 copies w/a)
Licensing Project Manager, Callaway Plant
Office of Nuclear Reactor Regulation
U. S. Nuclear Regulatory Commission
Mail Stop 7E1
Washington, DC 20555-2738

Manager, Electric Department (1 copy w/o)
Missouri Public Service Commission
PO Box 360
Jefferson City, MO 65102

Mr. Paul Elkman (1 copy w/a)
Senior Emergency Preparedness Analyst
U. S. Nuclear Regulatory Commission
Region IV
611 Ryan Plaza Drive, Suite 400
Arlington, TX 76011-8064

Mr. Thomas A. Baxter (1 copy w/o)
Shaw, Pittman, Potts & Trowbridge
2300 N. Street N.W.
Washington, DC 20037

Mr. Jerry B. Uhlmann (1 copy w/o)
Director
Missouri State Emergency Management Agency
PO Box 116
Jefferson City, MO 65102

Superintendent, Licensing (1 copy w/o)
Wolf Creek Nuclear Operating Corporation
PO Box 411
Burlington, KS 66839

STATE OF MISSOURI)
) S S
COUNTY OF CALLAWAY)

Garry L. Randolph, of lawful age, being first duly sworn upon oath says that he is Vice President and Chief Nuclear Officer for Union Electric Company; that he has read the foregoing document and knows the content thereof; that he has executed the same for and on behalf of said company with full power and authority to do so; and that the facts therein stated are true and correct to the best of his knowledge, information and belief.

By Garry L Randolph
Garry L. Randolph
Vice President and
Chief Nuclear Officer

SUBSCRIBED and sworn to before me this 1 day of September, 2000.

Gloria J Taylor

GLORIA J. TAYLOR
NOTARY PUBLIC
STATE OF MISSOURI - CALLAWAY COUNTY
NOTARY SEAL
MY COMMISSION EXPIRES JUNE 21, 2003

bcc: J. V. Laux/J. D. Schnack w/o
A. C. Passwater/D. E. Shafer (470) w/o
M. S. Evans/File K162.0002 w/a
S. L. Gallagher (100) w/o
M. L. Orr (470) NSRB w/o
GLR Chrono w/o
E210.0001 w/o
A160.0761 w/o

Table 4-1
EMERGENCY ACTION LEVELS

Group 1 ABNORMAL RADIATION EVENTS
Offsite Events

UNUSUAL EVENT	ALERT	SITE EMERGENCY	GENERAL EMERGENCY
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. MODES: At All Times	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. MODES: At All Times	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. MODES: At All Times	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. MODES: At All Times
Indicators 1. All of the following: a. A **valid alarm** and reading on any of the following effluent monitors: HB-RE-18 GT-RE-21B GH-RE-10B b. The valid reading is 2 times the Hi Hi alarm setpoint value. c. The release cannot be terminated within 60 minutes of the alarm actuation. OR 2. Both of the following: a. **Confirmed** sample analysis indicates that a release exceeding 2 times the applicable values of the ODCM (APA-ZZ-01003), has occurred. b. The release **cannot** be terminated within 60 minutes.	**Indicators** 1. All of the following: a. A **valid alarm** and reading on any of the following effluent monitors: HB-RE-18 GT-RE-21B GH-RE-10B b. The valid reading is 200 times the Hi Hi alarm setpoint value. c. The release **cannot** be terminated within 15 minutes of the alarm actuation. *CN 00-002* OR 2. Both of the following: a. A **Valid reading** on any of the following monitors: AB-RE-0111 >~~12~~27 mrem/hr AB-RE-0112 >~~12~~27 mrem/hr AB-RE-0113 >~~12~~27 mrem/hr AB-RE-0114 >~~12~~27 mrem/hr FC-RE-0385 >~~65~~150 mrem/hr b. The release **cannot** be terminated within 15 minutes. OR 3. Both of the following: a. **Confirmed** sample analysis indicates that a release exceeding 200 times the applicable values of the ODCM (APA-ZZ-01003), has occurred. b. The release **cannot** be terminated within 15 minutes.	**Indicators** Any of the following: *CN 00-002* *1. A **valid reading** on the Unit Vent monitor, GT-RE-21B, > ~~2.35~~2.42E+8 µCi/sec for 15 minutes or longer. *2. Both of the following: a. A **Valid reading** on any of the following monitors: AB-RE-0111 >148 mrem/hr AB-RE-0112 >148 mrem/hr AB-RE-0113 >148 mrem/hr AB-RE-0114 >148 mrem/hr FC-RE-0385 >865 mrem/hr b. The reading has been, or is expected to be, exceeded for 15 minutes or longer. 3. A **valid dose projection** indicates **>100 mrem TEDE** or **>500 mrem CDE** thyroid dose at, or beyond, the **EXCLUSION AREA BOUNDARY** using in plant rad data or field monitoring team survey results. 4. Field survey results at, or beyond, 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. *Declare the event using this indicator only if actual dose projections per Indicator 3 cannot be performed within 15 minutes of the monitors exceeding the reading.	**Indicators** Any of the following: *CN 00-002* *1. A **valid reading** on the Unit Vent monitor, GT-RE-21B, > ~~2.35~~2.42E+9 µCi/sec for 15 minutes or longer. *2. Both of the following: a. A **Valid reading** on any of the following monitors: AB-RE-0111 >1480 mrem/hr AB-RE-0112 >1480 mrem/hr AB-RE-0113 >1480 mrem/hr AB-RE-0114 >1480 mrem/hr FC-RE-0385 >8650 mrem/hr b. The reading has been, or is expected to be, exceeded for 15 minutes or longer. 3. A **valid dose projection** indicates **>1000 mrem TEDE** or **>5000 mrem CDE** thyroid dose at, or beyond, the **EXCLUSION AREA BOUNDARY** using in plant rad data or field monitoring team survey results. 4. Field survey results at, or beyond, 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. * Declare the event using this indicator only if actual dose projections per Indicator 3 cannot be performed within 15 minutes of the monitors exceeding the reading.

Table 4-1
EMERGENCY ACTION LEVELS

Group 1 ABNORMAL RADIATION EVENTS
Onsite Events

UNUSUAL EVENT	ALERT	ALERT
E.* An Unexpected Increase in Plant Radiation. MODES: At All Times	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. MODES: At All Times Unless Noted	G.* Release of Rad Material, or an Increase in Rad Level that Either Impedes Safe Operations or the Ability to Establish or Maintain Cold Shutdown. MODES: At All Times
Indicators Any of the following: 1. Spent Fuel Pool level is decreasing on EC-LI-0039A with Normal makeup being added, and all irradiated fuel assemblies remain covered. 2. Refueling Pool level is decreasing on BB-LI-0053A or B with Normal makeup being added, and all irradiated fuel assemblies remain covered. 3. 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.) * 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.)	**Indicators** Any of the following: 1. A **VALID** Hi-Hi Alarm on Fuel Building exhaust monitors GG-RE-27 or 28 (Channel 273 or 283). 2. Containment refueling bridge area radiation monitor (SD-41) > 100 mR/hr. (Mode 6 only.) 3. Fuel building area radiation monitor (SD-37 or 38) > 30 mR/hr. 4. Report of visual observation of loss of water level resulting in irradiated fuel being uncovered. * 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.)	**Indicators** Any of the following: 1. Valid (confirmed by HP) reading on SD-33 (Control Room) >15 mR/hr. 2. Valid (confirmed by HP) reading on the following Safe Shutdown ARMs: SDRE-26 AB 2026 PC Changeout SDRE-23 AB 2000 RHR Hx Area Corridor SDRE-15 AB 1974 West Corridor-Central SDRE-16 AB 1974 West Corridor-South > 1000 times normal (normal levels can be considered as the monitor reading prior to the noticed increase). * 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.)

Table 4-1
EMERGENCY ACTION LEVELS

Group 2 FISSION PRODUCT BARRIERS

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

CONTAINMENT BARRIER
MODES: 1-4

Loss indicators:

1. Containment Pressure
   a) A rapid unexplained loss of CTMT pressure following an initial increase in pressure.
   or
   b) CTMT pressure or sump level not increasing with a LOCA.
2. Containment Isolation Valve Status
   Incomplete CTMT isolation allowing a direct release to the environment, following a valid CTMT isolation signal (CISA, CISB, CPIS).
3. SG Release with Primary-Secondary Leakage
   a) Pri-to-sec leakage verified greater than 150 gpd per SG. T.S. 3.4.6.2 (ITS 3.4.13)
   and
   b) Any of the following:
      1) The leaking SG pressure is decreasing in an uncontrolled manner or completely depressurized.
      2) Use of the ruptured SG PORV for cool down or temperature control.
      3) The leaking SG is supplying the TDAFW turbine.

Potential Loss indicators:

4. Critical Safety Function Status
   Meet the entry requirements for FRZ.1, Red Path Summary for CTMT.
5. Containment Pressure
   a) H2 concentration in containment >4%.
   or
   b) Less than 1 full train of Ctmt spray and Ctmt cooling fans, with Ctmt pressure greater than 27 psig.
6. Significant Radioactive Inventory in Ctmt
   GT-RE-59 or 60 (Channels 591 or 601) reading >1.5 E+4 R/hr
7. Core Exit Thermocouples
   a) Core exit TCs >1200°F and restoration procedures not effective in 15 minutes.
   or
   b) Core exit TCs >700°F and RVLIS (pumps off) <40% and restoration procedures not effective in 15 minutes.

RCS BARRIER
MODES: 1-4

Loss indicators:

1. RCS Leak Rate
   Safety Injection initiated with a loss of subcooling (less than instrument error) using Attachment 2 or 3 of Emerg. Procedure E-0.
2. SG Tube Rupture
   a) Any of the following:
      1) GE-RE-92 (Channel 925) >2.0E-5 µCi/cc
      2) BM-RE-25 (Channel 256) >1.0E-4 µCi/cc
      3) SJ-RE-02 (Channel 026) >1.0E-4 µCi/cc
      4) Level in any SG continues to increase in an uncontrolled manner
   and
   b) Any of the following:
      1) The ruptured SG pressure is decreasing in an uncontrolled manner or completely depressurized.
      2) Use of the ruptured SG PORV for cool down or temperature control.
      3) The leaking SG is supplying the TDAFW turbine.
3. Containment Radiation Monitoring
   GT-RE-59 or 60 (Channels 591 or 601) reading > 6.4 E+0 R/hr.

Potential Loss indicators:

4. Critical Safety Function Status
   Meet the entry requirement for FRH.1, Red Path Heat Sink or FRP.1, Red Path for Integrity.
5. RCS Leak Rate
   RCS leakage >50 gpm.
6. SG Tube Rupture
   a) Any of the following:
      1) GE-RE-92 (Channel 925) >2.0 E-5 µCi/cc
      2) BM-RE-25 (Channel 256) >1.0 E-4 µCi/cc
      3) SJ-RE-02 (Channel 026) >1.0 E-4 µCi/cc
      4) Level in any SG continues to increase in an uncontrolled manner.
   and
   b) the primary-to-secondary leak rate exceeds 50 gpm.

FUEL CLAD BARRIER
MODES: 1-4

Loss indicators:

1. Critical Safety Function Status
   Meet the entry requirements for FRC.1, Red Path for Core cooling.
2. Primary Coolant Activity Level
   RCS coolant activity >300µCi/cc dose equivalent I-131.
3. Containment Radiation Monitoring
   GT-RE-59 or 60 (Channels 591 or 601) reading >2.8E+3 R/hr.

Potential Loss indicator:

4. Critical Safety Function Status
   Meet the entry requirements for FRC.2, Orange Path for Core Cooling or FRH.1, Red Path for Heat Sink.
5. Core Exit Thermocouples
   Core exit TCs >700°F.
6. Reactor Vessel Water Level
   a) RVLIS (Pumps Off) less than 40%
   or
   b) RVLIS (Pumps On) less than minimum

RCP's on	Minimum
4	44
3	30
2	20
1	13

Table 4-1
EMERGENCY ACTION LEVELS

Group 3 HAZARDS AFFECTING PLANT SAFETY
Security Events

UNUSUAL EVENT	ALERT	SITE EMERGENCY	GENERAL EMERGENCY
A. Confirmed Security Event Which Indicates a Potential Degradation in the Level of Safety of the Plant. MODES: At All Times	B. Security Event in the Plant Protected Area. MODES: At All Times	C. Security Event in a Safe Shutdown Area. MODES: At All Times	D. Security Event Resulting in a Loss of the Ability to Reach and Maintain Cold Shutdown. MODES: At All Times
Indicators Any of the following: 1. Bomb device discovered within the plant Protected Area and outside the following Safe Shutdown Areas: 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.	**Indicators** Confirmed report by the Shift Security Supervisor of an intrusion by a hostile force into the plant Protected Area.	**Indicators** Any of the following 1. Bomb device discovered within any of the following areas: 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 any of the following areas: 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	**Indicators** Any of the following: 1. Occupation of the Control Room by a hostile force. 2. Occupation of the Aux Shutdown Panel by a hostile force.

Table 4-1
EMERGENCY ACTION LEVELS

Group 3 HAZARDS AFFECTING PLANT SAFETY

Fires

UNUSUAL EVENT	ALERT
E. Fire Within Protected Area Boundary Not Extinguished Within 15 Minutes of Verification. MODES: At All Times	F. Fire Affecting the Operability of Plant Safety Systems Required to Establish or Maintain Safe Shutdown. MODES: At All Times
Indicators 1. Fire in or adjacent to any of the following: 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 and 2. Not extinguished within 15 minutes of control room verification of a fire.	**Indicators** 1. Fire in any of the following areas: 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 and 2. There is visible damage to permanent structures or equipment, affecting the operability of safety related equipment.

Natural and Destructive Events

UNUSUAL EVENT	ALERT
G. Natural and Destructive Phenomena Affecting the Protected Area. MODES: At All Times	H. Natural and Destructive Phenomena Affecting a Safe Shutdown Area. MODES: At All Times
Indicators Any of the following: 1. a. Response spectrum recorder operating annunciator 98E alarms in the Control Room and 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 adjacent to any of the following: 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	**Indicators** Any of the following: 1. a. Operating basis earthquake annunciator 98D alarms in the Control Room and 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 any of the following Safe Shutdown areas: 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 and b. There is visible damage to permanent structures or equipment, affecting plant operations.

Table 4-1
EMERGENCY ACTION LEVELS

Group 3 HAZARDS AFFECTING PLANT SAFETY

Toxic Gas

UNUSUAL EVENT	ALERT
I. Release of Toxic or Flammable Gases Deemed Detrimental to Safe Operation of the Plant. MODES: At All Times	J. Release of Toxic or Flammable Gases Within a Facility Structure Which Jeopardizes Operation of Systems Required to Establish or Maintain Cold Shutdown. MODES: At All Times
Indicators Any of the following: 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-01300, deemed detrimental to safe operation. 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.	**Indicators** Any of the following: 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-01300,jeopardizing operation of systems required to establish or maintain Cold Shutdown 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

Control Room Evacuation Events

ALERT	SITE EMERGENCY
K. Control Room Evacuation Has Been Initiated. MODES: At All Times	L. Control Room Evacuation Has Been Initiated and Plant Control Cannot Be Established. MODES: At All Times
Indicators Entry into OTO-ZZ-00001, Control Room Inaccessibility, is required.	**Indicators** 1. Entry into OTO-ZZ-00001, Control Room Inaccessibility, is required. and 2. Control of the Aux Feed System and a SG PORV for cooldown cannot be established within 15 minutes.

Table 4-1
EMERGENCY ACTION LEVELS

Group 4 SYSTEM MALFUNCTIONS
Annunciator Events

UNUSUAL EVENT	ALERT	SITE EMERGENCY
A. Unplanned Loss of Most or All Alarms (Annunciators) for Greater Than 15 Minutes. MODES: 1-4	B. Unplanned Loss of Most or All Annunciators With Either a Transient In Progress, or the Plant Computer is Unavailable. MODES: 1-4	C. Inability to Monitor a Significant Transient in Progress. MODES: 1-4
Indicators 1. Any of the following: a. 3 of 4 field power supplies indicate < 105 volts for greater than 15 minutes (loss of all annunciators) and not a result of planned action. b. Field Power Supply Bus voltage is less than 105 volts for greater than 15 minutes (loss of all annunciators) and not a result of planned action. c. Ten or more logic power supplies have failed for greater than 15 minutes (loss of all annunciators) and not a result of planned action. d. Five or more Multiplexer Adapter Rack Fuses have failed for greater than 15 minutes and not a result of planned action. or 2. All of the following: a. Any combination of power supplies (including Optical Isolators) or Multiplexer Adapter Rack Fuses have failed for greater than 15 minutes. b. Any minimum compensatory actions, per OTO-RK-00001, cannot be maintained. c. The loss does not result from planned action.	**Indicators** 1. Any of the following: a. 3 of 4 field power supplies indicate < 105 volts for greater than 15 minutes (loss of all annunciators) and not a result of planned action. b. Field Power Supply Bus voltage is less than 105 volts for greater than 15 minutes (loss of all annunciators) and not a result of planned action. c. Ten or more logic power supplies have failed for greater than 15 minutes (loss of all annunciators) and not a result of planned action. d. Five or more Multiplexer Adapter Rack Fuses have failed for greater than 15 minutes and not a result of planned action. or 2. All of the following: a. Any combination of power supplies (including Optical Isolators) or Multiplexer Adapter Rack Fuses have failed for greater than 15 minutes. b. Any minimum compensatory actions, per OTO-RK-00001, cannot be maintained. c. The loss does not result from planned action. and 3. Any of the following: a. A change in reactor power greater than ±10%. b. Safety injection initiation. c. Compensatory plant parameters monitored via the plant computer, per OTO-RK-00001, are not valid or cannot be obtained.	**Indicators** 1. Any of the following: a. 3 of 4 field power supplies indicate < 105 volts (loss of all annunciators). b. Field Power Supply Bus voltage is less than 105 volts (loss of all annunciators). c. Ten or more logic power supplies have failed (loss of all annunciators). d. Five or more Multiplexer Adapter Rack Fuses have failed (loss of all annunciators). or 2. All of the following: a. Any combination of power supplies (including Optical Isolators) or Multiplexer Adapter Rack Fuses have failed. b. Any minimum compensatory actions, per OTO-RK-00001, cannot be maintained. and 3. Any of the following: a. A change in reactor power greater than ±10%. b. Safety injection initiation. and 4. Compensatory plant parameters monitored via the plant computer, per OTO-RK-00001, are not valid or cannot be obtained.

Table 4-1
EMERGENCY ACTION LEVELS

Group 4 SYSTEM MALFUNCTIONS

Electrical Events (Operating)

UNUSUAL EVENT	ALERT	SITE EMERGENCY	SITE EMERGENCY	GENERAL EMERGENCY
D. Loss of All Offsite Power to Essential Busses for Greater Than 15 Minutes. MODES: 1-4	E. Only One AC Source to Essential Busses for >15 Minutes Such That Any Additional Single Failure Would Result in Station Blackout. MODES: 1-4	F. Loss of All Offsite Power and Loss of All Onsite AC Power to Essential Busses. MODES: 1-4	G. Loss of All Vital DC Power MODES: 1-4	H. Prolonged Loss of All Offsite Power and Prolonged Loss of All Onsite AC Power. MODES: 1-4
Indicators All of the following: 1. Loss of offsite power to NB01 and NB02. * 2. The loss of offsite power has occurred for >15 minutes.	**Indicators** 1. Loss of any 3 of the following power sources: a. Offsite power to NB01 * b. Offsite power to NB02 * c. Emergency Diesel NE01 d. Emergency Diesel NE02 and 2. The loss of all 3 has occurred for >15 minutes.	**Indicators** 1. Loss of all 4 of the following power sources: a. Offsite power to NB01 * b. Offsite power to NB02 * c. Emergency Diesel NE01 d. Emergency Diesel NE02 and 2. The loss of all 4 has occurred for >15 minutes.	**Indicators** 1. Loss (Bus Voltage < 106.9 VDC) of all 4 of the following busses: a. NK01 b. NK02 c. NK03 d. NK04 and 2. Failure to restore power to at least one DC bus within 15 minutes.	**Indicators** All 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 not likely. or b. Meet the entry requirements for FRC.1, Red Path for Core Cooling.

Electrical Events (Shutdown)

UNUSUAL EVENT	UNUSUAL EVENT	ALERT
I. Loss of Required DC Power During Cold Shutdown or Refueling Mode for Greater Than 15 Minutes. MODES: 5, 6	J. Loss of All Offsite Power to Essential Busses for Greater Than 15 Minutes. MODES: 5,6	K. Loss of All Offsite Power and Loss of All Onsite AC Power to Essential Busses During Cold Shutdown or Refueling. MODES: 5, 6, Defueled
Indicators 1. Loss of Division 1 Vital DC power as indicated by <106.9 VDC on NK01 or NK03. and Loss of Division 2 Vital DC power as indicated by <106.9 VDC NK02 or NK04. and 2. The loss of both Divisions has occurred for >15 minutes.	**Indicators** 1. Loss of offsite power to NB01 and NB02. * and 2. The loss of offsite power has occurred for >15 minutes.	**Indicators** 1. Loss of all 4 of the following power sources: a. Offsite power to NB01 * b. Offsite power to NB02 * c Emergency Diesel NE01 d. Emergency Diesel NE02 and 2. The loss of all 4 has occurred for >15 minutes.

* Note: Supply Breakers opening due to degraded switchyard voltage is considered a Loss of Offsite Power.

Table 4-1
EMERGENCY ACTION LEVELS

Group 4 SYSTEM MALFUNCTIONS

Shutdown Capability

UNUSUAL EVENT	ALERT	SITE EMERGENCY	SITE EMERGENCY
L.* Inability to Perform a Required Shutdown Within Technical Specification Limits. MODES: 1-4	M. Inability to Maintain Plant in Cold Shutdown. MODES: 5, 6	N. Loss of Water Level That Has or Will Uncover Fuel in the Reactor Vessel. MODES: 5, 6	O. Complete Loss of Function Needed to Achieve or Maintain Hot Shutdown. MODES: 1-4
Indicators 1. The plant is not brought to a required operating mode within a Technical Specification LCO action completion time. * It is not intended to declare an Unusual Event due to an unknown condition or failure resulting in exceeding the allowable action statement time. The allowable action statement time is always available from the time of the discovery.	**Indicators** 1. Any of the following: a. Complete loss of both trains of RHR. b. Complete loss of both trains of CCW. c. Complete loss of both trains of ESW. and 2. Either of the following: a. Greater than 200°F on any valid incore thermocouple.* b. Uncontrolled temperature rise, with no actions available that will likely prevent approaching 200°F on any valid incore thermocouple.* * If a thermocouple is not available, use Wide Range Hot Leg temperature indications: • BBTI413A - Loop 1 • BBTI423A - Loop 2 • RECORDERS BBTR413 - Loop 1 BBTR423 - Loop 2 BBTR433 - Loop 3 BBTR443 - Loop 4	**Indicators** 1. Any of the following: a. Complete loss of both trains of RHR. b. Complete loss of both trains of CCW. c. Complete loss of both trains of ESW. and 2. Either of the following: a. Greater than 200°F on any valid incore thermocouple.* b. Uncontrolled temperature rise, with no actions available that will likely prevent approaching 200°F on any valid incore thermocouple.* and 3. a. Water level in the reactor vessel is less than 2.0 inches on BB-LI-0053A or B. or b. RVLIS (pumps off) <55% * If a thermocouple is not available, use Wide Range Hot Leg temperature indications: • BBTI413A - Loop 1 • BBTI423A - Loop 2 • RECORDERS BBTR413 - Loop 1 BBTR423 - Loop 2 BBTR433 - Loop 3 BBTR443 - Loop 4	**Indicators** 1. All of the following: a. Failure to bring the reactor subcritical with the control rods fully inserted. b. Complete loss of all Boron Injection Flowpaths. or 2. All of the following: a. All steam generator levels <10% wide range. b. All steam dump valves to condenser (AB UV-34, 35 and 36) are NOT responding to steam header pressure controller (AB PK-507 or AB UK-33). c. All steam generator steam dump valves to atmosphere are NOT operating properly (AB-PIC-1A, 2A, 3A and 4A). d. Complete loss of both RHR trains. (A complete loss of ESW or CCW constitutes a complete loss of RHR.) or 3. All of the following: a. The Ultimate Heat Sink (UHS) is inoperable as a result of level or temperature. b. Complete loss of both UHS Cooling Tower trains.

Table 4-1
EMERGENCY ACTION LEVELS

Group 4 SYSTEM MALFUNCTIONS

Communication Events

UNUSUAL EVENT
P. Unplanned Loss of All Onsite or Offsite Communication Capabilities MODES: 1-6
Indicators 1. All of the following on-site systems: a. Complete failure of Plant telephone systems b. Complete failure of Gai-tronics systems c. Complete failure of Plant radios d. Complete failure of Plant Emergency Dedicated Phones. or 2. All of the following offsite systems: a. Complete failure of ENS (Red Phone) line. b. Complete failure of Back Up Radio System (BURS). c. Complete failure of Plant telephone system. d. Complete failure of the Sheriff's radio system. e. Complete failure of the SENTRY notification system.

RCS/Fuel Events

UNUSUAL EVENT	UNUSUAL EVENT
Q. Fuel Clad Degradation MODES: 1-6	R. RCS Leakage MODES: 1-4
Indicators 1. Any of the following: a. >1.0 µCi/gram Dose Equivalent I-131 for greater than a 48 hour continuous period. b. Dose Equivalent I-131 activity exceeding the limits of Tech Spec Fig. 3.4-1. (ITS Fig. 3.4.16-1) c. >100/E bar µ Ci/gram of gross radioactivity.	**Indicators** 1. Any of the following: a. Unidentified leakage greater than 10 gpm. b. Pressure boundary leakage greater than 10 gpm. c. Identified leakage greater than 25 gpm.

Reactor Protection System

ALERT	SITE EMERGENCY	GENERAL EMERGENCY
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 Successful. MODES: 1, 2	T. 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 **NOT** Successful. MODES: 1, 2	U. Failure of the Reactor Protection System to Complete an Automatic Trip and Manual Trip Was **NOT** Successful and There Is Indication of an Extreme Challenge to the Ability to Cool the Core. MODES: 1, 2
Indicators 1. All of the following: a. An automatic (not manual) reactor trip setpoint has been exceeded as listed in Attachment 1 of E-0. b. An automatic reactor trip is NOT successful. c. A manual reactor trip IS successful using manual trip switches SB-HS-1 on RL003 OR SB-HS-42 on RL006.	**Indicators** 1. All of the following: a. An automatic (not manual) reactor trip setpoint has been exceeded as listed in Attachment 1 of E-0. b. An automatic reactor trip is NOT successful. c. A manual reactor trip is NOT successful using manual trip switches SB-HS-1 on RL003 AND SB-HS-42 on RL006.	**Indicators** 1. All of the following: a. An automatic (not manual) reactor trip setpoint has been exceeded as listed in Attachment 1 of E-0. b. An automatic reactor trip is NOT successful. c. A manual reactor trip is NOT successful using manual trip switches SB-HS-1 on RL003 AND SB-HS-42 on RL006. d. Meet the entry requirements for FRC.1 OR FRH.1, red path summaries for core cooling and heat sink.