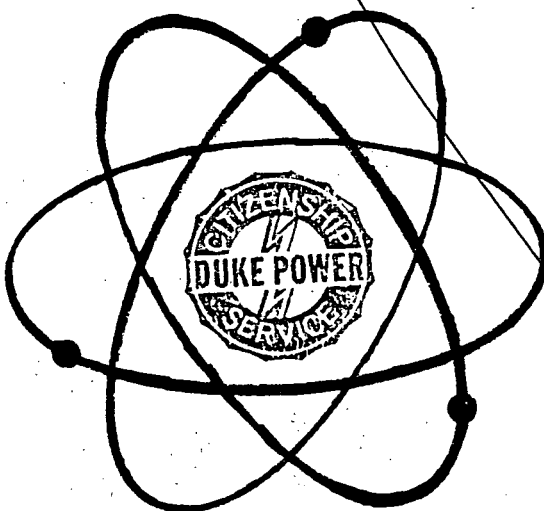


# DUKE POWER COMPANY

## OCONEE NUCLEAR STATION

### EMERGENCY PLAN IMPLEMENTING PROCEDURES



APPROVED:

*M. S. Tuckman*

M. S. Tuckman, Station Manager

*5/12/87*

Date Approved

*5/12/87*

Effective Date

Volume C

Revision 87-2

May, 1987

8706120191 870603  
PDR ADDCK 05000269  
F PDR

VOLUME C

TABLE OF CONTENTS

	Emergency Telephone Numbers - (87-1, 03/31/87)
RP/0/B/1000/01	Emergency Classification - (12/09/86)
RP/0/B/1000/02	Notification of Unusual Event - (03/07/86)
RP/0/B/1000/03	Alert - (03/07/86)
RP/0/B/1000/04	Site Area Emergency - (03/07/86)
RP/0/B/1000/05	General Emergency - (03/07/86)
RP/0/B/1000/06	Protective Action Recommendations - (01/16/87)
RP/0/B/1000/07	Security Event - (04/30/85)
RP/0/B/1000/08	Oconee Nuclear Data Transmission from TSC - (1/4/85)
RP/0/B/1000/09	Procedure for Site Assembly (07/29/86)
RP/0/B/1000/10	Procedure for Emergency Evacuation of Station Personnel - (6/1/84)
RP/0/B/1000/11	Dose Extension (11/29/84)
RP/0/B/1000/12	Determination of Protective Action Guides by Control Room Personnel or Emergency Coordina- tor During a Radiological Accident (07/29/86)
RP/0/B/1000/14	Spent Fuel Transport Emergency Plan (10/24/86)
RP/0/B/1000/15	Offsite Communicator - (03/06/86)
RP/0/B/1000/16	Medical Response - (08/01/86)

**CONTROL COPY**

RP/O/B/1000/01

DUKE POWER COMPANY  
PROCEDURE PROCESS RECORD**INFORMATION ONLY**

(1) ID No. \_\_\_\_\_

Change(s) 0 to0 IncorporatedSEPARATION(2) STATION Oconee Nuclear Station(3) PROCEDURE TITLE Emergency Classification(4) PREPARED BY Coleman L. Jennings DATE 12/8/86(5) REVIEWED BY Fred Owens DATE 12-9-86Cross-Disciplinary Review By David Deatherage <sup>12-9-86</sup> N/R \_\_\_\_\_

(6) TEMPORARY APPROVAL (If Necessary)

By \_\_\_\_\_ (SRO) DATE \_\_\_\_\_

By \_\_\_\_\_ DATE \_\_\_\_\_

(7) APPROVED BY Joe M. Davis DATE 12-9-86

(8) MISCELLANEOUS

Reviewed/Approved By Craig L. Parkin DATE 12/09/86

Reviewed/Approved By \_\_\_\_\_ DATE \_\_\_\_\_

(9) COMMENTS (For procedure reissue indicate whether additional changes, other than previously approved changes, are included.  
Attach additional pages, if necessary.) ADDITIONAL CHANGES INCLUDED. ☐ Yes ☐ No

(10) COMPARED WITH CONTROL COPY \_\_\_\_\_ DATE \_\_\_\_\_

COMPLETION

(11) DATE(S) PERFORMED \_\_\_\_\_

(12) PROCEDURE COMPLETION VERIFICATION

- ☐ Yes ☐ N/A Check lists and/or blanks properly initialed, signed, dated or filled in N/A or N/R, as appropriate?
- ☐ Yes ☐ N/A Listed enclosures attached?
- ☐ Yes ☐ N/A Data sheets attached, completed, dated and signed?
- ☐ Yes ☐ N/A Charts, graphs, etc. attached and properly dated, identified and marked?
- ☐ Yes ☐ N/A Acceptance criteria met?

VERIFIED BY \_\_\_\_\_ DATE \_\_\_\_\_

PROCEDURE COMPLETION APPROVED \_\_\_\_\_ DATE \_\_\_\_\_

(14) REMARKS (Attach additional pages, if necessary.)

DUKE POWER COMPANY  
OCONEE NUCLEAR STATION  
CLASSIFICATION OF EMERGENCY

1.0 Symptoms

1.1 Notification of Unusual Event

- 1.1.1 Events are in progress or have occurred which indicate a potential degradation of the level of safety of the plant.
- 1.1.2 No releases of radioactive material requiring offsite response or monitoring are expected unless further degradation of safety occurs.

1.2 Alert

- 1.2.1 Events are in progress or have occurred which involve an actual or potential substantial degradation of the level of safety of the plant.
- 1.2.2 Loss of one fission product barrier.
- 1.2.3 Any releases are expected to be limited to small fractions of the EPA Protection Action Guideline exposure levels.

1.3 Site Area Emergency

- 1.3.1 Events are in process or have occurred which involve actual or likely major failures of plant functions needed for protection of the public.
- 1.3.2 Loss of two fission product barriers.
- 1.3.3 Any releases are not expected to exceed EPA Protective Action Guideline exposure levels except near the site boundary.

1.4 General Emergency

- 1.4.1 Events are in process or have occurred which involve actual or imminent substantial core degradation or melting with potential for loss of containment integrity.
- 1.4.2 Loss of two fission product barriers and failure or imminent failure of the third barrier.
- 1.4.3 Releases can be reasonably expected to exceed EPA Protective Action Guideline exposure levels offsite for more than the immediate site area.

## 2.0 Immediate Actions

- 2.1 Compare actual plant conditions to the Emergency Action Level(s) listed in Enclosure 4.1 then declare the appropriate Emergency Class as indicated.
- 2.2 Initiate the Emergency Response Procedure (RP) applicable to the Emergency Class as follows:

Notification of Unusual Event	RP/0/B/1000/02
Alert	RP/0/B/1000/03
Site Area Emergency	RP/0/B/1000/04
General Emergency	RP/0/B/1000/05

## 3.0 Subsequent Actions

- 3.1 To escalate, de-escalate or close out the Emergency, consult the procedure indicated by the action level.

## 4.0 Enclosures

### 4.1 Emergency Action Level(s) for Emergency Classes

<u>Event No.</u>	<u>Page(s)</u>
4.1.1 Primary Coolant Leak	1 & 2
4.1.2 Fuel Damage	3
4.1.3 Steam System Failure	4
4.1.4 High Radiation/Radiological Effluents	5
4.1.5 Loss of Shutdown Function	6
4.1.6 Loss of Power	7
4.1.7 Fires and Security Actions	8
4.1.8 Spent Fuel Damage	9
4.1.9 Natural Disasters and Other Hazards	10
4.1.10 Other Abnormal Plant Conditions	11 & 12

ENCLOSURE 4.1.1  
PRIMARY COOLANT LEAK

Page 1

UNUSUAL EVENT	ALERT	SITE AREA EMERGENCY	GENERAL EMERGENCY
<p>1. REACTOR SHUTDOWN REQUIRED BY RCS LEAKAGE TS 3.1.6 (ONE OF THE FOLLOWING)</p> <ul style="list-style-type: none"> <li>Primary leakage (unidentified) greater than 1 GPM evaluated as unsafe.</li> <li>Total primary coolant leakage rate (identified) exceeds 10 GPM</li> <li>Any leakage exists through RCS strength boundary (except S/G tubes)</li> <li>OTSG tube leakage (Unit 1-.3 GPM Unit 2&amp;3 - 1 GPM)</li> </ul> <p>2. FAILURE OF A PRESSURIZER PORV TO CLOSE FOLLOWING REDUCTION OF APPLICABLE PRESSURE</p> <ul style="list-style-type: none"> <li>Acoustical monitor indication</li> </ul> <p>WITH</p> <ul style="list-style-type: none"> <li>PZR level increasing with decreasing RCS pressure</li> </ul> <p>AND</p> <ul style="list-style-type: none"> <li>QT temp and pressure alarms</li> </ul>	<p>1. PRIMARY COOLANT LEAK RATE GREATER THAN 50 GPM</p> <ul style="list-style-type: none"> <li>Mismatch between total makeup and total letdown (letdown plus controlled leakage) greater than 50 gpm with PZR not increasing.</li> </ul> <p>2. RAPID GROSS FAILURE OF ONE OTSG TUBE WITH LOSS OF OFF-SITE POWER</p> <p>*NOTE: Leak greater than 10 GPM but less than 200 GPM</p> <ul style="list-style-type: none"> <li>RIA 40 ALERT alarm</li> <li>RIA 16/17 HIGH alarm</li> </ul> <p>AND</p> <ul style="list-style-type: none"> <li>RCS leak rate calculation</li> </ul> <p>AND</p> <ul style="list-style-type: none"> <li>LDST level decreasing AND</li> <li>Undervoltage - underfrequency on HFB 1 and HFB 2</li> </ul> <p>3. RAPID FAILURE OF STEAM GENERATOR TUBES.</p> <p>*NOTE: Leak greater than 50 GPM but less than makeup pump capacity.</p> <ul style="list-style-type: none"> <li>RIA 40 ALERT alarm</li> <li>RIA 16/17 HIGH alarm</li> </ul> <p>AND</p> <ul style="list-style-type: none"> <li>Rapidly decreasing PZR level AND</li> <li>Rapid depressurization of RCS</li> </ul>	<p>1. KNOWN LOCA GREATER THAN MAKEUP PUMP CAPACITY</p> <p>PRIMARY LEAK</p> <ul style="list-style-type: none"> <li>HIGH RB pressure, HIGH RB sump, RIA 4 HIGH alarm, OR</li> <li>Decrease in RCS pressure AND</li> <li>Loss of subcooling margin OR</li> <li>Full HPI and PZR level decreasing</li> </ul> <p>P/S LEAK</p> <ul style="list-style-type: none"> <li>Rx Trip on LOW RCS PRESSURE AND</li> <li>RCS PRESSURE decreasing uncontrollably with <math>T_{avg}</math> constant AND</li> <li>RIA 40 ALERT Alarm</li> <li>RIA 16/17 HIGH alarm AND</li> <li>No significant increase in RB pressure and sump level</li> </ul> <p>2. RAPID FAILURE OF STEAM GENERATOR TUBE LEAK (GREATER THAN 200 GPM) WITH LOSS OF OFFSITE POWER</p> <ul style="list-style-type: none"> <li>SAE #1 EALs for P/S leak AND</li> <li>Undervoltage - Underfrequency alarms in the 230 KV switchyard.</li> </ul>	<p>1. SMALL AND LARGE LOCAS WITH FAILURE OF ECCS - LEADS TO CORE MELT.</p> <ul style="list-style-type: none"> <li>LOCA EALs-SAE #1 or SAE #2</li> </ul> <p>AND</p> <ul style="list-style-type: none"> <li>HPI system failure AND</li> <li>LPI system failure</li> </ul> <p>2. SMALL LOCA AND INITIALLY SUCCESSFUL ECCS WITH FAILURE OF RB HEAT REMOVAL SYSTEMS OVER SEVERAL HOURS LEADS TO CORE MELT AND FAILURE OF CONTAINMENT</p> <ul style="list-style-type: none"> <li>LOCA EALs in SAE #1 AND</li> <li>RB temperature rising AND</li> <li>RB spray system and cooling units fail to function.</li> </ul>

INITIAL NOTIFICATION  
REQUIREMENTSSEE EMERGENCY TELEPHONE  
DIRECTORY

NOTIFY 1,2,3,4

NOTIFY 1,2,3,4

NOTIFY 1,2,3,4

NOTIFY 1,2,3,4

ENCLOSURE 1.1  
PRIMARY CONTAINMENT LEAK

Page 2

UNUSUAL EVENT

ALERT

SITE AREA EMERGENCY

GENERAL EMERGENCY

4. STEAM LINE BREAK WITH GREATER  
THAN 10 BUT LESS THAN 50 GPM  
P/S LEAK RATEP/S LEAK

- RIA 40 ALERT alarm
- RIA 16/17 HIGH alarm AND
- LDST level decreasing

WITH  
EITHERSTEAM LINE BREAK INSIDE RB

- Unexpected increase in Rx power AND
- Rapid decrease in  $T_{avg}$ , PZR level, RCS pressure, Steam pressure AND
- Increased RB pressure and temperature

ORSTEAM LINE BREAK OUTSIDE RB

- Unexpected increase in Rx power AND
- Rapid decrease in  $T_{avg}$ , PZR level, RCS pressure, Steam pressure AND
- Increased PR pressure and temperature if steam line break inside PR.

3. STEAM LINE BREAK WITH GREATER  
THAN 50 GPM P/S LEAKAGE AND  
INDICATION OF FUEL DAMAGE

- Rx trip on Low RCS pressure AND
- RCS pressure and  $T_{avg}$  decreasing uncontrollably AND
- RIA 40 ALERT alarm
- RIA 16/17 HIGH alarm AND
- Chemistry sample analysis indicates fuel damage - I-131 concentration greater than 70  $\mu\text{Ci/ml}$ .

INITIAL NOTIFICATION  
REQUIREMENTSSEE EMERGENCY TELEPHONE  
DIRECTORY

NOTIFY 1,2,3,4

NOTIFY 1,2,3,4

NOTIFY 1,2,3,4

ENCLOSURE 4.1.2  
FUEL DAMAGE

Page 3

UNUSUAL EVENT	ALERT	SITE AREA EMERGENCY	GENERAL EMERGENCY
<p><b>1. FUEL DAMAGE INDICATION</b></p> <hr/> <p><u>HIGH ACTIVITY SAMPLE RESULTS</u></p> <ul style="list-style-type: none"> <li>• Total activity of RCS due to half lives longer than 30 min exceeds 224 / E <math>\mu\text{Ci/ml}</math> when the Rx is critical</li> </ul> <p style="text-align: center;"><u>OR</u></p> <ul style="list-style-type: none"> <li>• I-131 concentration in the secondary side of the steam generator exceeds 1.4 <math>\mu\text{Ci/ml}</math></li> </ul> <p><u>TOTAL FAILED FUEL EXCEEDS 1%</u></p> <ul style="list-style-type: none"> <li>• I-131 concentration in the RCS is between 70 <math>\mu\text{Ci/ml}</math> and 350 <math>\mu\text{Ci/ml}</math></li> </ul> <p><b>2. ABNORMAL COOLANT TEMPERATURE AND/OR PRESSURE OR ABNORMAL FUEL TEMPERATURE OUTSIDE TS LIMITS</b></p> <hr/> <ul style="list-style-type: none"> <li>• An event has occurred which requires operation of the TSOR (Thermal Shock Operating Range).</li> </ul> <p style="text-align: center;"><u>OR</u></p> <ul style="list-style-type: none"> <li>• Exceeding NDT limit</li> </ul> <p style="text-align: center;"><u>OR</u></p> <ul style="list-style-type: none"> <li>• Shift Supervisor's judgement.</li> </ul>	<p><b>1. SEVERE LOSS OF FUEL CLADDING:</b></p> <hr/> <p><u>*NOTE:</u> Mechanical clad failure or flow-induced failure.</p> <ul style="list-style-type: none"> <li>• RCS sample - 350 <math>\mu\text{Ci/ml}</math> to 1770 <math>\mu\text{Ci/ml}</math> - I-131 concentration</li> </ul> <p style="text-align: center;"><u>OR</u></p> <ul style="list-style-type: none"> <li>• RCS sample shows an increase of 70 <math>\mu\text{Ci/ml}</math> in a 30 minute period of time.</li> </ul> <p style="text-align: center;"><u>OR</u></p> <ul style="list-style-type: none"> <li>• 5% total failed fuel rate</li> </ul>	<p><b>1. DEGRADED CORE WITH POSSIBLE LOSS OF COOLABLE GEOMETRY</b></p> <hr/> <p><u>FLOW INDUCED - MECHANICAL</u></p> <ul style="list-style-type: none"> <li>• RCS sample results indicate GAP activity <u>WITH</u></li> <li>• I-131 concentration greater than 1770 <math>\mu\text{Ci/ml}</math></li> </ul> <p><u>FUEL OVER-TEMPERATURE-</u></p> <ul style="list-style-type: none"> <li>• Incore thermocouple readings greater than 700°F <u>AND</u></li> <li>• Excess <math>\text{H}^2</math> in RB or RCS sample <u>AND</u></li> <li>• RCS sample results indicate I-131 concentration greater than 1300 <math>\mu\text{Ci/ml}</math></li> </ul> <p><u>FUEL MELT CONDITIONS</u></p> <ul style="list-style-type: none"> <li>• Incore thermocouple readings are above 2300°F <u>AND</u></li> <li>• RCS sample results indicate I-131 concentration is greater than 1180 <math>\mu\text{Ci/ml}</math>.</li> </ul>	<p><b>1. LOSS OF 2 OF 3 FISSION PRODUCT PRODUCT BARRIERS WITH A POTENTIAL FOR LOSS OF 3RD BARRIER:</b></p> <hr/> <p>Any one of the following are indications of the specific barrier lost:</p> <p><u>CLADDING FAILURE</u></p> <ul style="list-style-type: none"> <li>• RCS sample results indicate GAP activity.</li> </ul> <p style="text-align: center;"><u>WITH</u></p> <ul style="list-style-type: none"> <li>• I-131 concentration greater than 1180 <math>\mu\text{Ci/ml}</math>.</li> </ul> <p><u>LOSS OF CONTAINMENT</u></p> <ul style="list-style-type: none"> <li>• RB penetrations are not valved off or closed.</li> <li>• Steamline break upstream from HSSV and HSSV malfunction.</li> <li>• Steamline break or stop valve failure with S/G tube leak.</li> <li>• RB pressure increases and approaches 59 psig <u>WITH</u> loss of RB spray OR cooling units</li> </ul> <p><u>LOSS OF PRIMARY COOLANT</u></p> <ul style="list-style-type: none"> <li>• HIGH RB pressure</li> <li>• HIGH RB sump level</li> <li>• Loss of subcooling margin</li> <li>• RIA 40 ALERT alarm</li> <li>• RIA 16/17 HIGH alarm</li> <li>• RIA 4 HIGH alarm</li> <li>• RCS pressure decreasing uncontrollably with <math>T_{\text{avg}}</math> constant.</li> <li>• Pressurizer level decreasing</li> </ul>

INITIAL NOTIFICATION REQUIREMENTS

SEE EMERGENCY TELEPHONE DIRECTORY

NOTIFY 1,2,3,4

NOTIFY 1,2,3,4

NOTIFY 1,2,3,4

NOTIFY 1,2,3,4



ENCLOSURE 3  
STEAM SYSTEM FAILURE

Page 4

GENERAL EMERGENCY

## UNUSUAL EVENT

## ALERT

## SITE AREA EMERGENCY

1. RAPID DEPRESSURIZATION OF  
SECONDARY SIDE.  
(ANY ONE OF THE FOLLOWING)

- Observation/indication of steam line break which causes a rapid pressure decrease below relief valve and/or bypass valve setpoints

OR

- Excessive FDW flow to one or both OTSG WITH
- Rapidly increasing level

OR

- Rapidly decreasing level

INITIAL NOTIFICATION  
REQUIREMENTSSEE EMERGENCY TELEPHONE  
DIRECTORY

NOTIFY 1,2,3,4

1. STEAMLINE BREAK WITH GREATER  
THAN 10 BUT LESS THAN 50 GPM  
P/S LEAK RATE.P/S LEAK

- RIA 40 ALERT alarm
- RIA 16/17 HIGH alarm AND
- LDST level decreasing

WITH  
EITHERSTEAMLINE BREAK INSIDE RB

- Unexpected increase in Rx power AND
- Rapid decrease in  $T_{avg}$ , PZR level, RCS pressure, Steam pressure AND
- Increased RB pressure and temperature

ORSTEAMLINE BREAK OUTSIDE RB

- Unexpected increase in Rx power AND
- Rapid decrease in  $T_{avg}$ , PZR level, RCS pressure, Steam pressure AND
- Increased PR pressure and temperature if steam line break inside PR.

NOTIFY 1,2,3,4

1. STEAMLINE BREAK WITH GREATER  
THAN 50 GPM P/S LEAKAGE AND  
INDICATION OF FUEL DAMAGE.

- Rx trip on LOW RCS pressure or HIGH power AND
- RCS pressure and  $T_{avg}$  decreasing uncontrollably AND
- RIA 40 ALERT alarm
- RIA 16/17 HIGH alarm AND
- RCS sample results indicate fuel damage - I-131 concentration greater than 70  $\mu\text{Ci/ml}$

NOTIFY 1,2,3,4

ENCLOSURE 4.1.4  
HIGH RADIATION/RADIOLOGICAL EFFLUENTS

UNUSUAL EVENT	ALERT	SITE AREA EMERGENCY	GENERAL EMERGENCY
<p>1. RADIOLOGICAL EFFLUENT TS LIMITS EXCEEDED</p> <hr/> <p>*NOTE: TS for ONS gaseous release Shared 3-Unit System</p> <p><u>GASEOUS EFFLUENT</u></p> <ul style="list-style-type: none"> <li>RIA-45 in valid alarm mode for more than 1 hour <u>AND</u></li> <li>RIA-46 in valid alarm mode</li> </ul> <p><u>AND</u></p> <ul style="list-style-type: none"> <li>Release rate calculations using vent sample analysis and flow rate data are in excess of TS limits per RP/O/B/1009/15.</li> </ul> <p><u>LIQUID EFFLUENT</u></p> <ul style="list-style-type: none"> <li>RIA-33/34 alarm setpoint established in discharge permit exceeded <u>AND</u></li> <li>Flow not terminated <u>AND</u></li> <li>Samples at restricted area boundary exceed limits of TS 3.9.</li> </ul> <p><u>INITIAL NOTIFICATION REQUIREMENTS</u></p> <p>SEE EMERGENCY TELEPHONE DIRECTORY</p>	<p>1. HIGH RADIATION LEVEL OR HIGH AIRBORNE CONTAMINATION:</p> <hr/> <ul style="list-style-type: none"> <li>Step increase by a factor of 1000 times normal setpoint of RIA-32, 40, 35, 31, 41, 51, 53.</li> </ul> <p>2. RADIOLOGICAL EFFLUENTS EXCEEDING 10 TIMES TS</p> <hr/> <p><u>GASEOUS EFFLUENTS</u></p> <ul style="list-style-type: none"> <li>RIA-46 in valid alarm mode verified by RIA-45</li> </ul> <p><u>AND</u></p> <ul style="list-style-type: none"> <li>10 x Release rate calculations using vent sample analysis and flow rate data are in excess of limits established by RP/O/B/1009/15.</li> </ul> <p><u>LIQUID EFFLUENTS</u></p> <ul style="list-style-type: none"> <li>10 x RIA-33/34 alarm setpoint established in discharge permit <u>AND</u></li> <li>Isolation valve fails to close and flow is not terminated <u>AND</u></li> <li>Samples at restricted area boundary exceed 10 x limits of TS 3.9.</li> </ul>	<p>1. ACCIDENTAL RELEASE OF GASES AT THE SITE BOUNDARY UNDER METEOROLOGICAL CONDITIONS EXISTING AT THE TIME OF RELEASE.</p> <hr/> <ul style="list-style-type: none"> <li>RIA 45 valid alarm mode</li> </ul> <p><u>AND</u></p> <ul style="list-style-type: none"> <li>RIA 46 reading greater than 80 cpm for 30 minutes</li> </ul> <p><u>WITH</u></p> <ul style="list-style-type: none"> <li>Dose calculations verifying dose rates at the site boundary greater than or equal to:</li> </ul> <p>50 mR WB for 30 minutes</p> <p><u>OR</u></p> <p>500 mR WB for 2 minutes</p> <p>2. RADIATION LEVEL IN CONTAINMENT WITH LEAK RATE APPROPRIATE FOR EXISTING RB PRESSURE.</p> <hr/> <ul style="list-style-type: none"> <li>RIA 57 or 58 HIGH alarm <u>AND</u></li> <li>Dose rate inside RB coupled with RB leak rate results in calculated dose rate at site boundary greater than 50 mR/hr WB for 30 minutes or 500 mR/hr WB for 2 minutes.</li> </ul> <p><u>OR</u></p> <ul style="list-style-type: none"> <li>Radiation Monitoring teams measure I-131 equivalent greater than:</li> </ul> <p>250 mR/hr (<math>9 \times 10^{-8}</math> <math>\mu</math>Ci/ml) for 30 min.</p> <p><u>OR</u></p> <p>2500 mR/hr (<math>9 \times 10^{-7}</math> <math>\mu</math>Ci/ml) for 2 min. at the site boundary.</p>	<p>1. ACCIDENTAL RELEASE UNDER ACTUAL METEOROLOGICAL CONDITIONS AT SITE BOUNDARY:</p> <hr/> <ul style="list-style-type: none"> <li>RIA 45 valid alarm mode</li> </ul> <p><u>AND</u></p> <ul style="list-style-type: none"> <li>RIA 46 reading 16,000 cpm</li> </ul> <p><u>WITH</u></p> <ul style="list-style-type: none"> <li>Dose calculations verifying</li> </ul> <p>1 R/hr Whole Body</p> <p><u>OR</u></p> <p>5 R/hr Thyroid</p> <p>2. RADIATION LEVEL IN RB WITH LEAK RATE APPROPRIATE FOR EXISTING RB PRESSURE.</p> <hr/> <ul style="list-style-type: none"> <li>RIA 57 or 58 ALERT alarm</li> </ul> <p><u>AND</u></p> <ul style="list-style-type: none"> <li>Dose Projection equals</li> </ul> <p>1 R/hr Whole Body</p> <p><u>OR</u></p> <p>5 R/hr thyroid</p> <p><u>AND</u></p> <ul style="list-style-type: none"> <li>Radiation Monitoring teams verify dose projections offsite past the Site Boundary.</li> </ul>

NOTIFY 1,2,3,4 and 9 \*\*  
\*\*Liquid releases only

NOTIFY 1,2,3,4 and 9 \*\* NOTIFY 1,2,3,4  
\*\*Liquid releases only

NOTIFY 1,2,3,4

ENCLOSURE  
LOSS OF SHUTDOWN FUNCTIONS

Page 6

## UNUSUAL EVENT

## ALERT

## SITE AREA EMERGENCY

## GENERAL EMERGENCY

1. LOSS OF FUNCTIONS NEEDED  
TO MAINTAIN PLANT COLD  
SHUTDOWN:

- LPI system not functional

AND

- Inability to sustain either natural or forced circulation.

2. FAILURE OF THE RPS TO INITIATE  
AND COMPLETE A SCRAM WHICH  
BRINGS THE RX SUBCRITICAL

- 2 or more RPS channels trip

AND

- Control Rods must be manually tripped or inserted to shutdown the reactor.

1. LOSS OF FUNCTIONS NEEDED  
FOR PLANT HOT SHUTDOWN:

- No HPI flow

AND

- No FDW flow and no EFDW flow

2. TRANSIENT REQUIRING OPERATION OF SD  
SYSTEMS WITH FAILURE TO SCRAM.

- 2 or more RPS channels trip

AND

- Control rods remain withdrawn and can not be manually tripped or inserted.

1. TRANSIENT REQUIRING RX TRIP  
WITH FAILURE TO SCRAM. ADDI-  
TIONAL FAILURE OF CORE COOLING  
AND ECCS WOULD LEAD TO CORE  
MELT:

- RCS pressure greater than 2500 psig

AND

- RB pressure rapidly increasing

AND

- Rx remains critical

2. TRANSIENT INITIATED BY LOSS OF  
FDW AND CONDENSATE SYSTEMS  
FOLLOWED BY FAILURE OF EFDW FOR  
EXTENDED PERIOD. CORE MELT  
POSSIBLE IN SEVERAL HOURS.

- Loss of main condenser

AND

- No FDW OR EFDW flow

AND

- No HPI/LPI flow

INITIAL NOTIFICATION  
REQUIREMENTSSEE EMERGENCY TELEPHONE  
DIRECTORY

NOTIFY 1,2,3,4

NOTIFY 1,2,3,4

NOTIFY 1,2,3,4

UNUSUAL EVENT	ALERT	SITE AREA EMERGENCY	GENERAL EMERGENCY
<p>1. LOSS OF OFFSITE POWER OR LOSS OF ONSITE AC POWER CAPABILITY</p> <hr/> <ul style="list-style-type: none"> <li>• Switchyard isolation <u>OR</u></li> <li>• Underfrequency-undervoltage on MFB #1 or #2 <u>AND</u></li> <li>• Keowee emergency start with transfer of auxiliaries to STBY buses.</li> </ul>	<p>1. LOSS OF OFFSITE POWER AND LOSS OF ALL ONSITE AC POWER</p> <hr/> <p>*NOTE: Alert declared as soon as power outage occurs.</p> <ul style="list-style-type: none"> <li>• Load rejection and Rx trip <u>AND</u></li> <li>• SY isolation on undervoltage underfrequency <u>AND</u></li> <li>• Loss of voltage on MFB 1 &amp; 2 <u>AND</u></li> <li>• Keowee emergency start with transfer of auxiliaries to STBY buses.</li> </ul> <p>2. LOSS OF ALL ONSITE DC POWER</p> <hr/> <p>*NOTE: Alert declared as soon as a loss of DC power occurs.</p> <ul style="list-style-type: none"> <li>• Low voltage on all DC buses <u>OR</u></li> <li>• DC buses unavailable to be closed.</li> </ul> <p>3. RAPID GROSS FAILURE OF ONE OTSG TUBE WITH LOSS OF OFF-SITE POWER.</p> <hr/> <p>*NOTE: Leak greater than 10 GPM but less than 200 GPM.</p> <ul style="list-style-type: none"> <li>• RIA 40 ALERT alarm</li> <li>• RIA 16/17 HIGH alarm <u>AND</u></li> <li>• LDST level decreasing <u>AND</u></li> <li>• RCS leak rate calculation</li> </ul> <p><u>AND</u></p> <ul style="list-style-type: none"> <li>• Undervoltage - underfrequency on MFB 1 and MFB 2</li> </ul>	<p>1. LOSS OF OFFSITE POWER AND LOSS OF ONSITE AC POWER FOR MORE THAN 15 MINUTES</p> <hr/> <ul style="list-style-type: none"> <li>• Undervoltage on MFB 1 &amp; 2 <u>AND</u></li> <li>• Keowee Hydro fails to start either manual or automatic</li> </ul> <p>2. LOSS OF ALL VITAL ONSITE DC POWER FOR MORE THAN 15 MINUTES.</p> <hr/> <ul style="list-style-type: none"> <li>• DC bus undervoltage alarms (all buses) <u>AND</u></li> <li>• DC alarm on EPSL.</li> </ul> <p>3. RAPID FAILURE OF STEAM GENERATOR TUBE LEAK (GREATER THAN 200 GPM) WITH LOSS OF OFFSITE POWER.</p> <hr/> <ul style="list-style-type: none"> <li>• Rx trip on LOW RCS PRESSURE <u>AND</u></li> <li>• RCS PRESSURE decreasing uncontrollably with <math>T_{avg}</math> constant <u>AND</u></li> <li>• RIA 40 ALERT alarm</li> <li>• RIA 16/17 HIGH alarm <u>AND</u></li> <li>• No significant increase in RB pressure and sump level <u>AND</u></li> <li>• Undervoltage-underfrequency alarms in the 230 KV switchyard.</li> </ul>	<p>1. FAILURE OF OFFSITE AND ONSITE POWER ALONG WITH TOTAL LOSS OF EFDW MAKE-UP CAPABILITY FOR SEVERAL HOURS.</p> <hr/> <ul style="list-style-type: none"> <li>• Undervoltage on MFB 1 &amp; 2 alarms for greater than 2 hours <u>AND</u></li> <li>• Keowee Hydro fails to start (either manual or automatic) <u>AND</u></li> <li>• EFDW pumps fail to start.</li> </ul> <p>2. SMALL AND LARGE LOCAS WITH FAILURE OF ECCS - LEADS TO CORE MELT.</p> <hr/> <ul style="list-style-type: none"> <li>• LOCA EALS-SAE #1 or SAE #2 <u>AND</u></li> <li>• HPI system failure <u>AND</u></li> <li>• LPI system failure</li> </ul>
<p>INITIAL NOTIFICATION REQUIREMENTS</p> <p>SEE EMERGENCY TELEPHONE DIRECTORY</p> <p>Notify 1,2,3,4</p>	<p>NOTIFY 1,2,3,4</p>	<p>NOTIFY 1,2,3,4</p>	<p>NOTIFY 1,2,3,4</p>

ENCLOSURE  
FIRES AND SECURITY CONDITIONS

RP/0/B/1000/01

Page 8

UNUSUAL EVENT

ALERT

SITE AREA EMERGENCY

GENERAL EMERGENCY

1. FIRE WITHIN THE PLANT LASTING MORE THAN 10 MINUTES.

NOTE: Within the plant means:  
Aux Bldg, TB, RB, Keowee Hydro

- Efforts to extinguish a fire within the plant lasts longer than 10 minutes.

2. SECURITY THREAT OR ATTEMPTED ENTRY OR ATTEMPTED SABOTAGE. (NOTE\*)

One of the following:

- Bomb Threat/Extortion
- Discovery of bomb within the site boundary
- Civil disturbance (hostile)
- Intrusion/Attempted Intrusion (Protected area)
- Hostage situation

NOTE\*: RP/0/B/1000/07 shall be used in conjunction with all security-related emergency classifications.

1. FIRE POTENTIALLY AFFECTING SAFETY SYSTEMS.

- Fire alarm in vital areas and visual observation of fires affecting safety related systems AND
- Shift Supervisor's judgement OR
- Fire in the Control Room requiring evacuation and Unit being shutdown from the auxiliary shutdown panel.

2. ONGOING SECURITY COMPROMISE (NOTE\*)

One of the following:

- Adversaries commandeer an area of the plant but not control over the SD capability.
- Discovery of breached barrier caused by intrusion or sabotage in vital area.
- Discovery of bomb in the protected area.
- Adversaries commandeer the CAS OR SAS Security area.

1. FIRE COMPROMISING THE FUNCTIONS OF SAFETY SYSTEMS.

- Observation of a fire causing the loss of redundant safety system trains or functions. OR
- Fire in Control Room requiring evacuation and Unit requires the shutdown capabilities of the SSF.

2. IMMINENT LOSS OF PHYSICAL CONTROL OF THE PLANT (NOTE\*)

One of the following:

- Physical attack resulting in imminent occupancy of the CR, AUX SD panels or other vital areas as determined by the Emergency Coordinator.
- Discovery of bomb in the vital areas.
- Adversaries commandeer the CAS AND SAS Security areas.

1. ANY MAJOR INTERNAL OR EXTERNAL EVENTS WHICH COULD CAUSE MASSIVE COMMON DAMAGE TO PLANT.

- Visual observation of fires AND
- Shift Supervisor's judgement

2. LOSS OF PHYSICAL CONTROL OF THE PLANT (NOTE\*)

- Physical attack resulting in unauthorized personnel occupying the CR or any other vital areas as determined by the Emergency Coordinator.

INITIAL NOTIFICATION  
REQUIREMENTS

SEE EMERGENCY TELEPHONE  
DIRECTORY

NOTIFY 1,2,3,4

NOTIFY 1,2,3,4

NOTIFY 1,2,3,4

NOTIFY 1,2,3,4

ENCLOSURE 4.1.8  
SPENT FUEL DAMAGE

Page 9

UNUSUAL EVENT

ALERT

SITE AREA EMERGENCY

GENERAL EMERGENCY

1. FUEL DAMAGE ACCIDENT WITH  
RELEASE OF RADIOACTIVITY TO:CONTAINMENT

- RIA 2,3,4, valid ALERT alarm

AND

- RB Equipment Hatch open

FUEL-HANDLING BUILDING

- RIA 6 ALERT alarm AND
- RIA 41 HIGH alarm AND
- RIA 46 in valid alarm mode  
verified by RIA 45

AND

- Release rate calculations  
using vent sample analysis  
and flow rate data are in  
excess of limits established  
by RP/0/B/1009/15.

1. MAJOR DAMAGE TO SPENT FUEL:  
DAMAGE MECHANISM IS:

- Large object damages fuel OR

- Water loss below fuel level

INCONTAINMENT

- RIA 2,3,4, 49 HIGH alarm WITH
- RIA 57/58 HIGH alarm AND
- Dose rate inside RB coupled with  
RB leak rate results in calculated  
dose rate at Site boundary greater  
than:

50 mR/hr WB for 30 minutes

OR

500 mR/hr WB for 2 minutes

FUEL HANDLING BUILDING

- RIA 6 HIGH alarm OR
- RIA 41 ALERT alarm AND
- RIA 45 in valid alarm mode

AND

- RIA 46 reading greater than 80 cpm  
for 30 minutes

WITH

- Dose calculations verifying dose  
rates at the site boundary  
greater than or equal to:

50 mR/hr WB for 30 minutes

500 mR/hr WB for 2 minutes

INITIAL NOTIFICATION  
REQUIREMENTSSEE EMERGENCY TELEPHONE  
DIRECTORY

NOTIFY 1,2,3,4

NOTIFY 1,2,3,4

ENCLOSURE  
NATURAL DISASTERS OTHER HAZARDS

## UNUSUAL EVENT

## ALERT

## SITE AREA EMERGENCY

## GENERAL EMERGENCY

1. EARTHQUAKE FELT IN PLANT OR DETECTED
2. LAKE LEVEL (Keowee)
  - low < 775 ft.
3. ANY TORNADO WITHIN THE SITE BOUNDARY.
4. AIRCRAFT CRASH ONSITE OR UNUSUAL AIRCRAFT ACTIVITY OVER SITE.
5. EXPLOSION WITHIN THE SITE BOUNDARY.
6. TOXIC OR FLAMMABLE GAS RELEASE WITHIN THE SITE BOUNDARY
7. TURBINE ROTATING COMPONENT FAILURE CAUSING RAPID PLANT SD.

1. DBE  $\geq$  .05g
2. TORNADO STRIKING FACILITY
3. AIRCRAFT CRASH ON FACILITY
4. MISSILE IMPACT ON FACILITY
5. EXPLOSION DAMAGE TO FACILITY AFFECTING PLANT OPERATION
6. UNCONTROLLED ENTRY OF TOXIC OR FLAMMABLE GAS INTO FACILITY AFFECTING SAFE OPERATION OF PLANT
7. TURBINE ROTATING COMPONENT FAILURE CAUSING PENETRATION OF TURBINE CASING.

PLANT NOT IN COLD SHUTDOWN:

1. MHE  $\geq$  .10g (Class. 1 structure founded on bedrock)

MHE > .15 g (structures founded on overburden)

2. DAMAGE FROM TORNADO, MISSILE OR EXPLOSION, AIRCRAFT CRASH CAUSING INABILITY TO ESTABLISH HOT SHUTDOWN:

- No HPI injection

AND

- No FDW flow and no EDFW flow

3. ENTRY OF CONTROLLED TOXIC OR FLAMMABLE GASES INTO CR, CABLE SPREADING ROOMS, RB, SWITCHGEAR ROOM, AUX. SD PANELS AFFECTING SAFE OPERATION OF PLANT.

1. ANY MAJOR INTERNAL OR EXTERNAL EVENTS (i.e., FIRES, EARTHQUAKES SUBSTANTIALLY BEYOND DESIGN LEVELS) WHICH COULD CAUSE MASSIVE COMMON DAMAGE TO PLANT SYSTEMS.

INITIAL NOTIFICATION REQUIREMENTS

SEE EMERGENCY TELEPHONE DIRECTORY

NOTIFY 1,2,3,4

NOTIFY 1,2,3,4

NOTIFY 1,2,3,4

NOTIFY 1,2,3,4

ENCLOSURE 4.1.10  
OTHER ABNORMAL PLANT CONDITIONS

UNUSUAL EVENT	ALERT	SITE AREA EMERGENCY	GENERAL EMERGENCY
<p>1. ECCS INITIATED:</p> <hr/> <ul style="list-style-type: none"> <li>• 1 or more ES channels actuated <u>WITH</u></li> <li>• Flow indicated in A or B injection header (LPI or HPI) on valid RCS LOW pressure</li> </ul> <p style="text-align: center;"><u>OR</u></p> <ul style="list-style-type: none"> <li>• Valid RB HIGH pressure signal.</li> </ul> <p>2. LOSS OF CONTAINMENT INTEGRITY REQUIRING SD BY TS.</p> <hr/> <ul style="list-style-type: none"> <li>• Limits as established in TS 3.6 exceeded.</li> </ul> <p>3. LOSS OF ES FEATURE OR FIRE PROTECTION SYSTEM FUNCTION REQUIRING SD BY TS.</p> <hr/> <p>EX: Malfunction, Personnel Error, Procedural Inadequacy.</p> <ul style="list-style-type: none"> <li>• ES System found inoperable (TS 3.3)</li> </ul> <p style="text-align: center;"><u>OR</u></p> <ul style="list-style-type: none"> <li>• Fire suppression water system found inoperable (include Keowee Hydro) TS 3.17</li> </ul> <p><u>INITIAL NOTIFICATION REQUIREMENTS</u></p> <p>SEE EMERGENCY TELEPHONE DIRECTORY</p>	<p>1. OTHER PLANT CONDITIONS THAT WARRANT PRECAUTIONARY ACTIVATION OF THE TSC AND PLACING THE CMC AND OTHER KEY PERSONNEL ON STANDBY.</p> <hr/> <ul style="list-style-type: none"> <li>• Emergency Coordinator judgment</li> <li>• Evacuation of Control Room and Unit being shutdown from the Auxiliary shutdown panel.</li> </ul> <p>2. LOSS OF ASSESSMENT</p> <hr/> <ul style="list-style-type: none"> <li>• Loss of 2 or more Control Room statalarm panels for more than 15 minutes.</li> </ul> <p>(NOTE: Loss must occur on the same Unit.)</p> <p><u>Unit 1</u></p> <ul style="list-style-type: none"> <li>• 1SA1-9, 14-16, 18</li> </ul> <p><u>Unit 2</u></p> <ul style="list-style-type: none"> <li>• 2SA1-9, 14-16</li> </ul> <p><u>Unit 3</u></p> <ul style="list-style-type: none"> <li>• 3SA1-9, 14-16, 18</li> </ul>	<p>1. OTHER PLANT CONDITIONS EXIST THAT WARRANT ACTIVATION OF THE TSC AND CMC.</p> <hr/> <ul style="list-style-type: none"> <li>• Emergency Coordinator judgment</li> <li>• Evacuation of Control Room and Unit requires the shutdown capabilities of the SSF.</li> </ul>	<p>1. OTHER PLANT CONDITIONS EXIST FROM WHATEVER SOURCE THAT MAKE RELEASE OF LARGE AMOUNTS OF RADIOACTIVITY IN A SHORT TIME PERIOD POSSIBLE</p> <hr/> <ul style="list-style-type: none"> <li>• Any core melt situation</li> </ul>

NOTIFY 1,2,3,4

NOTIFY 1,2,3,4

NOTIFY 1,2,3,4

NOTIFY 1,2,3,4



UNUSUAL EVENT

ALERT

SITE AREA EMERGENCY

GENERAL EMERGENCY

4. TREATMENT OF PERSONNEL AT OFFSITE  
HOSPITAL

Any one of the following:

- Decontamination efforts fail to reduce external contamination below 150 cpm

AND

Health Physics determines that radiological controls are required for offsite medical treatment.

- Internal contamination requiring medical assessment/treatment
- Irradiation requiring medical treatment/assessment.

5. SIGNIFICANT LOSS OF ASSESSMENT  
OR COMMUNICATION CAPABILITY

- Loss of sub-cooling margin per TS 3.1.12 requiring shutdown.
- Loss of ONS communications capability to all offsite agencies.

INITIAL NOTIFICATION  
REQUIREMENTS

SEE EMERGENCY TELEPHONE  
DIRECTORY

NOTIFY 1,2,3,4