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ONS-2014-065

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May 22, 2014

10 CFR 50.54(q)

Attn: Document Control Desk
U.S. Nuclear Regulatory Commission
11555 Rockville Pike
Rockville, Maryland 20852-2746

Subject: Duke Energy Carolinas, LLC
Oconee Nuclear Station, Units 1, 2, and 3
Docket Nos. 50-269, -270, and -287
Emergency Plan Implementing Procedures Manual
Volume A, Revision 2014-001

Please find attached for your use and review copies of the revision to the Oconee Nuclear Station Emergency Plan Implementing Procedures along with the associated revision instructions and 10 CFR 50.54(q) evaluation.

This revision is being submitted in accordance with 10 CFR 50.54(q) and does not reduce the effectiveness of the Emergency Plan or the Emergency Plan Implementing Procedures. If there are any questions or concerns pertaining to this revision please call Pat Street, Emergency Planning Manager, at 864-873-3124.

By copy of this letter, two copies of this revision are being provided to the NRC, Region II, Atlanta, Georgia.

Sincerely,

Scott L. Batson
Vice President
Oconee Nuclear Station

Attachments:
Revision Instructions
EPIP Volume C - Revision 2014-001
10 CFR 50.54(q) Evaluation(s)

AX45
NRR

U. S. Nuclear Regulatory Commission
May 22, 2014

xc: w/2 copies of attachments

Mr. Victor McCree, Regional Administrator
U.S. Nuclear Regulatory Commission - Region II
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Mr. James R. Hall, Project Manager
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(send via E-mail)

w/o attachments

Mr. Eddy Crowe
NRC Senior Resident Inspector
Oconee Nuclear Station

ELL
EC2ZF

April 29, 2014

OCONEE NUCLEAR STATION

**SUBJECT: Emergency Plan Implementing Procedures
 Volume A Revision 2014-001**

**Please make the following changes to the Emergency Plan Implementing
Procedures, Volume A:**

REMOVE

Cover Sheet Rev. 2013-01

**Pages 1, 2, & 3
EPA List of Effective Pages Rev 010
EPA List of Figures Rev 002
EPA Record of Changes Rev 010
EPA Section B Rev 005
EPA Section D Rev 005
EPA Section G Rev 004
EPA Section H Rev 003
EPA Section J Rev 003
EPA Section M Rev 001
EPA Section P Rev 004
EPA Appendix 02 Rev 001
EPA Appendix 05 Rev 006**

INSERT

Cover Sheet Rev. 2014-001

**Pages 1, 2, & 3
EPA List of Effective Pages Rev 011
EPA List of Figures Rev 003
EPA Record of Changes Rev 011
EPA Section B Rev 006
EPA Section D Rev 006
EPA Section G Rev 005
EPA Section H Rev 004
EPA Section J Rev 004
EPA Section M Rev 002
EPA Section P Rev 005
EPA Appendix 02 Rev 002
EPA Appendix 05 Rev 007**

**Pat Street
ONS Emergency Planning Manager**



**OCONEE NUCLEAR STATION
EMERGENCY PLAN IMPLEMENTING PROCEDURES
VOLUME A**



APPROVED:

Scott L. Batson
Scott L. Batson

05-15-2014
Date Approved

05-14-2014
Effective Date

**VOLUME A
REVISION 2014-001
March 2014**

DUKE ENERGY COMPANY
OCONEE NUCLEAR SITE

EMERGENCY PLAN

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- B. Scope and Applicability
- C. Planning Basis

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- B. Onsite Emergency Organization
- C. Emergency Response Support and Resources
- D. Emergency Classification System
- E. Notifications
- F. Emergency Communications
- G. Public Information and Education
- H. Emergency Facilities and Equipment
- I. Accident Assessment
- J. Protective Response
- K. Radiological Exposure Control
- L. Medical and Public Health Support
- M. Recovery and Reentry Planning and Post-Accident Operations
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- 9. Ground Water Monitoring Program
- 10. Chemical Emergency Response Plan

Revision/Change Package Fill-In Form

Rev. 04/23/2012

The purpose of this fill-in form is to provide a location to type in information you want to appear on the various forms needed for Major/Minor Procedure Revisions, and Major/Minor Procedure Changes. After you type in information on this form, it will be electronically transferred to the appropriate locations in the attached forms when you perform Step 3 below.

Step 1- press [F12] (Save As) then save this form using standard file name convention in appropriate LAN storage location.

Step 2- type in basic information in the blanks below:

Note: place cursor in center of brackets before typing.

1. ID No.: ____
2. Revision No.: 2014 - 01 _
3. Change No.: ____ **Note:** if this package is for a change, replace hyphen with a letter.
4. Procedure Title: ONS E Plan Volume A revision _
5. For changes only, enter procedure sections affected: ____
6. Prepared By: John Kaminski
7. Preparation Date: 03/11/2014
8. PCR Numbers Included in Revision: ONS-

Step 3- go to Print Preview to update this information in all the attached documents.

Step 4- page down to affected pages and enter any additional information needed.

Step 5- when all information is entered, print package and review for correctness.

Duke Energy
PROCEDURE PROCESS RECORD

(1) ID No. ____

Revision No. 2014 - 01**PREPARATION**

- (2) Station OCONEE NUCLEAR STATION
- (3) Procedure Title ONS E Plan Volume A revision
- (4) Prepared By* John Kaminski (Signature) [Signature] Date 03/11/2014
- (5) Requires NSD 228 Applicability Determination?
☒ Yes (New procedure or revision with major changes) - Attach NSD 228 documentation.
☐ No (Revision with minor changes)
- (6) Reviewed By* Dan A. [Signature] (QR)(KI) Date 4/3/14
 Cross-Disciplinary Review By* _____ (QR)(KI) NA [Signature] Date 4/3/14
 Reactivity Mgmt Review By* _____ (QR) NA [Signature] Date 4/3/14
 Mgmt Involvement Review By* _____ (Ops. Supt.) NA [Signature] Date 4/3/14
- (7) Additional Reviews
 Reviewed By* _____ Date _____
 Reviewed By* _____ Date _____
- (8) Approved By* Patricia M. Stagg [Signature] Date 4/29/14

PERFORMANCE (Compare with control copy every 14 calendar days while work is being performed.)

- (9) Compared with Control Copy* _____ Date _____
 Compared with Control Copy* _____ Date _____
 Compared with Control Copy* _____ Date _____
- (10) Date(s) Performed _____
 Work Order Number (WO#) _____

COMPLETION

- (11) Procedure Completion Verification:
☐ Unit 0 ☐ Unit 1 ☐ Unit 2 ☐ Unit 3 Procedure performed on what unit?
☐ Yes ☐ NA Check lists and/or blanks initialed, signed, dated, or filled in NA, as appropriate?
☐ Yes ☐ NA Required enclosures attached?
☐ Yes ☐ NA Charts, graphs, data sheets, etc. attached, dated, identified, and marked?
☐ Yes ☐ NA Calibrated Test Equipment, if used, checked out/in and referenced to this procedure?
☐ Yes ☐ NA Procedure requirements met?
- Verified By* _____ Date _____
- (12) Procedure Completion Approved _____ Date _____
- (13) Remarks (Attach additional pages, if necessary)

Procedure Title: ONS E Plan Volume A revision

SUMMARY OF CHANGES: (DESCRIPTION AND REASON)

General Changes

See below

PCR Numbers Incorporated

ONS-

Enclosure

ONS Emergency Plan Rev 2014-01 Volume A Change Matrix				
Change #	Document Number / Section	Current Wording	Proposed Wording	Reason for Change
1	Cover sheet	Rev 2013-01 November 2013	Rev 2014-01 March 2014	Editorial
2	List of Effective Pages (LOEP)	Contains LOEP for 2013-01 rev.	Updated for changes made as a result of 2014-01	Editorial
3	List of Effective Figures	Fig H1A, Alt TSC Fig H2A, Alt OSC	Fig H1A, Deleted Alt TSC drawing is not needed in E Plan as it is used for Implementation Fig H2A, Deleted Alt OSC drawing is not needed in E Plan as it is used for Implementation	Editorial - eliminated implementation details from E Plan as these are located within the Site Telephone Directory as referenced in the procedure for their use.
4	Record of Changes	2013-01 words	Added - changes made per section as a result of 2014-01	Editorial - maintain record of changes
5	Section B On Site Emergency Organization	B-3 Note- ...provides names home addresses and phone numbers B.8 - would be contacted by the Site Services Group who are represented... Figure B-2 Figure B-3	B-3 Note... provides names and phones numbers B-8 would be contacted by the EOF Services Group at the EOF Figure B-2 clarified titles and reporting chains consistent with fleet titles. Figure B-3 clarified Titles to make consistent with Fleet titles	Editorial- home addresses are not contained in the Emergency Telephone Directory as it is available publicly. Editorial change in group name. Editorial - title changes Editorial - title changes
6	Section D Emergency Classification System	NA	Added clarification for which RIA 45 monitor is to be used. 1 RIA45 used for Unit 1 2 RIA 45 used for Unit 2 3 RIA 45 used for Unit 3 4 RIA 45 is not specifically used and is not applicable to Enclosure 4.3 Updated appropriate procedure references	Enhancement to clarify which RIA to use. Editorial to update procedure references as appropriate RP/0/B... to RP/0/A... CP/0/B to CP/0/A
7	Section G Public Information and Education	Public Emergency Notification Brochure (2013 Calendar)	Public Emergency Notification Brochure Calendar is included by reference only. Current Year calendar is maintained on file in the EP Department Files	Enhancement - Moving the information from within the E Plan to being maintained on file reduces work effort and costs that are unnecessary. Copies of updated calendars are sent under separate cover to all residents and agencies as required.

ONS Emergency Plan Rev 2014-01 Volume A Change Matrix				
Change #	Document Number / Section	Current Wording	Proposed Wording	Reason for Change
8	Section H Emergency Facilities and Equipment	NA	<ul style="list-style-type: none"> Removed implementation details from TSC and OSC drawings. Revised titles to indicate these are typical drawings of the TSC/OSC to enable flexibility in set up. Removed alt TSC and alt OSC drawings as these are rooms and can be setup as needed. Revised procedure numbers SR/0/B... to ST/0/A... Corrected misalignment on H-20 	Enhancements -removing implementation details from within the E Plan to other documents reduces work effort . Corrected Typo on procedure number and misalignment on Figure H-20.
9	Section J Protective Response	RP/0/B/1000/010 RP/0/B//1000/009 NA	RP/0/A/1000/010 RP/0/A/1000/009 J.7 FigureJ-1A...avoided dose. Per Appendix 2 initial protective actions are predetermined for Control Room use... and to shelter	Editorial - updated procedure numbers Added a more clear tie to Appendix 2.
10	Section M Recovery and Reentry Planning and Post Accident Operations	RP/0/B/1000/019 Insurance	RP/0/A/1000/019 Updated titles and responsibilities in Figure M-2; Risk Management and Insurance Procurement, Financial	Editorial updated procedure number Enhancement to show the various necessary departments.
11	Section P Responsibility for the Planning Effort	<ul style="list-style-type: none"> P.9...Guidance for performing the assessment against performance indicators is provided in the EP FAM Figure P-1 old procedure references RP/0/B... Figure P-1, HR Emergency Plan NA 	<ul style="list-style-type: none"> P.9...Guidance for performing the assessment against performance indicators is provided in Emergency Preparedness Administrative Procedure AD-EP-ALL-0001 Figure P-1 RP/0/A... (eliminated reference to HR Emergency Plan Added reference to P9 in Figure P1. 	Editorial - Moving to fleet formatting of procedure and associated numbering. Editorial up dates to the procedure numbers. Eliminated reference to HR Emergency Plan as the implementing procedures for assembly / accountability and evacuation for all personnel is contained in RP procedures.
12	Appendix 2 Agreement Meteorology and Offsite Dose Assessment	RP/0/B/1000/001	RP/0/A/1000/001	Editorial updated procedure number
13	Appendix 5 Agreement Letters	Provided current copies of actual agreement letters within the appendix.	Provided a list of agreement letters and indicated that the actual agreement letters are kept on file with EP>	Enhancement - reduces work load / burden to maintain the E Plan. No requirement to have the actual agreements within the plan, as long as the current agreements are kept on file.

APPENDIX C. APPLICABILITY DETERMINATION (Rev. 10)

Page 1 of 2

PART I – ACTIVITY DESCRIPTION**DUKE ENERGY CAROLINAS, LLC SITE****UNIT(S)**☒ Oconee☐ McGuire☐ Catawba☒ Unit 1☒ Unit 2☒ Unit 3**Revision to Volume A of ONS E Plan**

ACTIVITY TITLE/DOCUMENT/REVISION:

PART II – PROCESS REVIEW

For each activity, address all of the questions below. If the answer is "YES" for any portion of the activity, apply the identified process(es) to that portion of the activity. Note: It is not unusual to have more than one process apply to a given activity.

Will implementation of the above activity require a change to the:

- | | | | |
|--|--|---|---|
| 1. Technical Specifications (TS) or Operating License? | <input checked="" type="checkbox"/> NO | <input type="checkbox"/> YES | If YES, process as a license amendment per NSD 227. |
| 2. Quality Assurance Topical? | <input checked="" type="checkbox"/> NO | <input type="checkbox"/> YES | If YES, seek assistance from Independent Nuclear Oversight. |
| 3. Security Plans?
(See Appendix H) | <input checked="" type="checkbox"/> NO | <input type="checkbox"/> YES | If YES, process per the Nuclear Security Manual. |
| 4. Emergency Plan? | <input type="checkbox"/> NO | <input checked="" type="checkbox"/> YES | If YES, process per the Emergency Planning Functional Area Manual. |
| 5. Inservice Testing Program Plan? | <input checked="" type="checkbox"/> NO | <input type="checkbox"/> YES | If YES, process per site IST Program for ASME code compliance and related facility changes. |
| 6. Inservice Inspection Program Plan? | <input checked="" type="checkbox"/> NO | <input type="checkbox"/> YES | If YES, process per Materials, Metallurgy and Piping Inservice Inspection FAM for ASME code compliance and related facility or procedure changes. |
| 7. Fire Protection Program Plan? | <input checked="" type="checkbox"/> NO | <input type="checkbox"/> YES | If YES, evaluate activity in accordance with NSD 320. |
| 7a -Utilize Appendix E to address Fire Protection Program Plan Impact. | | <input type="checkbox"/> | Check to confirm use of Appendix E Screening Questions. |
| 8. Regulatory Commitments? | <input checked="" type="checkbox"/> NO | <input type="checkbox"/> YES | If YES, process per NSD 214. |
| 9. Code of Federal Regulations? | <input checked="" type="checkbox"/> NO | <input type="checkbox"/> YES | If YES, contact the Regulatory Affairs group. |
| 10. Programs and manuals listed in the Administrative Section of the TS? | <input checked="" type="checkbox"/> NO | <input type="checkbox"/> YES | If YES, contact the Regulatory Affairs group. |

PART IIIa - 10 CFR 72.48 APPLICABILITY

For each activity, address the question below. If the answer to question 11 is "YES," and questions 14 and 17 are answered "NO", then process the activity per NSD 211 - 10 CFR 72.48 does apply.

11. Does the activity involve SSCs, procedures or conduct tests or experiments that support/impact the loading or transport of the canister/cask to the ISFSI, the ISFSI facility, spent fuel cask design? ☒ NO ☐ YES

PART IIIb - 10 CFR 50.59 APPLICABILITY

For each activity, address all of the questions below. If the answer to question 18 is "YES," then 10 CFR 50.59 does not apply. If the answer to questions 18 is "NO," then process the activity per NSD 209 - 10 CFR 50.59 applies.

12. Does the activity involve a procedure, governed by NSD 703 that has been excluded from the 10 CFR 50.59 process per NSD 703 and the exclusion status remains valid? ☒ NO ☐ YES
13. Does the activity involve an administrative procedure governed by NSD 100 or AD-DC-ALL-0201 that does not contain information regarding the operation and control of Structures, Systems and Components? ☒ NO ☐ YES
14. Does the activity involve a type of Engineering Change that NSD 301 excludes from the 10 CFR 50.59 and/or 10 CFR 72.48 Processes? Consult NSD 301 for assistance. ☒ NO ☐ YES
15. Does the activity involve (a) maintenance activities that restore SSCs to their as-designed condition (including activities that implement approved design changes) or (b) temporary alterations supporting maintenance that will be in effect during at-power operations for 90 days or less? ☒ NO ☐ YES
16. Does the activity involve a UFSAR modification that NSD 220 excludes from the 10 CFR 50.59 Process? Consult NSD 220 for assistance. ☒ NO ☐ YES
17. Does the activity involve NRC and/or Duke Energy Carolinas, LLC approved changes to the licensing basis? ☒ NO ☐ YES
18. Are ALL aspects of the activity bounded by one or more "YES" answers to questions 1 through 17, above? ☐ NO ☒ YES

PART IV - UFSAR REVIEW

19. Does the activity require a modification, deletion, or addition to the UFSAR to satisfy the UFSAR content requirements of 10 CFR 50.34 (b), 10 CFR 50.71 (e), or Regulatory Guide (RG) 1.70? Consult NSD 220 for Assistance. ☒ NO ☐ YES

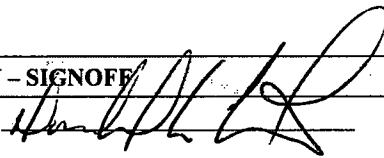
IF YES, process per NSD 220.

PART V - SIGNOFF

(Print Name)

Donald A. Graw

(Sign)



DATE

4/3/14

Applicability Determination Preparer

**ONS Emergency Plan Rev 2014-01 Volume A
Change Matrix**

Change #	Document Number / Section	Current Wording	Proposed Wording	Reason for Change
1	Cover sheet	Rev 2013-01 November 2013	Rev 2014-01 March 2014	Editorial
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ONS Emergency Plan Rev 2014-01 Volume A
Change Matrix

Change #	Document Number / Section	Current Wording	Proposed Wording	Reason for Change
10	Section M Recovery and Reentry Planning and Post Accident Operations	RP/0/B/1000/019 Insurance	RP/0/A/1000/019 Updated titles and responsibilities in Figure M-2; Risk Management and Insurance Procurement, Financial	Editorial updated procedure number Enhancement to show the various necessary departments.
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P-2 Supporting Plans	P-8

Appendix 10

Hazardous Materials Response Plan - (Hazardous Waste Contingency Plan)

RECORD OF CHANGES

<u>REVISION NUMBER</u>	<u>EFFECTIVE DATE</u>	<u>REASON FOR REVISIONS</u>
Revision 1	April 1, 1981	Meteorological Update
Revision 2	December 31, 1981	Rewrite Emergency Plan in Nureg 0654 Format
Revision 3	March, 1982	Update Emergency Plan
Revision 4	April, 1982	Revisions & Changes to update Emergency Plan
Revision 5	September 1, 1982	Revision to coincide with Crisis Management Plan
Revision 6	November 1, 1982	Revision update
Revision 7	December 14, 1982	Review and update
83-1	June 10, 1983	Changes required by action items due to annual exercise and review and general update
83-2	November 17, 1983	Changes required by review and general update
84-1	March 26, 1984	Revisions as determined by QA audit and minor editing
84-2	November 15, 1984	Revisions as determined by annual review
85-1	June 7, 1985	Revisions/changes/editing
85-2	-----	Revisions/changes/editing-annual review
86-1	March 8, 1986	New Oconee Brochure
86-2	November 13, 1986	Revisions/changes/editing-annual review
86-3	December 9, 1986	Correct changes identified as deficiencies by the NRC in Rev. 85-2.
87-1	February 4, 1987	Revision update, minor editing changes, included failed fuel accident assessment information.
87-2	-----	Revision update, minor editing changes Review Section D. Agreement letters updated.
87-4	December 10, 1987	Incorporate alternate TSC and OSC into Emergency Plan
88-1	June 7, 1988	Revised EALS in Section D.
88-2	October 14, 1988	Annual review. Minor editorial revisions.
89-1	February 28, 1989	Major revision to Section D. Added Appendix 7. Minor editorial changes.
89-2	August 14, 1989	Change to Section D. Minor editorial revisions.
89-3	January 5, 1990	Annual Review

RECORD OF CHANGES (Continued)

<u>REVISION NUMBER</u>	<u>EFFECTIVE DATE</u>	<u>REASON FOR REVISIONS</u>
90-1	March 1, 1990	Changes to Section D as required by NRC commitment.
90-2	June 1, 1990	Changes reflect upgrade of radiation monitor system and minor editing.
90-3	July 2, 1990	Change to Section D, Emergency Classification.
90-4	October 31, 1990	Annual Review
91-1	January 21, 1991	Section D revision. (RIA upgrade)
91-2	February 20, 1991	Section D revision. (TS to SLC)
91-3	March 22, 1991	Section D revision. (RIA upgrade); Section D revision. (SLB revision)
91-5	September 19, 1991	Section D revision. (RIA upgrade)
91-6	December 16, 1991	Annual review.
92-1	March 1, 1992	Section D (RIA upgrade). Minor editorial changes.
92-2	June 30, 1992	Major Revision
92-3	October 29, 1992	Annual review
92-4	12/31/92	Section B, D, H, J, Appendix 4, 5 & 6 changes.
93-1	03/01/93	Sections D, G, H, N, P, and Appendix 6
93-2	05/07/93	Sections A, B, D, Appendix 5 and 6
93-3	07/23/93	Sections A, B, G, H, I, J, L, M, N, & Appendix 6
93-4	08/11/93	Sections B, D, and Appendix 5
93-05	01/01/94	Annual Review, Incorporation of EPA-400 guidelines.
94-01	03/15/94	Additions of Appendix 8 and 9. - (Minor revisions)
94-02	05/09/94	Changes to Appendix 5, Pages 1 and 2; Changes to Appendix 6, Pages 2 and 4; State of South Carolina Agreement Letter
94-03	05/25/94	Changes to Appendix 5, Page 2; Changes to Appendix 6, Pages 4 and 5; INPO Agreement Letter
94-04	06/06/94	Changes to Appendix 5, Page 2; Change Teledyne Isotopes Badge Service agreement letter to Northeast Utilities Service Company
94-05	08/08/94	Changes to Section D
94-06	12/29/94	Annual review. Editorial changes, minor revisions.

RECORD OF CHANGES (Continued)

<u>REVISION NUMBER</u>	<u>EFFECTIVE DATE</u>	<u>REASON FOR REVISIONS</u>
95-01	02/23/95	Changes to Sections B, G, Appendix 5.
95-02	10/23/95	Annual review and changes
95-03	11/01/95	Section D. Change, Incorporated new EAL'S.
95-04	12/31/95	Calendar 1996, HAZMAT Changes, RP/14 deleted
96-01	02/13/96	Changes to Sections B, D, and N.
96-02	06/25/96	Changes to Section D
96-03	07/96	Changes to Section D
96-04	12/96	Annual review, editorial changes, minor changes with major change to Appendix 10.
97-01	07-97	Section B, I, Appendix 5 & 7, with editorial/minor changes to Section H & P
97-02	12-97	Annual review and editorial/minor changes
98-01	02-98	Section D, page 35. Correction of title on Enclosure 4.3
98-02	03-98	Section N, page 1 & 2, Added part a (General) to Section N.2 to ensure drills conducted between NRC evaluated exercises are performed in accordance with 10CFR50, Appendix E, Section IV.F.2.b
98-03	04-98	List of Figures page number corrections, Added Emergency Operation Facility to Figure H-15, Figure H-20 reformatted. Added Agreement Letter with Keowee-Key Volunteer Fire Department, Appendix 5, #24. Appendix 10 - Hazardous Materials Response Plan, corrections on Table of Contents with minor revisions. Headings on Appendix 10, Figure 2 with minor revisions.
98-04	12-98	Annual review and editorial/minor changes.
99-01	03-99	The ONS Technical Specifications have been converted to a set of Technical Specifications based on NUREG 1430. "Standard Technical Specifications Babcock and Wilcox Plants."

Replaced the description phrases (titles) in Section D for Operating Modes with the Mode number from Improved Technical Specifications. In Section I the portion describing leak rate volume percent per day was changed to percent of the containment air weight per day. The reference to Tech Spec 4.4.1.1 was changed to reference Improved Technical Specification 5.5.2.

NOTE: The implementation date of Improved Tech Specs was moved from March 4, 1999 to March 27, 1999, therefore the revision date for revision 99-01 will depict February when the actual administrative changes were completed.

RECORD OF CHANGES (Continued)

<u>REVISION NUMBER</u>	<u>EFFECTIVE DATE</u>	<u>REASON FOR REVISIONS</u>
99-02	12-99	Annual review and editorial/minor changes
2000-01	04-2000	Addition of List of Effective Pages
2000-02	05/2000	Editorial /minor changes
2000-03	12/2000	Annual review and editorial/minor changes
2001-01	02/07/2001	Additions and corrections as result of 50.54(t) audit. Additional information added to Basis Document and additional EAL's resulting from EP drill critiques.
2001-02	08/2001	Changes in areas of responsibility. Added note concerning RVLS to Fission Product Barrier Matrix; 2001 calendar; information added to EP Functional Area Manual; added/updated information on annual average meteorology; Appendix 5; Appendix 6; editorial/minor changes.
2001-03	12/2001	Added information in Basis Document concerning a reactor building containment break. Replaced the 2001 calendar with the 2002 calendar. Editorial/minor changes.
2002-01	01/02	<p>The present Oconee Nuclear Station Emergency Operating Procedure is written in a different format and with some different terms than the earlier version. The term PTS (Pressurized Thermal Shock) has replaced TSOR (Thermal Shock Operating Range). This is only a change in terminology.</p> <p>The additional EAL is to ensure a site specific credible threat results in a declaration of a notification of Unusual Event (NOUE). This change is also intended to achieve an appropriate level and consistent response Nationwide.</p>
2002-02	06/02	Section B - minor changes; Section D - Added information requested by Emergency Coordinators to Enclosure 4.1; Section G - Rewrite of entire section; Section H - Updated information on Figure H-4 relating to Met Data; Appendix 5 - Updated Letters of Agreement; and miscellaneous spelling/grammar errors.
2002-03	09/02	Section A - Compliance with the NRC Security Interim Compensatory Measure (ICM) issued 02/25/02; Section P - Audit frequencies per revised 10 CFR 50.54 (t) as stated in Federal Register Vol 64, 03/29/99. Appendix 1 - Added definition of monthly and Semi-Annual; Appendix 5, Agreement Letters, updated #17, Appendix 6 - Changed name on 78A. Miscellaneous corrections.
2003-01	02/03	Section D - RIA setpoints change, Section G - 2003 Calendar, Appendix 3 - Siren upgrade, new map (i-5) ; Appendix 5 - Agreement Letters, Appendix 6 - Issued To change, Section B, E, F editorial/minor changes
2003-02	08/03	Section D - incorporates additional guidance for the Emergency Coordinator/EOF Director related to classification of a high energy line break, such as a Main Steam Line Break. In addition, Section D has been retyped using a consistent font style - no changes in content resulted from the retype.

RECORD OF CHANGES (Continued)

<u>REVISION NUMBER</u>	<u>EFFECTIVE DATE</u>	<u>REASON FOR REVISIONS</u>
2004-01	02/04	Incorporates a retype of the majority of the sections as an editorial change to adopt a consistent format: Section G - Added information concerning One Mile Exclusion Area Signs; Section H - Strip Chart Recorders were removed under an NSM; Section J - Incorporated guidance on the use of KI as a protective action recommendation; Section K - changed KI dose to 5 REM CDE from 25 REM; Appendix 4 - Incorporate results of Evacuation Time Estimate; Appendix 5 - Revised Agreement Letters
2004-02	12/21/04	Editorial changes to correct typos, drawings, and title/organizational names. This revision also incorporates clarifying information from the latest Evacuation Time Estimate (ETE); clarification of offsite agency responsibilities for protective actions for impediments and special populations; revised EAL #2 for Enclosure 4.3, Unusual Event IC #2; clarification of ERO activation after normal working hours; and revisions to the site's SPCC Plan included in Appendix 8. In addition to these changes, applicable references have replaced generic references in Figure P-1. This revision also incorporates the 2005 Calendar distributed to the 10 mile EPZ population.
2005-01	02/01/05	Section D, Enclosure 4.7, Page 66 - Duke Power Hydro-Electric Group has revised the Lake Keowee water level from 807 to 815.5 feet for initiating a Condition B. This elevation is used in Enclosure 4.7 for classifying the event as an Unusual Event. The Hydro -Electric Group notifies the Control Room when Condition B has been declared. No protective actions by the plant are changed.
2005-02	05/17/05	Section I & Letters of Agreement - Incorporates an editorial revision that describes the makeup of Field Monitoring Teams and updated Agreement Letters. I.7&8 replaced "....personnel from Radiation Protection and Chemistry." with "...a RP Technician and a Driver." Editorial Change - Chemistry personnel no longer perform the function of FMT Driver. FMT Drivers are now provided by other groups.
2005-03	08/24/05	Revision 2005-03 incorporates an addendum for the Fire Department/Volunteer Fire Department Agreement Letters. This addendum was added as a result of NRC guidance provided to utilities. The addendum to these letters provides guidance on the use of the Incident Command System at ONS and identifies the ONS Fire Brigade Leader as the on-scene commander and site-interface for responding offsite fire departments.
2005-04	09/15/05	Revision 2005-04 is a change to Page 66, Enclosure 4.7, Emergency Action Levels #1 - Reservoir elevation greater than or equal to 807.0 feet with all spillway gates open and the lake elevation continues to rise. This change undoes Revision 2005-01 which changed Keowee Lake level from 807 feet elevation to 815.5 feet elevation. This revision was determined to be a non conservative change in that it delayed the Unusual Event emergency classification. Appendix 5, Agreement Letter #21 has been updated.
2005-05	01/09/06	Revision 2005-05 incorporates editorial changes that clarify organizational charts/responsibilities, revise procedure references, replaces public information calendar, and replaces obsolete survey instruments. Agreement Letters #16 and #19 were updated.

RECORD OF CHANGES (Continued)

<u>REVISION NUMBER</u>	<u>EFFECTIVE DATE</u>	<u>REASON FOR REVISIONS</u>
2006-03	06/8/06	Section D - Change #1 Revised initiating condition #2 for the Alert classification for Enclosure 4.6 (Fire/Explosions and Security Events). This change is based on a correction to the NEI White Paper, Enhancements to Emergency Preparedness Programs For Hostile Actions which was endorsed in a letter from the NRC on December 8, 2005. Change #2 - Renumbered Emergency Action Levels through out Section D to match the numbering scheme found in RP/0/B/1000/001 (Emergency Classification) procedure - Renumbering makes it easier for procedure users to locate the correct emergency action level in the Basis Document. Appendix 5 - Agreement Letters #8, 14,15 & 23 were updated.
2006-04	11/06	Reference changes to the deletion of the Clemson EOF and incorporates reference to the Charlotte EOF. In addition, miscellaneous editorial changes are included in this revision.
2007-01	03/07	Appendix 5 Agreement Letters that have been updated/revised.
2007-02	12/07	Editorial changes including a revised 50 mile radius map (Figure B), a revision to the Emergency Classification Basis Section D , the 2008 Emergency Planning Calendar, a revised layout drawing for the JIC, a revised listing of portable survey instruments, the latest renewal of existing agreement letters and a revised Ground Water Monitoring Plan
2008-01	09/08	The original order of the EALs created a human performance trap. The first fission barrier column that the procedure user reviews is the RCS Barrier column which is on the left side of the page. The second fission barrier column that is reviewed is the Fuel Clad Barrier which is in the center of the page. This order gives the procedure user the mind set that the EALs are listed in the same order: RCS EAL followed by the Fuel Clad EAL. Changing the order of the EALs is not a deviation from the approved EAL scheme but is a difference. This change does not constitute a decrease in the effectiveness of the EPLAN since the EALs are exactly the same.
2008-02	10/08	As of this change 2008-02, the Emergency Plan is now available on NEDL/SCRIBE and has been completely re-issued. All changes in the future to the Emergency Plan will be completed thru NEDL/SCRIBE. The following Agreement Letters were also updated: 1, 2, 3, 4, 5, 6, 7, 9, 10, 11, 19 and 21.
2009-01	02/09	Revised existing information relating to organization names that have changed, removed specific names and replaced with a title to mitigate the need for future revisions due to personnel changes, and changed staging location names based on changes made to area designation names; however staging will still occur in same area. Changes made only reflect actual organization names, functional position names, and current location names being used to make the E-Plan more accurately reflect current information. No changes are being made to the process or conduct of the how the E-Plan is to be implemented.

RECORD OF CHANGES (Continued)

<u>REVISION NUMBER</u>	<u>EFFECTIVE DATE</u>	<u>REASON FOR REVISIONS</u>
2010-10	02/10	<p>Revised existing information relating to changes made to the callback system, who performs the dose assessments, the basis information for the Containment Barrier EAL based on NEI 99-01 Rev 5 FAQ lessons learned. Made name change for Oconee Medical Center, corrected information relating to testing frequency for major elements referenced in the E-Plan, the new neutron instrument used by radiation protection, and street name change for figure H-3A. Changes made are the result of the Annual Review process and no changes are being made to the process or conduct of how the E-Plan is to be implemented.</p> <p>The following Agreement Letters were also updated: Number - 6, 8, 13, 14, 15, 16, 18, 20, 22, & 23.</p>
2011-01	05/11	<p>Figure B-10 - Redistribution of support for Field Monitoring Teams from Chemistry to Business Management and Work Control. Section D - Basis corrected to delete reference to USFAR Table 15-114 which has been deleted, revised ICs 4.3.A.3 and 4.4.A.3, EAL A to align with RP/0/B/1000/001, revised ICs and EALs to add levels of operating modes that represent the operating levels of hot shutdown, cold shutdown and hot standby were listed, added "AC" back to IC 4.5.A.1 where it had been inadvertently deleted, add SSF to IC 4.6.U.1, correct IC 4.5.G.1, EAL 1 to reflect SSF maintaining Mode 3 (hot standby) rather than hot shutdown, add new ICs for Jocassee Dam condition A and B declarations, correct misprint in IC 4.7.A.2, EAL B, correct formatting errors, and add Security EALs. Section F - deleted onsite areas requiring phone notifications for site assembly due to new wireless system being installed in those areas. Section G - replace 2010 calendar with 2011 calendar. Figure H-1 - revised room layout to reflect current arrangement. Section N - Revised the testing cycle for the EPLAN from a 5 year cycle to a 6 year cycle. Appendix 5 - update letters of agreement.</p>
2011-02	10/11	<p>This evaluation supports a request to revise the Oconee (ONS), McGuire (MNS), and Catawba (CNS) Emergency Plans to allow for an alternate approach for compliance with 10 CFR 50.47(b)(2) relative to meeting the minimum staffing requirement during emergencies for site Radiation Protection (RP) personnel and the Emergency Operations Facility (EOF) position staffing to that in Table B-1 in NUREG-0654, endorsed by Regulatory Guide 1.101.</p>
2012-01	6/12	<p>Section F - A change to the process for answering the 4911 emergency phone calls. The new process will have both Operations and Security(SAS) answering the phone. Appendix 7 -Will clarify the ERDS related system description verbiage from the modem based data transfer system to the new VPN System.</p>
2012-02	06/12	<p>The NRC published Federal Register notice [RIN 3150-AI10], "Enhancements to Emergency Preparedness Regulations" on November 23, 2011. The amendments contained in the rule are summarized as twelve (XII) topics with varying implementation due dates. Emergency Plan changes to the following sections (C, D, H, I, J, P, and Appendix 1) are made in accordance with the rule and the appropriate guidance documents pertaining to Topic V – Emergency Action Level for Hostile Action, Topic VI – Emergency Declaration Timeliness, Topic VIII – Emergency Operation Facility (Performance Based), Topic IX – Emergency Response Organization Augmentation at Alternate Facility, and Topic XI – Protective Actions for On-site Personnel.</p>

RECORD OF CHANGES (Continued)

<u>REVISION NUMBER</u>	<u>EFFECTIVE DATE</u>	<u>REASON FOR REVISIONS</u>
2012-03	06/13	Added Agreement Letter 25 - G&G Metal Fabrication to provide Hale pump technical support and Agreement Letter 26 Operating Agreement between Duke Energy's Lincoln Combustion Turbine Facility & MNS, CNS and ONS Nuclear Supply Chain concerning an Emergency Supply of Diesel Fuel.
2012-04	12/12	Section B - This change is to incorporate the new staffing analysis for the new EP rule and editorial changes.
2012-05	12/12	<p>Revised Section D, Enclosure 4.3 to add threshold values for unit vent sampling as a compensatory measure. Unit vent sampling is performed on the 6th floor auxiliary building at sampling equipment where manual grab samples are retrieved per HP/0/B/1000/060-D. Additionally, the use of RIA 56 was added as a compensatory measure for Site Area Emergency and General Emergency Classifications.</p> <p>This change allows for classification of gaseous radiological releases in the event of a loss of either RIA-45 or 46. This change only clarifies the values to be used in the event normal monitoring is not available.</p> <p>The plan is also being revised based on annual review requirements, changes are mainly editorial or formatting. Additional changes are being made to reflect current name changes, update Agreement letters, Spill Prevention and Control, and Groundwater monitoring programs.</p>
2013-01	10/13	<p>Section D - Added clarification in the basis for Loss of Shutdown function.</p> <p>Section I - Revised to reference procedures versus RPSM 11.7 which has been deleted.</p> <p>Section J - Revised to incorporate latest revision to ETE. Deleted climate data tables which were duplicative to information contained within the ETE (Appendix 4).</p> <p>Section P - Updated appropriate references.</p> <p>Appendix 4 - Added latest ETE as reference.</p>

RECORD OF CHANGES (Continued)

<u>REVISION NUMBER</u>	<u>EFFECTIVE DATE</u>	<u>REASON FOR REVISIONS</u>
2014-01	03/14	<p>Section B - Removed reference to having home addresses listed in the emergency telephone directory as these were never listed in the telephone directory and clarified EOF Services Group actions. Updated titles of ERO positions in the TSC and OSC consistent with duty roster.</p> <p>Section D - Added clarification for which RIA-45 is to be used. Respectively, it is expected that 1RIA-45, 2RIA-45 and 3RIA-45 would be used in connection with Enclosure 4.3, Abnormal Rad Level/Radiological Effluent. 4RIA-45 is not specifically related to a unit and therefore it is not applicable to Enclosure 4.3.</p> <p>Section G - Removed Calendar and replaced with Note that the calendar is retained on file with EP Staff.</p> <p>Section H - Eliminated drawings of Alternate TSC and Alternate OSC as these are for implementation and not needed in Emergency Plan. Removed implementation details from Primary TSC and Primary OSC drawings. Corrected Figure H-20 and shifted table alignment.</p> <p>Section J - Provided editorial corrections to procedure numerical references where applicable.</p> <p>Section M - Provided clarification of EOF Services listed on Figure M-2.</p> <p>Section P - Provided editorial corrections to procedure numerical references where applicable, and changed a reference from the EP Functional Area Manual to a fleet administrative procedure reference (EP FAM to AD-EP-ALL-0001). Eliminated reference to HR Emergency Plan.</p> <p>Appendix 5 - Removed all copies of the Letters of Agreement and indicated they are included by reference. The actual Letters of Agreement are retained on file by the EP Staff.</p>

B. ONSITE EMERGENCY ORGANIZATION

Adequate staffing to provide for initial emergency response in key functional areas is maintained at all times, timely augmentation of response capabilities is available, and the interfaces among various onsite response activities and offsite support and response activities are specified.

B.1. Emergency Response Organization

Figures B-1 through B-6 shows the Oconee Nuclear Site Emergency Response Organization that would be established during an incident along with the duties the different groups would assume. Designation of personnel to the Emergency Response organization is determined by the particular job expertise of an individual. This assures that these personnel are qualified to carry out their responsibilities during an emergency. The normal staffing assignments at the Oconee Nuclear Site include emergency response responsibilities. See Figures B-10 for emergency responsibilities for designated groups.

The Emergency Response Organization is outlined in Division/Section Directives. These directives establish the duties, responsibilities and alternates for each required emergency response position. Response procedures have been established for each section through these Directives.

B.2. Emergency Coordinator - (24 hour)

As a result of training and day-to-day experiences in the normal operating mode at the Oconee Nuclear Site, the Operations Shift Manager will assume authority and responsibility for any emergency that may arise at the site. He will assume control of the situation, alert and warn personnel and others, take necessary onsite remedial action, obtain necessary outside aid and notify management and appropriate offsite agencies. The authority vested in this position by Duke Energy management enables the Operations Shift Manager to declare an emergency as necessary to protect the plant, site personnel, and the general public. He is vested with the authority to provide protective action recommendations to state and local agencies for implementing offsite emergency measures.

The Operations Shift Manager will continue with these responsibilities until relieved by the Station Manager (alternate).

B.3. Alternates for Emergency Coordinator

In an emergency situation where the Station Manager/Emergency Coordinator is unavailable, for whatever reason, and an acting Station Manager has not been designated in writing, an alternate will be contacted. Alternates are personnel with intimate knowledge of plant operations and will fulfill the position as TSC Emergency Coordinator when assigned duty. Alternates are designees appointed by the Station Manager.

Note: Emergency Telephone Directory, provides names and phone numbers for the Emergency Coordinators listed above.

B.4 Functional Responsibilities of the Emergency Coordinator

Figure B-5 defines the duties and responsibilities of the Emergency Coordinator within the emergency response organization.

The Emergency Coordinator and the EOF Director are the individuals responsible for making protective action recommendations to the state and county agencies. Once the Emergency Operations Facility is activated, only the EOF Director has this responsibility. Prior to the activation of the EOF, the Emergency Coordinator is responsible for making protective action recommendations, classifying/ downgrading/ escalating/terminating events, and approving notification forms to offsite agencies. These responsibilities may not be delegated.

B.5 Minimum Staffing Requirements for Nuclear Power Plant Emergencies

Figure B-8(a/b) identifies the positions by title and major tasks to be performed by the persons assigned to the functional areas of emergency activity within 45 to 75 minutes. The TSC and OSC will be activated within 75 minutes of event classification. The EOF (Figure B-9) will also be staffed and operational by a minimum staff within 75 minutes of event classification.

A detailed analysis demonstrating that on-shift personnel assigned emergency plan implementation functions are not assigned responsibilities that would prevent the timely performance of their assigned functions as specified in Figure B-8a is located in ONS-OSSA-12212012 Rev: 0.

B.6 Interface - Onsite, Offsite Organizations

(Figure A-1) shows the interfaces between and among the onsite functional areas of emergency activity, site support, local services support, and State and Local government response organizations. The onsite Technical Support Center, Operational Support Center, and the Emergency Operations Facility is shown.

B.7 Minimum Staffing Requirements - Corporate Level

Personnel from the corporate location will provide assistance to the Oconee Nuclear Station in the areas of dose assessment, coordination of news media and severe accident analysis. These people will respond on an as needed basis.

The Emergency Response Facility Organization is shown on Figures B-4A through B-4D. Division/Section Directives detail the emergency response organization and are included as implementing procedures.

Should an event occur at another Duke Energy nuclear facility concurrent with an event at Oconee Nuclear Site, additional resources would be required to support the EOF Organization. Figure B-11 shows the supplemental EOF organization that would be required to manage a multi-site event. An additional Assistant EOF Director would function as the lead manager to support the second site. The EOF Director would have overall emergency management responsibility for both events.

B.8 Contractor/Private Organizations - Technical Assistance

Private Contractors and/or companies that would be available to augment and support the emergency organization:

Waste Management	Chem Nuclear
Bartlett Nuclear	Emergency Equipment Supplier
SEG	(e.g. Safe Industries, Inc.)
Alaron	AREVA

Additional groups that could respond to emergencies would be contacted by the EOF Services Group at the Emergency Operations Facility.

B.9 Local Agency Support

Agreements with local agency support groups have been made to assist the Oconee Nuclear Site during emergency situations.

POLICE -

Oconee Sheriff's Department

Pickens Sheriff's Department

S. C. Highway Patrol

S. C. Law Enforcement Division

AMBULANCE -

Oconee Medical Center - Emergency Medical Services

MEDICAL -

Blue Ridge Emergency Physicians

Oconee Medical Center

FIRE FIGHTING -

Oconee Rural Fire Association

Keowee-Ebenezer Fire Department

Corinth-Shiloh Fire Department

Six-Mile Fire Department

Keowee Fire Department

RADIOLOGICAL MONITORING -

Pickens County Emergency Management Agency

Oconee County Emergency Management Agency

EVACUATION OF POPULATION -

Oconee County Emergency Management Agency

Pickens County Emergency Management Agency

HOSPITAL -

Oconee Medical Center

USE OF BUILDINGS -

Oconee County School District

Pickens County School District

FIGURE B-1
OCONEE NUCLEAR STATION
EMERGENCY RESPONSE ORGANIZATION
FUNCTIONAL AREAS OF EMERGENCY RESPONSE

1. Emergency Response Coordination
 - Operations Shift Manager
 - Station Manager
 - Division Managers
 - Section Managers
2. Plant Systems Operations
 - Superintendent of Operations
 - Operations Shift Managers
 - Operations Engineers
 - On Shift Staff (Operations)
 - Engineering
3. Accident Assessment
 - Emergency Coordinators
 - Operations Shift Managers
 - Operations Engineers
 - Shift Managers
 - Site Engineering
 - Severe Accident Analysis Group (GO)
4. Radiological Environmental Survey and Monitoring
 - Contract service
 - Radiation Protection Section
5. First Aid/Rescue, Firefighting
 - Medical Emergency Response Team Members
 - Fire Brigade
6. Personnel Monitoring
 - Radiation Protection Section
7. Decontamination
 - Radiation Protection Section

FIGURE B-1
OCONEE NUCLEAR STATION
EMERGENCY RESPONSE ORGANIZATION

8. Security of Plant and Access Control
 Duke Security (ONS and Oconee JIC)
 Building Security/Access & Control (Charlotte EOF)
9. Repair/Corrective Actions
 Nuclear Supply Chain
 Site Services Group
10. Personnel Accountability
 Division Managers
 Section Managers
 Supervisors
 Duke Security
11. Radiological Accident Assessment
 Radiation Protection Section (ONS/GO/CNS/MNS)
 Site Engineering
 Operations Group
 Chemistry Group
 Severe Accident Analysis Group (GO)
12. Communications
 Operations
 Safety Assurance
 Training
 Nuclear Assurance
13. Radiation Protection Section
 Radiation Protection Section
14. Plant Chemistry
 Chemistry Group

FIGURE B-1
OCONEE NUCLEAR STATION
EMERGENCY RESPONSE ORGANIZATION

- 15. Radwaste Operations
Chemistry Group
- 16. Technical Support
Site Engineering
- 17. Manpower Planning and Logistical Support
Work Control Group
Nuclear Supply Chain
Site Services Group
- 18. Public Information
Corporate Communications - Joint Information Center
- 19. Licensee Representative to State County EOC
Site Engineering

FIGURE B-2
OCONEE NUCLEAR STATION
TECHNICAL SUPPORT CENTER ORGANIZATION CHART

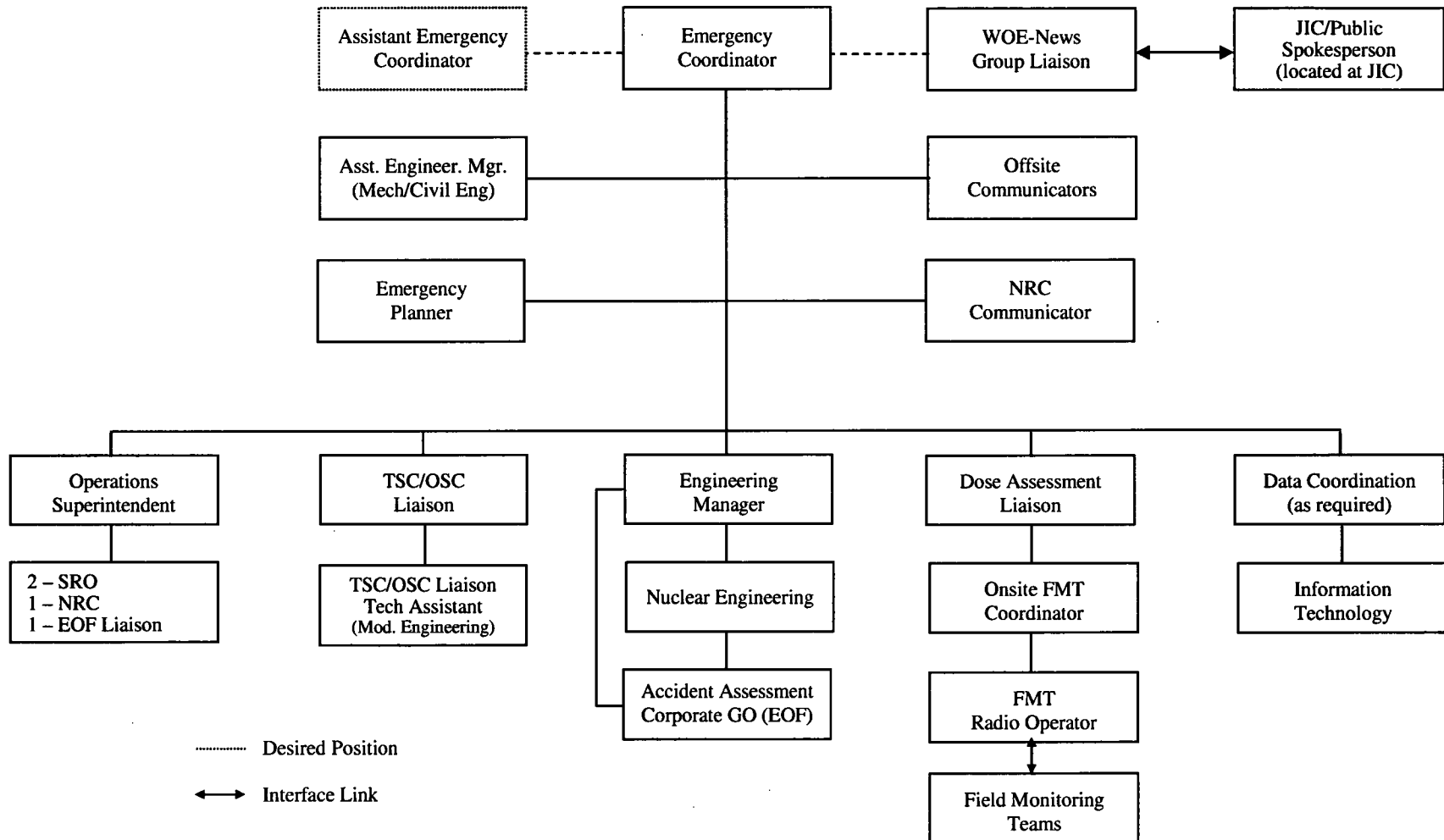


FIGURE B-3
OCONEE NUCLEAR STATION
OPERATIONAL SUPPORT CENTER ORGANIZATION CHART

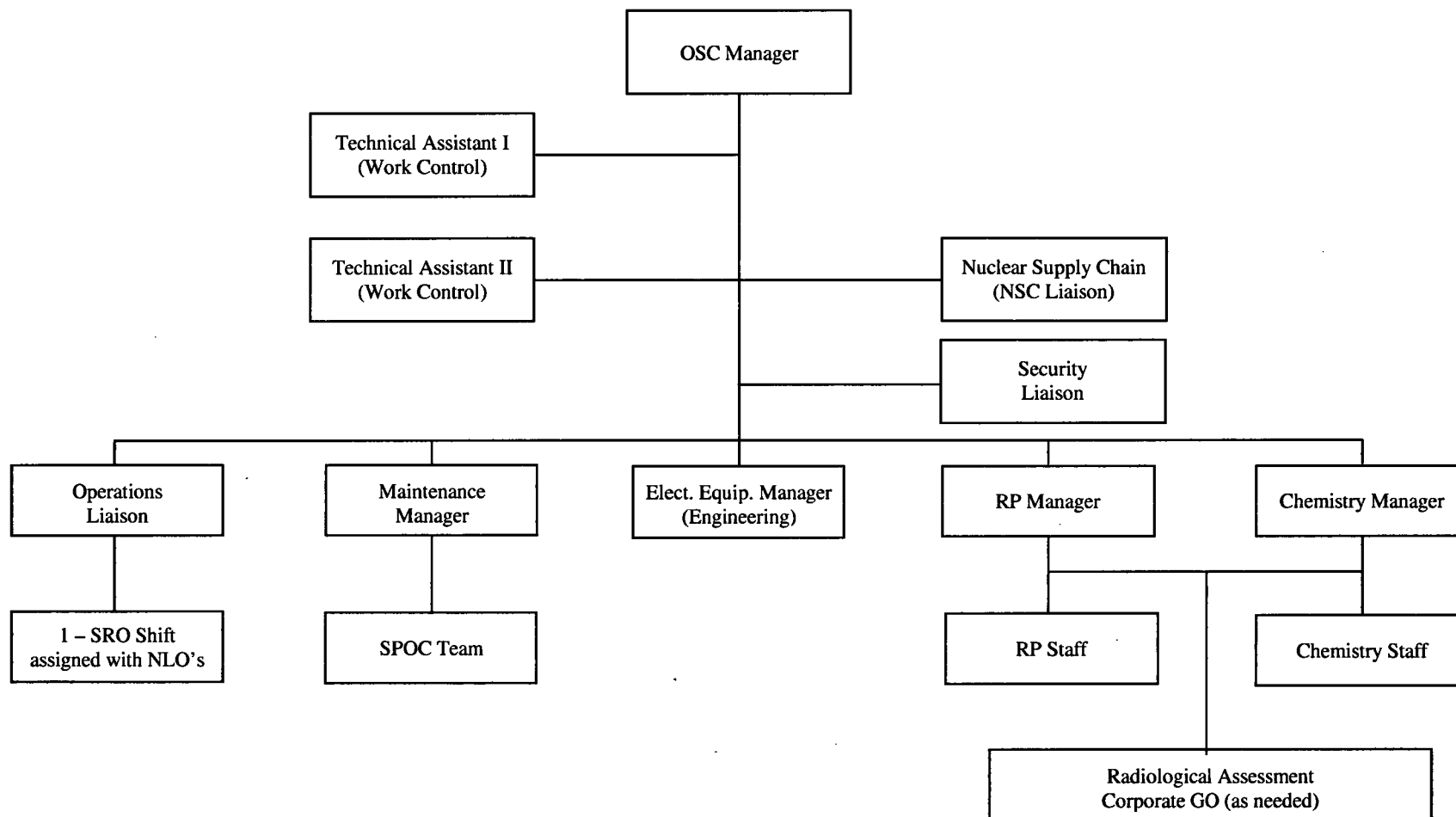


FIGURE B-4A
OCONEE NUCLEAR STATION
Emergency Operations Facility

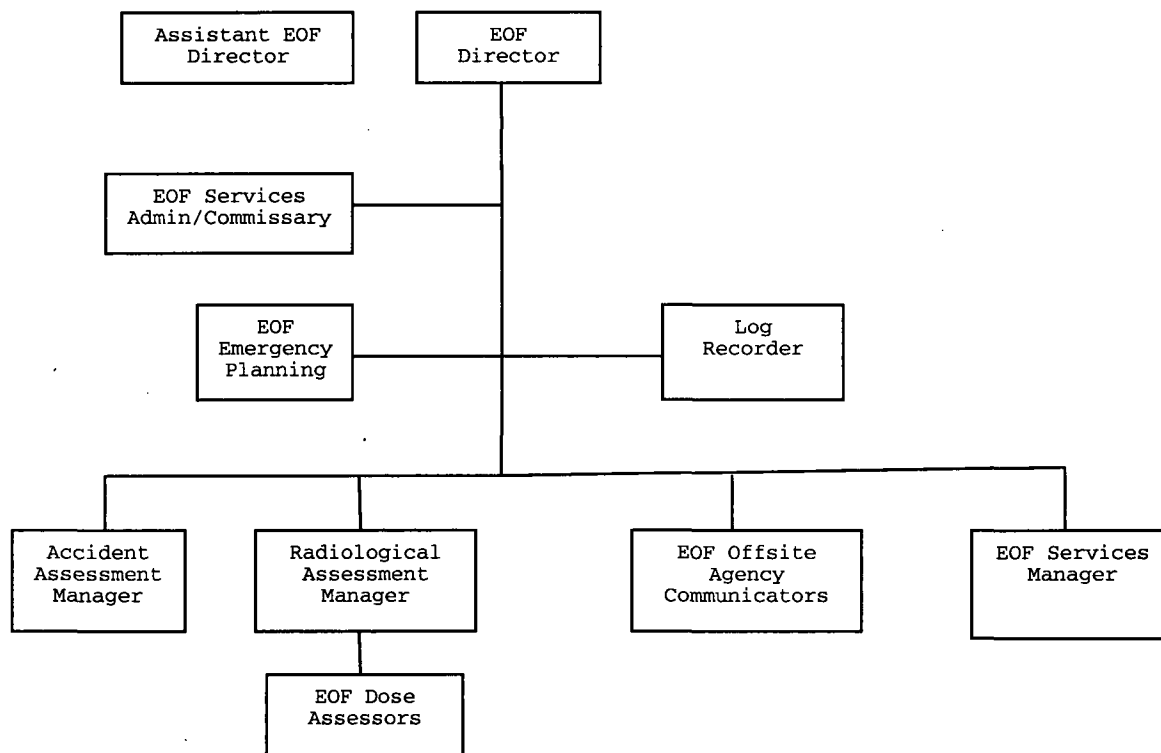


FIGURE B-4B
DUKE ENERGY COMPANY
OCONEE NUCLEAR STATION
EMERGENCY OPERATIONS FACILITY

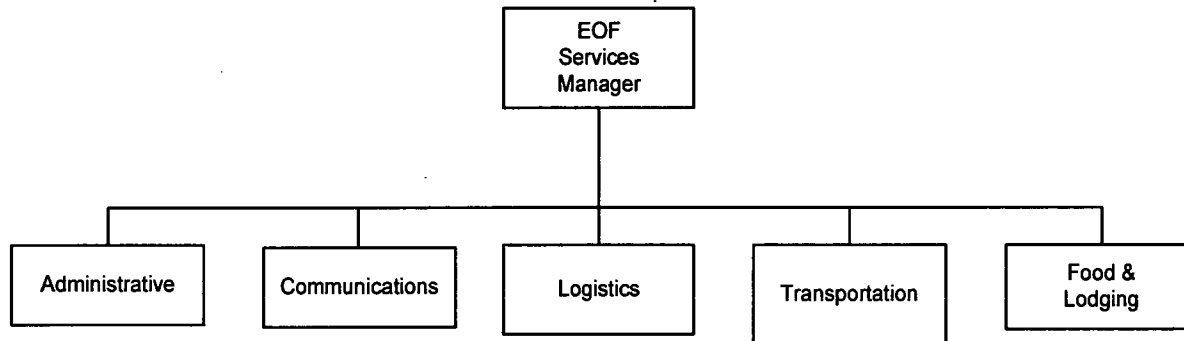


FIGURE B-4C
OCONEE NUCLEAR STATION
EMERGENCY OPERATIONS FACILITY

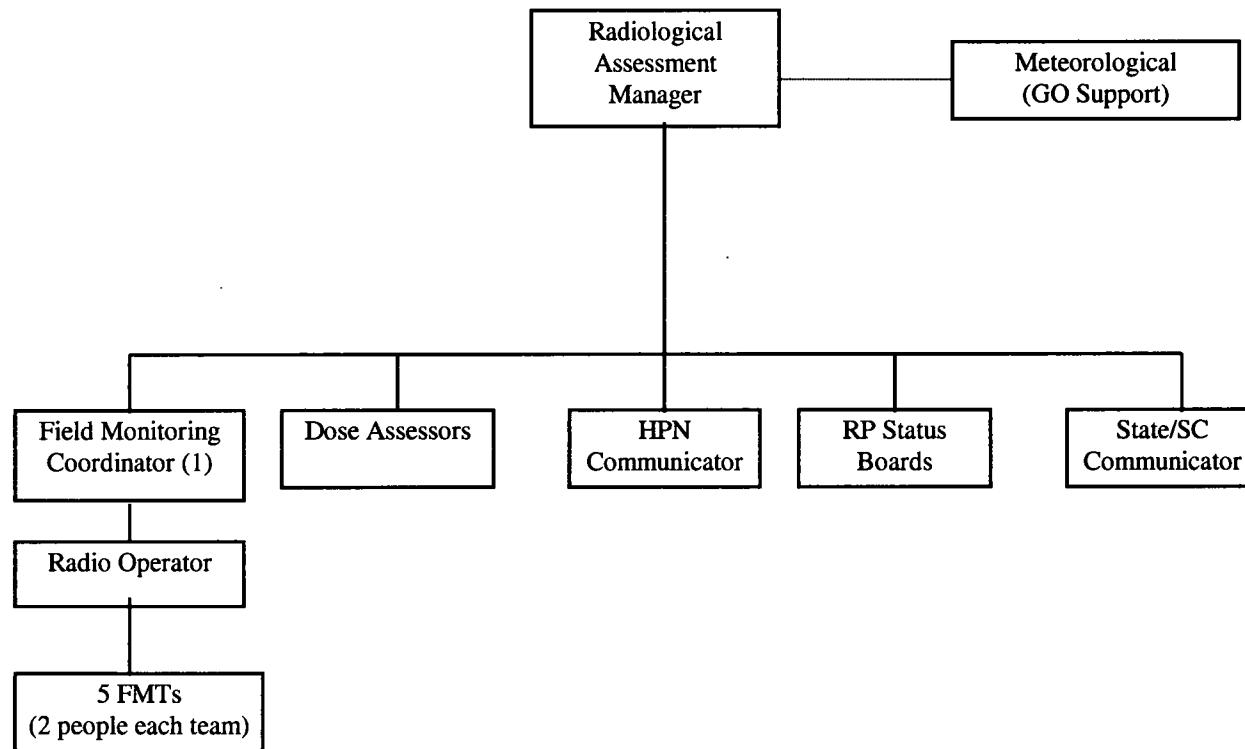


FIGURE B-5
OCONEE NUCLEAR STATION
EMERGENCY COORDINATOR DUTIES

Duties and Responsibilities:

1. Activate the Emergency Response Organization (Technical Support Center, Operational Support Center and the Emergency Operations Facility).
2. Coordinate technical assistance for remedial actions to mitigate circumstances surrounding plant operations.
3. Designate individual to communicate with offsite agencies promptly. Approve all information released via the emergency notification form. Approval (signature) of contents of message form may not be delegated to others in the emergency organization.
4. Initiate emergency actions within the provisions of the Oconee Nuclear Site Emergency Plan.
5. Classify emergency events. Escalate/de-escalate or terminate from an emergency status if the Emergency Operations Facility is not operational. Responsibility may not be delegated.
6. Make senior technical and management staff available onsite for consultation with NRC and State on periodic basis if EOF has not been activated.
7. Coordinate all emergency actions concerning the technical aspects of the corrective actions taken within the Technical Support Center.
8. Evacuate all non-essential personnel on site if a radiological emergency exists. Be aware of exposure guidelines of personnel.
9. Recommend protective action guides for the safety and welfare of the public to the appropriate offsite agency if the Emergency Operations Facility/EOF Director is not in a position to do so. This authority may not be delegated.
10. Authorize exposures in excess of routine yearly exposure limits for lifesaving and equipment repair missions in accordance with RP/0/B/1000/011. This responsibility can be delegated to the RP Manager in the OSC.

FIGURE B-6
OCONEE NUCLEAR STATION
EMERGENCY OPERATIONS FACILITY DIRECTOR

Duties and Responsibilities:

1. Overall Management of the offsite emergency response activities of Duke Energy (Oconee Nuclear Site).
2. Recommend protective action guides for the safety and welfare of the public to the appropriate offsite agency. This authority may not be delegated.
3. Classify emergency events. Escalate, de-escalate, terminate emergency classification. This responsibility may not be delegated.
4. Approve all information released via the emergency notification form. Approval (signature) of contents of message form may not be delegated to others in the emergency organization.
5. Coordination with federal, state and local government agencies.
6. Provide approval of news releases if Public Spokesperson is unavailable.

FIGURE B-8a
OCONEE NUCLEAR STATION
MINIMUM ON-SHIFT STAFFING LEVELS

Functional Area	Major Tasks	Emergency Positions	Shift Staffing
1. Plant Operations and Assessment of Operational Aspects (a)	--	CR Supervisor (SRO) Control Room Operator (RO) Non-Licensed Operator (NLO)	3 6 3
2. Emergency Direction and Control	Command and Control	Ops Shift Manager	1
3. Notification & Communication	Licensee	Operator (SRO/RO/NLO)	1 ^(b)
	Local/ State	SRO	1
	Federal	Operator (SRO/RO/NLO)	1 ^(b)
4. Radiological Assessment	Dose Assessment	RP Qualified Individual	1
	In-plant Surveys	RP Qualified Individual	1
	Onsite Surveys	RP Qualified Individual	1
	Chemistry	Chemistry Technician	1
5. Plant System Engineering, Repair, and Corrective Actions	Tech Support – OPs – Core Damage	Shift Technical Advisor Shift Technical Advisor	1 1 ^(b)
	Repair and Corrective Actions	Mechanical Maintenance IAE Maintenance	2 2
6. In-Plant PAs	Radiation Protection (such as access control, job coverage and personnel monitoring)	RP Qualified Individual	2 ^(b)
7. Fire Fighting (c)	--	Fire Brigade Lead (SRO/NLO) Fire Brigade Member (NLO) Fire Brigade Member	1 4 5 ^(b,c)
8. 1 st Aid and Rescue	--	MERT (d)	2
9. Site Access Control and Accountability	Security & Accountability	SAS Operator Security Personnel	1 (e)
Minimum # of Personnel:			31

(a) The Control Room staff complement is reflective of 3 Units in operation.

(b) May be performed by an individual filling another position provided they are qualified to do the collateral function.

(c) The Fire Brigade requirement of ten members is met by using five personnel from Operations (including the Fire Brigade Leader) and five personnel from either SPOC, Radiation Protection, Chemistry or Security (SLC 16.13.1).

(d) The Medical Emergency Response Team (MERT) can be filled by any qualified technician.

(e) Per Duke Energy ONS Security Plan.

FIGURE B-8b
OCONEE NUCLEAR STATION
MINIMUM AUGMENTED ERO STAFFING LEVELS

MAJOR FUNCTIONAL AREA	MAJOR TASKS	POSITION TITLE OR EXPERTISE	CAPABILITY FOR ADDITIONS*	
			WITHIN 45 MINUTES	WITHIN 75 MINUTES
Emergency Director and Control (Emergency Coordinator) ***		Station Manager	—	1
Notification/Communication	Notify Company Personnel, State, County, Federal Agencies and maintain communication	State Communicators		2
EOF/Radiological Accident Assessment and Offsite Agency Support	EOF Director (Emergency Classification, Protective Action Recommendation, Offsite Agency Interface, ENF approval)	DPC Senior Manager	—	1
Emergency Classification	EOF Plant Assessment	Accident Assessment Manager	—	1
Dose Assessment and Protective Action Recommendations	EOF Offsite Dose Assessment/ Protective Action Recommendations	Radiological Assessment Manager	—	1
Offsite Notifications	Offsite Agency Notifications	Offsite Agency Communicator	—	1
			—	1
	EOF Access Control	Electronic Card Reader	—	#
	TSC Dose Assessment/Protective Action Recommendations	Radiological Assessment	—	1
	Offsite Surveys	Field Monitoring Teams (2)		4 ****
	Onsite Surveys (Out-of-Plant)		1	1
	In-Plant Surveys	RP Qualified Individuals	1	1
	Chemistry/Radio Chemistry	Rad/Chem Technician	—	1
Plant System Engineering, Repair and Corrective Actions	Technical Support	Core/Thermal Hydraulics	—	1
		Electrical	—	1
		Mechanical	—	1
	Repair and Corrective Actions	Mechanical Maintenance	—	1
		Rad/Waste Operator	—	1
		I&E Technician	—	2
Protective Actions (In-Plant)	Radiation Protection A. Access Control B. RP Coverage for Repair Corrective Actions, Search and Rescue, First Aid & Firefighting C. Personnel Monitoring D. Dosimetry E. On-Shift Dose Assessment	RP Qualified Individuals	—	4
Firefighting	—	Fire Brigade		Local Support
Rescue Operations & First-Aid	—	MERT Team		Local Support

FIGURE B-8b
OCONEE NUCLEAR STATION
MINIMUM STAFFING LEVELS

- * Consideration is given to the fact that many of the Oconee Nuclear Site Emergency Response Organization personnel do not live within a radius of the station which will allow a response time of 30 minutes or less under ideal conditions. Factors such as weather conditions, road capacity and traffic density, and the distance to travel from residence to the emergency response facility, indicate a realistic response time from a few minutes to 1 hour and 15 minutes for most employees. Consideration is also given to personnel on shift who are qualified and sufficient in number to handle any emergency condition until response personnel begin to arrive on site.

- *** Management of the Offsite Emergency Response will be assumed by the EOF Director when the Emergency Operations Facility is activated.

Management of the Onsite Emergency Response is assumed by the Station Manager/alternate acting as the Emergency Coordinator when the Technical Support Center and Operational Support Centers are activated.

- **** The Field Monitoring Teams will initially report to the Body Burden Analysis (BBA) Room. If needed, the Field Monitoring Teams will dispatch from the Body Burden Analysis (BBA) Room. Once the Emergency Operations Facility (EOF) Field Monitoring Coordinator is ready he/she will assume control of the Field Monitoring Teams. A FMT consists of one RP qualified individual and one vehicle driver.

- # An electronic card reader in conjunction with a posted building security officer fulfills the function for controlling access to the EOF during emergencies.

FIGURE B-9
OCONEE NUCLEAR STATION
MINIMUM STAFFING REQUIREMENTS

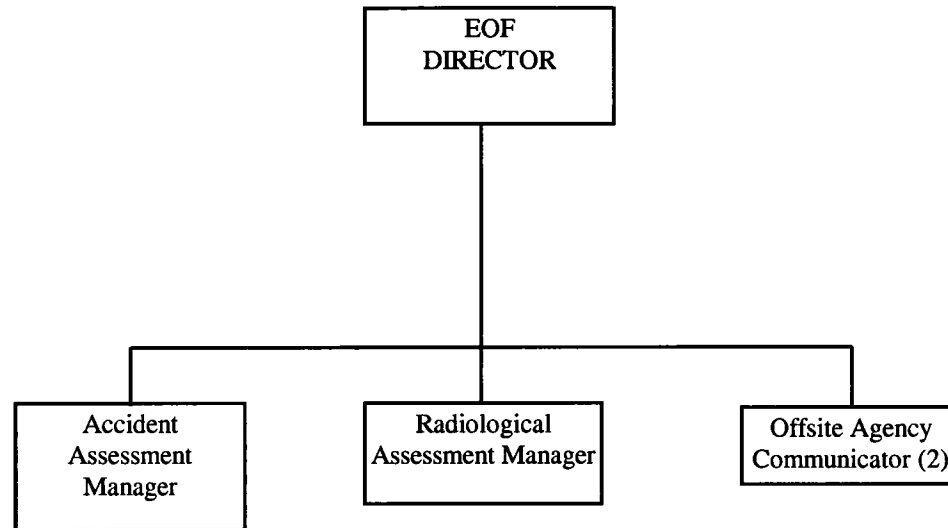


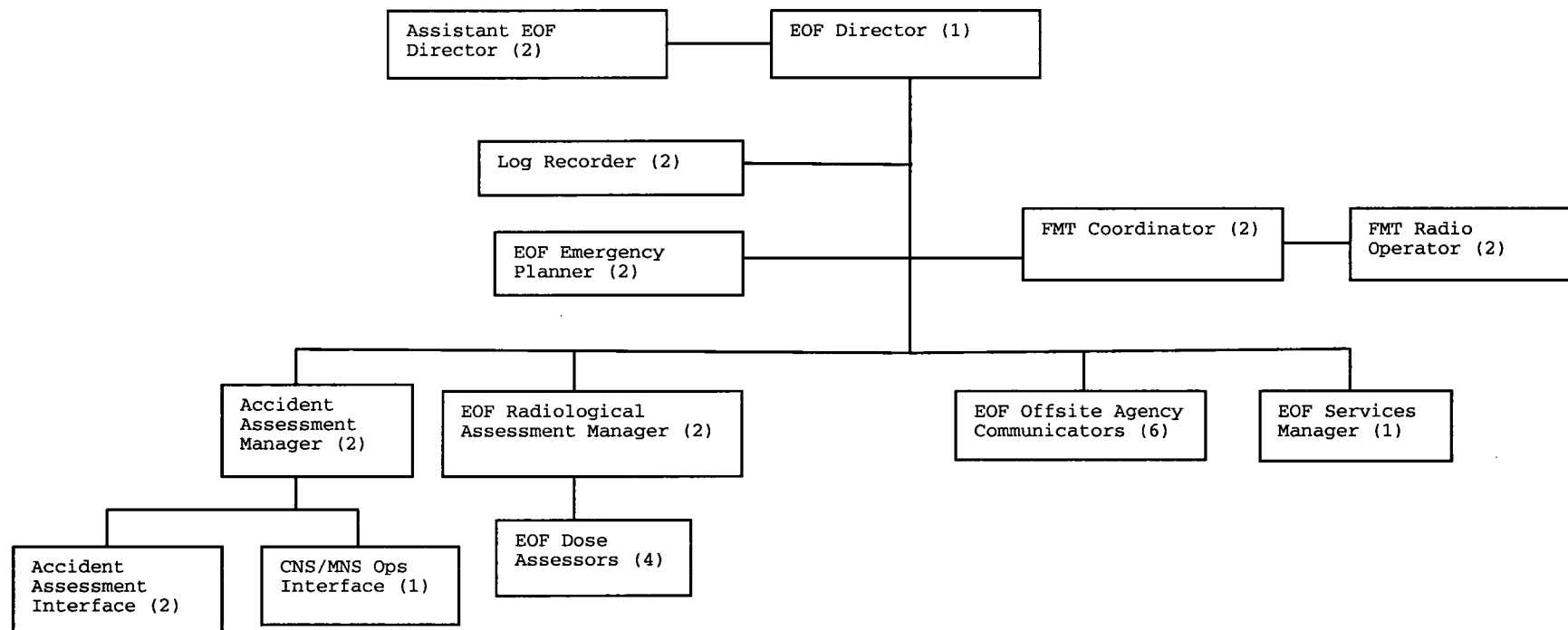
FIGURE B-10
OCONEE NUCLEAR STATION
ONSITE EMERGENCY RESPONSE DUTIES

RADIATION PROTECTION	CHEMISTRY	MAINTENANCE	OPERATIONS	WORK CONTROL	BUSINESS GROUP
Onsite Monitoring	Post-accident liquid sampling	Repair/calibration of electrical and mechanical equipment	Plant Operations	OSC Coordination	Provide personnel for field monitoring teams
Initial dose assessment	Chemistry analysis	Staff OSC with onshift personnel	Accident assessment	Recovery implementation	
Decontamination	Tank farm operation	Augment OSC with additional personnel	Safe shut-down of reactor	Provide personnel for field monitoring teams	
Post-accident gaseous sampling	Radwaste operation		Liaison with OSC		
Dose Control			Fire brigade response		
Provide personnel for field monitoring teams			Initial Emergency Management		
Evacuation coordination			NRC Communications		
RP support for work tasks in the field			Fire Support		

FIGURE B-10
OCONEE NUCLEAR STATION
ONSITE EMERGENCY RESPONSE DUTIES

SAFETY ASSURANCE	ENGINEERING	SECURITY	SAFETY	NUCLEAR SUPPLY CHAIN SITE SERVICES GROUP
	TSC LOG	ACCESS & CONTROL		COMMUNICATIONS EQUIPMENT
OFF SITE COMMUNICATIONS	TSC/OSC LIAISON TECHNICAL ASSISTANT	EVACUATION COORDINATION		SUPPLY/PARTS
ASSIST WITH ACCOUNTABILITY REPORTING	ENGINEERING SUPPORT	MEDICAL (MERT)	PERSONNEL SAFETY	HEAVY EQUIPMENT OPERATORS
ASSIST WITH EVACUATION	LIAISON WITH CORPORATE ACCIDENT ASSESSMENT GROUP			COMMISSARY
EMERGENCY PLANNING	TSC STATUS BOARDS			

FIGURE B-11
OCONEE NUCLEAR STATION
Common EOF - Multi-Site Event Staffing



1. Pagers activated for second unit - all call response
2. Assistant EOF Director assumes responsibility as lead manager for designated Site
3. Additional Log Keeper retained to support 2nd Site
4. Additional Accident Assessment Manager retained to support 2nd Site
5. Additional Dose Assessor retained to support 2nd Site
6. Additional FMT Coordinator retained to support 2nd Site
7. Additional FMT Radio Operator retained to support 2nd Site
8. Four additional Offsite Communicators as needed to support both Sites
9. Additional Emergency Planner as needed to support 2nd Site
10. Additional Radiological Assessment Manager as needed to support 2nd Site
11. Additional Assistant EOF Director as needed to support 2nd Site
12. Oconee Ops Interface position is staffed in the ONS TSC
13. Additional Accident Assessment Interface as needed to support 2nd Site

Oconee Emergency Plan List Of Effective Pages

<u>SECTION</u>	<u>PAGE NUMBER</u>	<u>REVISION NO.</u>	<u>DATE</u>
Emergency Plan Approval Cover Sheet			
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List Of Figures			
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Record Of Changes			
	Page 1 - 9	Rev. 2014-01	March 2014
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	Page 1 - 5	Rev. 2012-05	December 2012
	Page i-6	Rev. 2008-02	October 2008
	Page i-6a	Rev. 2012-05	December 2012
II. Planning Standards and Evaluation Criteria			
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	Page A-1 - A-8	Rev. 2012-05	December 2012
B. Onsite Emergency Organization			
	Page B-1 - B-21	Rev. 2014-01	March 2014
C. Emergency Response Support And Resources			
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D. Emergency Classification System			
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E. Notification			
	Page E-1 & E-2	Rev. 2008-02	December 2008
F. Emergency Communications			
	Page F-1 - F-8	Rev. 2012-05	December 2012
G. Public Information and Education			
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K. Radiological Exposure Control			
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L. Medical And Public Health Support			
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M. Recovery And Reentry Planning And Post-Accident Operations			
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N. Exercises and Drills			
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O. Emergency Response Training			
	Page O-1 - O-3	Rev. 2012-05	December 2012
P. Responsibility For The Planning Effort: Development, Periodic Review and Distribution Of The Emergency Plans			
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III. APPENDICIES			
APPENDIX 1 Definitions			
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APPENDIX 2 Meteorology And Offsite Dose Assessment Program			
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APPENDIX 3 Alert And Notification System Description			
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Oconee Emergency Plan List Of Effective Pages

APPENDIX 7

Emergency Data Transmittal System

Page 1

Rev. 2012-01

June 2012

APPENDIX 8

Spill Prevention Control And Countermeasure Plan

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Rev. 2012-05

October 2009

ONS Pollution Prevention Plan - Rev. 11

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Rev. 2012-05

December 2009

Site Drawing

Drawing

Revision 2001-03

October 2001

APPENDIX 9

ONS Chemical Treatment Ponds 1, 2 and 3, Groundwater Monitoring Sampling And Analysis Plan

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Rev. 2012-05

July 2010

APPENDIX 10

Hazardous Materials Response Plan

Page 1 - 12

Rev. 2010-01

February 2010

D. EMERGENCY CLASSIFICATION SYSTEM

NUREG 1.101, Rev. 3, August, 1992, approved the guidance provided by NUMARC/NESP-007, Revision 2, as an Alternative Methodology for the Development of Emergency Action Levels. Oconee Nuclear Site used the NUMARC guidance for the development of initiating conditions and emergency action levels. The emergency action levels provided in this section have been modified to implement the guidance provided in NRC Bulletin 2005-02, NEI guidance as endorsed in Regulatory Issue Summary 2006-12 and to support the implementation of NEI 03-12.

The emergency classification system utilizes four categories for classification of emergency events.

D.1.a. UNUSUAL EVENT

Events are in process or have occurred which indicate a potential degradation of the level of safety of the plant or indicate a security threat to facility protection has been initiated. No releases of radioactive material requiring offsite response or monitoring are expected unless further degradation of safety systems occurs.

The purpose of an Unusual Event classification is to provide notification of the emergency to the station staff, State and Local Government representatives, and the NRC.

Specific initiating conditions and their corresponding emergency action levels are provided in the Basis Document beginning on page D-4.

D.1.b ALERT

Events are in process or have occurred which involve an actual or potential substantial degradation of the level of safety of the plant or a security event that involves probable life threatening risk to site personnel or damage to site equipment because of HOSTILE ACTION. Any releases are expected to be limited to small fractions of the EPA Protective Action Guideline exposure levels.

The purpose of the Alert classification is to assure that emergency personnel are readily available to:

1. Activate the onsite response centers
2. Respond if the situation becomes more serious or to perform confirmatory radiation monitoring if required
3. Provide offsite authorities current status information

Specific initiating conditions and their corresponding emergency action levels are provided in the Basis Document beginning on page D-4.

D.1.c. SITE AREA EMERGENCY

Events are in process or have occurred which involve actual or likely major failures of plant functions needed for protection of the public or HOSTILE ACTION that results in intentional damage or malicious acts; (1) toward site personnel or equipment that could lead to the likely failure of or; (2) that prevent effective access to equipment needed for the protection of the public. Any releases are not expected to result in exposure levels which exceed EPA Protective Action Guideline exposure levels beyond the site boundary.

The purpose of the Site Area Emergency classification is to:

1. Activate the offsite response centers
2. Assure that monitoring teams are mobilized
3. Assure that personnel required for taking protective actions of near site areas are at duty stations should the situation become more serious
4. Provide current information to the public and be available for consultation with offsite authorities

Specific initiating conditions and their corresponding emergency action levels are provided in the Basis Document beginning on page D-4.

D.1.d. GENERAL EMERGENCY

Events are in process or have occurred which involve actual or imminent substantial core degradation or melting with potential for loss of containment integrity or HOSTILE ACTION that results in an actual loss of physical control of the facility. Releases can be reasonably expected to exceed EPA Protective Action Guideline exposure levels offsite for more than the immediate site area.

The purpose of the General Emergency classification is to:

1. Initiate predetermined protective actions for the public
2. Provide continuous assessment of information from onsite and offsite measurements
3. Initiate additional measures as indicated by event releases or potential releases
4. Provide current information to the public and be available for consultation with offsite authorities

Specific initiating conditions and their corresponding emergency action levels are provided in the Basis Document beginning on page D-4.

D.2 Initiating Conditions

Initiating conditions and their corresponding emergency actions levels are contained in the BASIS document beginning on page D-4. Classification procedure (RP/0/A/1000/001) provides the guidance necessary to classify events and promptly declare the appropriate emergency condition within 15 minutes after the availability of indications to cognizant facility staff that an emergency action level threshold has been exceeded. Specific response procedures are in place for the Control Room, Technical Support Center and the Emergency Operations Facility which delineate the required response during the appropriate classification.

D.3 LOCAL AND STATE EMERGENCY ACTION LEVELS

Pickens County FNF Plans
Oconee County FNF Plans
State of South Carolina FNF Plans (Site Specific)

D.4 LOCAL AND STATE EMERGENCY PROCEDURES

Pickens County FNF Plans
Oconee County FNF Plans
State of South Carolina FNF Plans (Site Specific)

ENCLOSURE 4.1

FISSION PRODUCT BARRIER MATRIX

DETERMINE THE APPROPRIATE CLASSIFICATION USING THE TABLE BELOW:

ADD POINTS TO CLASSIFY.

SEE NOTE BELOW

RCS BARRIERS (BD 5-7)		FUEL CLAD BARRIERS (BD 8-9)		CONTAINMENT BARRIERS (BD 10-12)																									
Potential Loss (4 Points)	Loss (5 Points)	Potential Loss (4 Points)	Loss (5 Points)	Potential Loss (1 Point)	Loss (3 Points)																								
RCS Leakrate ≥ 160 gpm	RCS Leak rate that results in a loss of subcooling.	Average of the 5 highest CETC $\geq 700^{\circ}$ F	Average of the 5 highest CETC $\geq 1200^{\circ}$ F	CETC $\geq 1200^{\circ}$ F ≥ 15 minutes OR CETC $\geq 700^{\circ}$ F ≥ 15 minutes with a valid RVLS reading 0"	Rapid unexplained containment pressure decrease after increase OR containment pressure or sump level not consistent with LOCA																								
SGTR ≥ 160 gpm		Valid RVLS reading of 0"	Coolant activity ≥ 300 μ Ci/ml DEI	RB pressure ≥ 59 psig OR RB pressure ≥ 10 psig and no RBCU or RBS	Failure of secondary side of SG results in a direct opening to the environment with SG Tube Leak ≥ 10 gpm in the <u>SAME</u> SG																								
Entry into the PTS (Pressurized Thermal Shock) Operation NOTE: PTS is entered under either of the following: <ul style="list-style-type: none">A cooldown below 400°F @ $> 100^{\circ}$F/hr. has occurred.HPI has operated in the injection mode while NO RCPs were operating.	1RIA 57 or 58 reading ≥ 1.0 R/hr 2 RIA 57 reading ≥ 1.6 R/hr 2 RIA 58 reading ≥ 1.0 R/hr 3RIA 57 or 58 reading ≥ 1.0 R/hr	<div>NOTE: RVLS is NOT valid if one or more RCPs are running OR if LPI pump(s) are running AND taking suction from the LPI drop line.</div>	<table><tr><th>Hours Since SD</th><th>RIA 57 OR R/hr</th><th>RIA 58 R/hr</th></tr><tr><td>0 - <0.5</td><td>≥ 300</td><td>≥ 150</td></tr><tr><td>0.5 - < 2.0</td><td>≥ 80</td><td>≥ 40</td></tr><tr><td>2.0 - 8.0</td><td>≥ 32</td><td>≥ 16</td></tr></table>	Hours Since SD	RIA 57 OR R/hr	RIA 58 R/hr	0 - <0.5	≥ 300	≥ 150	0.5 - < 2.0	≥ 80	≥ 40	2.0 - 8.0	≥ 32	≥ 16	<table><tr><th>Hours Since SD</th><th>RIA 57 OR R/hr</th><th>RIA 58 R/hr</th></tr><tr><td>0 - <0.5</td><td>≥ 1800</td><td>≥ 860</td></tr><tr><td>0.5 - < 2.0</td><td>≥ 400</td><td>≥ 195</td></tr><tr><td>2.0 - 8.0</td><td>≥ 280</td><td>≥ 130</td></tr></table>	Hours Since SD	RIA 57 OR R/hr	RIA 58 R/hr	0 - <0.5	≥ 1800	≥ 860	0.5 - < 2.0	≥ 400	≥ 195	2.0 - 8.0	≥ 280	≥ 130	SG Tube Leak ≥ 10 gpm exists in one SG. AND the other SG has secondary side failure that results in a direct opening to the environment AND is being fed from the affected unit.
Hours Since SD	RIA 57 OR R/hr	RIA 58 R/hr																											
0 - <0.5	≥ 300	≥ 150																											
0.5 - < 2.0	≥ 80	≥ 40																											
2.0 - 8.0	≥ 32	≥ 16																											
Hours Since SD	RIA 57 OR R/hr	RIA 58 R/hr																											
0 - <0.5	≥ 1800	≥ 860																											
0.5 - < 2.0	≥ 400	≥ 195																											
2.0 - 8.0	≥ 280	≥ 130																											
HPI Forced Cooling	RCS pressure spike ≥ 2750 psig			Hydrogen concentration $\geq 9\%$	Containment isolation is incomplete and a release path to the environment exists																								
Emergency Coordinator/EOF Director judgment	Emergency Coordinator/EOF Director judgment	Emergency Coordinator/EOF Director judgment	Emergency Coordinator/EOF Director judgment	Emergency Coordinator/EOF Director judgment	Emergency Coordinator/EOF Director judgment																								
UNUSUAL EVENT (1-3 Total Points)		ALERT (4-6 Total Points)		SITE AREA EMERGENCY (7-10 Total Points)																									
OPERATING MODE: 1, 2, 3, 4		OPERATING MODE: 1, 2, 3, 4		OPERATING MODE: 1, 2, 3, 4																									
4.1.U.1 Any potential loss of Containment		4.1.A.1 Any potential loss or loss of the RCS		4.1.S.1 Loss of any two barriers																									
4.1.U.2 Any loss of containment		4.1.A.2 Any potential loss or loss of the Fuel Clad		4.1.S.2 Loss of one barrier and potential loss of either RCS or Fuel Clad Barriers																									
				4.1.S.3 Potential loss of both the RCS and Fuel Clad Barriers																									
				4.1.G.1 Loss of any two barriers and potential loss of the third barrier																									
				4.1.G.2 Loss of all three barriers																									

NOTE: An event with multiple events could occur which would result in the conclusion that exceeding the loss or potential loss threshold is **IMMINENT** (i.e., within 1-3 hours). In this **IMMINENT LOSS** situation, use judgment and classify as if the thresholds are exceeded.

ENCLOSURE 4.1

BASIS INFORMATION FOR FISSION PRODUCT BARRIER REFERENCE TABLE

RCS BARRIER EALs: (1 or 2 or 3 or 4 or 5)

The RCS Barrier includes the RCS primary side and its connections up to and including the pressurizer safety and relief valves, and other connections up to and including the primary isolation valves.

1. RCS Leak Rate

Small leaks may result in the inability to maintain normal liquid inventory within the Reactor Coolant System (RCS) by normal operation of the High Pressure Injection System. The capacity of one HPI pump at normal system pressure is approximately 160 gpm. Leakage in excess of this value would call for compensatory action to maintain normal liquid inventory. As such, this is an indication of a degraded RCS barrier and is considered to be a potential loss of the barrier.

The loss of subcooling is the fundamental indication that the inventory loss from the primary system exceeds the capacity of the inventory control systems. If the loss of subcooling is indicated, the RCS barrier is considered lost.

2. SG Tube Rupture

Small Steam Generator tube leaks may result in the inability to maintain normal liquid inventory within the Reactor Coolant System (RCS) by normal operation of the High Pressure Injection System. The capacity of one HPI pump at normal system pressure is approximately 160 gpm. Leakage in excess of this value would call for compensatory action to maintain normal liquid inventory. As such, this is an indication of a degraded RCS barrier and is considered to be a potential loss of the barrier.

A tube rupture (> than 160 gpm) with an unisolable secondary line rupture is generally indicated by a reduction in primary coolant inventory, increased secondary radiation levels, and an uncontrolled or complete depressurization of the ruptured SG. This set of conditions represents a potential loss of the RCS and loss of containment fission product barrier and will result in the declaration of a Site Area Emergency. Escalation to a General Emergency would be indicated by at least a potential loss of the fuel clad barrier.

ENCLOSURE 4.1

BASIS INFORMATION FOR FISSION PRODUCT BARRIER REFERENCE TABLE

2. SG Tube Rupture

Secondary radiation increases should be observed via radiation monitoring of Condenser Air Ejector Discharge, Main Steam, and/or SG Sampling System. Determination of the "uncontrolled" depressurization of the ruptured SG should be based on indication that the pressure decrease in the ruptured steam generator is not a function of operator action. This should prevent declaration based on a depressurization that results from an EOP induced cooldown of the RCS that does not involve the prolonged release of contaminated secondary coolant from the affected SG to the environment. This EAL should encompass steam breaks, feed breaks, and stuck open safety or relief valves.

A steam generator tube leak less than 160 gpm would be classified under Enclosure 4.2, Systems Malfunctions, RCS leakage as an Unusual Event. If a release also occurs such as steam through a steam relief valve failed open, feedwater line break, steam line break on the affected steam generator then a loss of the Containment Barrier has also occurred. Upgrade to a higher classification would be by Enclosure 4.3, Abnormal Rad Levels/Radiological Effluent or further degradation of RCS or Fuel Clad Barriers.

3. Entry Into PTS

Entry into Pressurized Thermal Shock Operation could cause damage to the reactor vessel severe enough to cause a loss of coolant accident. Therefore, this situation represents a potential loss of the RCS. This EAL is satisfied if Rule 8 (Pressurized Thermal Shock) is implemented.

4. Reactor Coolant System Integrity

HPI Forced cooling represents the failure of the steam generators to remove heat from the core. To use this mode of cooling indicates that all feedwater (both main and emergency) are not available for use and the pressure in the reactor coolant system is greater than or equal to 2300 psig. The power-operated relief valve must be opened to initiate the cooling through the high pressure injection system. In effect, a self-imposed loss of coolant is established. The condition is classified as a potential loss of the reactor coolant system.

A reactor coolant system pressure spike of greater than or equal to design pressure of 2750 psig represents a loss of the RCS barrier.

ENCLOSURE 4.1

BASIS INFORMATION FOR FISSION PRODUCT BARRIER REFERENCE TABLE

5. Containment Radiation Monitoring

A containment radiation monitor reading of > 1 R/hr on radiation monitors 1RIA-57 or 58 (Unit 1), 2RIA-58 (Unit 2), and 3RIA-57 or 58 (Unit 3) indicates the release of reactor coolant to the containment. A containment radiation monitor reading of >1.6 R/hr on radiation monitor 2RIA-57 (Unit 2) also indicates the release of reactor coolant to the containment. The difference in these values is due to the relative strength of the detector check source which affects the background readings for the detector (the source for 2RIA-57 is stronger than that for the remaining detectors). This reading is less than that specified for Fuel Clad Barrier EAL#3. Thus, this EAL would be indicative of a RCS leak only. If the radiation monitor reading increased to that specified by Fuel Clad Barrier EAL #3, fuel damage would also be indicated.

There is no "Potential Loss" EAL associated with this item.

6. Emergency Coordinator/EOF Director Judgment

This EAL is intended to address unanticipated conditions not addressed explicitly but warrant declaration of an emergency because conditions exist which are believed by the Emergency Coordinator/EOF Director to fall under either the loss or potential loss of the RCS Barrier.

ENCLOSURE 4.1

BASIS INFORMATION FOR FISSION PRODUCT BARRIER REFERENCE TABLE

FUEL CLAD BARRIER EALS: (1 or 2 or 3 or 4)

The Fuel Clad Barrier is the zircalloy tubes that contain the fuel pellets.

1. Core Exit Thermocouple Readings

The "Potential Loss" EAL reading corresponds to loss of subcooling. The value of 700 °F is indicative of superheated steam and is a value referenced in the Emergency Operating procedure. The loss of subcooling may lead to clad damage and, therefore, this is a potential loss of the fuel clad barrier.

The "Loss" EAL reading (1200 °F) indicates significant superheating of the coolant and core uncover. Clad damage under these conditions is likely; therefore, this is indication of loss of the Fuel Clad Barrier.

2. Primary Coolant Activity Level

The value of 300 µCi/ml DEI coolant activity is well above that expected for iodine spikes and corresponds to about 4% fuel clad damage. This amount of clad damage indicates significant clad damage and thus the Fuel Clad Barrier is considered lost. Basis for determination is Engineering Calculation OSC-5283.

There is no equivalent "Potential Loss" EAL for this item.

3. Reactor Vessel Water Level

A valid reading of 0" on the RVLS (Reactor Vessel Level System) is an indicator that the fuel **could be** uncovered and would signify a potential loss of the fuel clad barrier. RVLS is invalid if LPI pumps are running and taking suction from the LPI drop line.

4. Containment Radiation Monitoring

Containment monitor readings on RIA 57/58 in the below listed table is higher than can be attributed to normal reactor coolant activity alone. These levels indicate that approximately 4% of the fuel cladding has failed which is consistent with the release of 300 uC/ml DEI to the containment atmosphere. Release of this amount of activity into containment corresponds to a loss of both the fuel clad and RCS barriers. Basis for the calculation which determined the activity levels can be found in engineering calculation OSC-5283.

Hours Since SD	RIA 57	RIA 58
0 - < 0.5	≥ 300	≥ 150
0.5 - < 2.0	≥ 80	≥ 40
2.0 - 8.0	≥ 32	≥ 16

There is no "Potential Loss" EAL associated with this item.

ENCLOSURE 4.1

BASIS INFORMATION FOR FISSION PRODUCT BARRIER REFERENCE TABLE

5. Emergency Coordinator/EOF Director Judgment

This EAL is intended to address unanticipated conditions not addressed explicitly but warrant declaration of an emergency because conditions exist which are believed by the Emergency Coordinator/EOF Director to fall under either the loss or potential loss of the Fuel Clad Barrier.

ENCLOSURE 4.1

BASIS INFORMATION FOR FISSION PRODUCT BARRIER REFERENCE TABLE

CONTAINMENT BARRIER EALs: (1 or 2 or 3 or 4 or 5 or 6)

The Containment Barrier includes the containment building, its connections up to and including the outermost containment isolation valves. This barrier also includes the main steam, feedwater, and blowdown line extensions outside the containment building up to and including the outermost secondary side isolation valve.

1. Containment Pressure

- ◆ Containment pressure above 59 psig (the design pressure) indicates that the containment or its heat removal systems are not functioning as intended. This degradation of containment pressure control represents a potential loss of containment integrity.
- ◆ Containment pressure of 10 psig with no reactor building cooling units or reactor building spray available represents degradation in the control of the containment conditions. Therefore, this situation represents a potential loss of containment integrity.
- ◆ A containment hydrogen concentration greater than 9 percent volume is sufficient to expect that any ignition would result in complete combustion of the hydrogen in containment and a significant pressure rise. At hydrogen concentrations near 9 percent volume no challenge to containment integrity would be expected. At levels somewhat higher the possibility of a deflagration to detonation transition raises the uncertainty as to the actual response of the containment. Therefore, it is prudent that this level of hydrogen in the containment be considered a potential loss of containment integrity.
- ◆ Rapid unexplained loss of pressure (i.e., not attributable to containment spray or condensation effects) following an initial pressure increase indicates a loss of containment integrity.

Containment pressure and sump levels should increase as a result of the mass and energy release into containment from a LOCA. Thus, sump level or pressure not increasing indicates an interfacing systems LOCA which is a containment bypass and a loss of containment integrity.

ENCLOSURE 4.1

BASIS INFORMATION FOR FISSION PRODUCT BARRIER REFERENCE TABLE

2. Containment Isolation Valve Status After Containment Isolation

Failure to isolate those containment pathways which would allow containment atmosphere to be released to the environment is a loss of the containment barrier.

The use of the modifier "direct" in defining the release path discriminates against release paths through interfacing liquid systems. The existence of an in-line charcoal filter does not make a release path indirect since the filter is not effective at removing fission product noble gases. Typical filters have an efficiency of 95-99% removal of iodine. Given the magnitude of the core inventory of iodine, significant releases could still occur. In addition, since the fission product release would be driven by boiling in the reactor vessel, the high humidity in the release stream can be expected to render the filters ineffective in a short period.

There is no Potential Loss threshold associated with this item.

The decision of whether this EAL is satisfied should be based on present and readily available information. This includes physical data seen and heard. It is not the intent of this EAL to use relatively long term calculations to make the determination. If there is a pathway which would allow containment atmosphere to be released to the environment, this EAL is satisfied.

There is no "Potential Loss" EAL associated with this item.

3. SG Secondary Side Release With Primary To Secondary Leakage

Secondary side releases directly to the atmosphere include atmospheric dump valves and stuck open main steam safety valves. If the main condenser is available, there may be releases via air ejector, gland seal exhausters, and other similar controlled, and often monitored, pathways. These pathways do not meet the intent of a direct opening to the environment. These minor releases are assessed using Abnormal Rad Levels/Radiological Effluent Initiating Conditions. A failure of the secondary side which results in a direct opening to the environment, in combination with Primary to Secondary leakage ≥ 10 gpm in the same steam generator, constitutes a bypass of the containment, and therefore, a loss of the containment barrier.

ENCLOSURE 4.1

BASIS INFORMATION FOR FISSION PRODUCT BARRIER REFERENCE TABLE

Likewise, a failure of the secondary side which results in a direct opening to the environment, in combination with Primary to Secondary leakage ≥ 10 gpm in the other steam generator, constitutes a bypass of the containment, **IF** the SG with the secondary side failure is being fed feedwater from the affected unit. Therefore, this condition also constitutes a loss of the containment barrier.

In combination with the SG Tube Rupture EAL under the RCS barrier section, the appropriate classification can be determined.

There is no "Potential Loss" EAL associated with this item.

4. Significant Radioactive Inventory in Containment

Containment radiation readings shown in the table below are values which indicate significant fuel damage well in excess of the EALs associated with both loss of Fuel Clad and loss of RCS Barriers. NUREG-1228, "Source Estimations During Incident Response to Severe Nuclear Power Plant Accidents," indicates that such conditions do not exist when the amount of clad damage is less than 20%. This amount of activity in containment, if released, could have such severe consequences that it is prudent to treat this as a potential loss of containment.

By treating the radioactive inventory in containment as a potential loss, a General Emergency will be declared when the conditions of the fuel clad and RCS barriers are included in the evaluation. This will allow the appropriate protective actions to be recommended.

Hours Since SD	RIA 57	RIA 58
0 - < 0.5	≥ 1800	≥ 860
0.5 - < 2.0	≥ 400	≥ 195
2.0 - 8.0	≥ 280	≥ 130

There is no "Loss" EAL associated with this item.

ENCLOSURE 4.1

BASIS INFORMATION FOR FISSION PRODUCT BARRIER REFERENCE TABLE

5. Core Exit Thermocouple

Core Exit Thermocouple temperatures $\geq 1200^{\circ}\text{F}$ or $\geq 700^{\circ}\text{F}$ with a valid RVLS reading for greater than 15 minutes, in this potential loss EAL represent imminent core damage that, if not terminated, could lead to vessel failure and an increased potential for containment failure. The potential for containment challenge as a result of events at reactor vessel failure makes it prudent to consider an unmitigated core damage condition as a potential loss of the containment barrier.

Severe accident analyses (e.g., NUREG-1150) have concluded that function restoration procedures can arrest core degradation within the reactor vessel in a significant fraction of the core damage scenarios, and that the likelihood of containment failure is very small in these events. Given this, it is appropriate to provide a reasonable period to allow function restoration procedures to arrest the core melt sequence. Whether or not the procedures will be effective should be apparent within 15 minutes. The Emergency Coordinator should make the declaration as soon as it is determined that the procedures have been, or will be ineffective.

There is no "Loss" EAL associated with this item.

6. Emergency Coordinator/EOF Director Judgment

This EAL is intended to address unanticipated conditions not addressed explicitly but warrant declaration of an emergency because conditions exist which are believed by the Emergency Coordinator/EOF Director to fall under either the loss or potential loss of the Containment Barrier.

Reference

NUMARC/NESP-007, Rev 2, 01/92, Table 5-F-3

ENCLOSURE 4.2

SYSTEM MALFUNCTION

UNUSUAL EVENT	ALERT	SITE AREA EMERGENCY	GENERAL EMERGENCY
RCS Leakage	Unplanned Loss of Most or All Safety System	Inability to Monitor a Significant Transient in Progress	
Unplanned Loss of Most or All Safety System	Annunciation or Indication in Control Room With Either (1) a Significant Transient in Progress, or (2)		
Annunciation or Indication in the Control Room for Greater than 15 minutes	Compensatory Non-Alarming Indicators are Unavailable		
Inability to Reach Required Shutdown Within Technical Specification Limits			
Unplanned Loss of All Onsite or Offsite Communications			
Fuel Clad Degradation			

ENCLOSURE 4.2

SYSTEM MALFUNCTION

UNUSUAL EVENT

1. RCS Leakage

OPERATING MODE APPLICABILITY: **1,2,3,4**

EMERGENCY ACTION LEVELS:

- A. Unidentified leakage ≥ 10 gpm
- B. Pressure boundary leakage ≥ 10 gpm
- C. Identified leakage ≥ 25 gpm
 - Includes SG tube leakage

BASIS:

Reactor Coolant system (RCS) Leakage is defined in RCS Operational Leakage in the Technical Specifications Basis B 3.4.13.

This IC is included as an Unusual Event because it may be a precursor of more serious conditions and, as result, is considered to be a potential degradation of the level of safety of the plant. The 10 gpm value for the unidentified and pressure boundary leakage was selected as it is observable with normal control room indications. Lesser values must generally be determined through time-consuming surveillance tests (e.g., mass balances). The EAL for identified leakage is set at a higher value due to the lesser significance of identified leakage in comparison to unidentified or pressure boundary leakage. In either case, escalation of this IC to the Alert level is via Fission Product Barrier Degradation ICs or IC, Enclosure 4.4, Loss of Shutdown Function, "Inability to Maintain Plant in Cold Shutdown".

Reference

NUMARC/NESP-007, Rev. 2, 01/92, SU5

ENCLOSURE 4.2

SYSTEM MALFUNCTION

UNUSUAL EVENT

- 2. Unplanned Loss of Most or All Safety System Annunciation or Indication in the Control Room for Greater Than 15 Minutes.**

OPERATING MODE APPLICABILITY: 1,2,3,4

EMERGENCY ACTION LEVEL:

The following conditions exist:

- A. Unplanned loss of > 50% of the following annunciators for greater than 15 minutes

Units 1&3 1SA 1, 2, 3, 4, 5, 6, 7, 8, 9, 14, 15, 16 and 18
 3SA 1, 2, 3, 4, 5, 6, 7, 8, 9, 14, 15, 16 and 18

Unit 2 2SA 1, 2, 3, 4, 5, 6, 7, 8, 9, 14, 15 and 16

AND

In the opinion of the Operations Shift Manager, the loss of the annunciators or indicators requires additional personnel (beyond normal shift compliment) to safely operate the unit.

BASIS:

This IC and its associated EAL are intended to recognize the difficulty associated with monitoring changing plant conditions without the use of a major portion of the annunciation or indication equipment.

"Unplanned" loss of annunciators or indicator excludes scheduled maintenance and testing activities. Fifteen minutes was selected as a threshold to exclude transient or momentary power losses. Equipment monitored by referenced annunciator panel is shown on page 20.

This Unusual Event will be escalated to an Alert if a transient is in progress during the loss of annunciation or indication.

Due to the limited number of safety systems in operation during cold shutdown, refueling, and defueled modes, no IC is indicated during these modes of operation.

Reference NUMARC/NESP-007, Rev. 2, 01/92, SU3

ENCLOSURE 4.2

SYSTEM MALFUNCTION

UNUSUAL EVENT

3. Inability to Reach Required Shutdown Within Technical Specification Limits

OPERATING MODE APPLICABILITY: 1, 2, 3, 4

EMERGENCY ACTION LEVELS:

- A. Plant is not brought to required operating mode within Technical Specifications LCO Action Statement Time.

BASIS:

Technical Specification Actions Statements require the plant to be brought to a required shutdown mode when the Technical Specification required configuration cannot be restored. Depending on the circumstances, this may or may not be an emergency or precursor to a more severe condition. In any case, the initiation of plant shutdown required by the site Technical Specifications requires a one hour report under 10 CFR 50.72 (b) Non-emergency events. The plant is within its safety envelope when being shut down within the allowable action statement time in the Technical Specifications. An immediate Notification of an Unusual Event is required when the plant is not brought to the required operating mode within the allowable action statement time in the Technical Specifications. **Declaration of an Unusual Event is based on the time at which the LCO-specified action statement time period elapses under the site Technical Specifications and is not related to how long a condition may have existed.** Other required Technical Specification shutdowns that involve precursors to more serious events are addressed by other System Malfunction, Hazards, or Fission Product Barrier Degradation ICs.

Reference

NUMARC/NESP-007, Rev. 2, 01/92, SU2

ENCLOSURE 4.2

SYSTEM MALFUNCTION

UNUSUAL EVENT

4. Unplanned Loss of All Onsite or Offsite Communications

OPERATING MODE APPLICABILITY: ALL

EMERGENCY ACTION LEVELS:

- A. Loss of all onsite communications capability (internal phone system, PA system, pager system, onsite radio system) affecting the ability to perform routine operations.
- B. Loss of all offsite communications capability (Selective Signaling, ETS lines, offsite radio system, commercial phone system) affecting the ability to communicate with offsite authorities.

BASIS:

The purpose of this IC and its associated EALs is to recognize a loss of communications capability that either defeats the plant operations staff ability to perform routine tasks necessary for plant operations or the ability to communicate problems with offsite authorities. The loss of offsite communications ability is expected to be significantly more comprehensive than the condition addressed by 10 CFR 50.72.

This EAL is intended to be used only when extraordinary means are being utilized to make communications possible (relaying of information from radio transmissions, individuals being sent to offsite locations, etc.).

Reference

NUMARC/NESP-007, Rev. 2, 01/92, SU6

ENCLOSURE 4.2

SYSTEM MALFUNCTION

UNUSUAL EVENT

5. Fuel Clad Degradation.

OPERATING MODE APPLICABILITY: ALL

EMERGENCY ACTION LEVEL:

A. DEI > 5 uCi/ml

BASIS:

Chemistry analysis which indicates the presence of > 5 uCi/ml dose equivalent iodine in the reactor coolant system clearly denotes a potential degradation in the level of safety of the plant and a potential precursor of more serious problems. The basis for the 5 uCi/ml is based upon the Oconee FSAR, Chapter 15, Table 15-14 of RCS Coolant Activity for 1% failed fuel. Escalation of this IC to the Alert level is via the Fission Product Barrier Degradation Monitoring ICs, Enclosure 4.1 of this document.

Reference

NUMARC/NESP-007, Rev. 2, 01/92, SU4

ENCLOSURE 4.2

SYSTEM MALFUNCTION

ALERT

- 1. Unplanned Loss of Most or All Safety System Annunciation or Indication in Control Room With Either (1) a Significant Transient in Progress, or (2) Compensatory Non-Alarming Indicators are Unavailable.**

OPERATING MODE APPLICABILITY: 1, 2, 3, 4

EMERGENCY ACTION LEVEL:

The following conditions exist:

- A. Unplanned loss of > 50% of the following annunciators for greater than 15 minutes.**

<u>Units 1&3</u>	1SA 1, 2, 3, 4, 5, 6, 7, 8, 9, 14, 15, 16, and 18
	3SA 1, 2, 3, 4, 5, 6, 7, 8, 9, 14, 15, 16, and 18

<u>Unit 2</u>	2SA 1, 2, 3, 4, 5, 6, 7, 8, 9, 14, 15 and 16
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AND

In the opinion of the Operations Shift Manager, the loss of the annunciators or indicators requires additional personnel (beyond normal shift compliment) to safely operate the unit.

AND

Either of the following:

A significant plant transient is in progress.

OR

Loss of the OAC and PAM indications.

ENCLOSURE 4.2

SYSTEM MALFUNCTION

BASIS:

- SA 1-9 : ES, RPS, CRD breakers, basic information concerning primary system, fire alarms, seismic trigger, condenser cooling, HPSW and LPSW system status.
- SA 14-16: Electrical load (Keowee emergency start, load shed, emergency power switching logic)
- SA-18 : CRD shunt trip relay, ICS, PZR relief valve flow, hydrogen concentration in RB, chlorine gas leakage.

This IC and its associated EAL are intended to recognize the difficulty associated with monitoring changing plant conditions without the use of a major portion of the annunciation or indication equipment during a transient.

Fifteen minutes was selected as a threshold to exclude transient or momentary power losses.

"Significant Transient" includes response to automatic or manually initiated functions such as scrams, runbacks involving greater than 25% thermal power change, ECCS injections, or thermal power oscillations of 10% or greater.

Significant indication is available from the OAC (operational aid computer) and from post accident monitoring (PAM). Loss of this data in conjunction with the loss of other indications would further impair the ability to monitor plant parameters.

Due to the limited number of safety systems in operation during cold shutdown, refueling and defueled modes, no IC is indicated during these modes of operation.

This Alert will be escalated to a Site Area Emergency if the operating crew cannot monitor the transient in progress.

Reference

NUMARC/NESP-007, Rev. 2, 01/92/ SA4

ENCLOSURE 4.2

SYSTEM MALFUNCTION

SITE AREA EMERGENCY

1. Inability to Monitor a Significant Transient in Progress

OPERATING MODE APPLICABILITY: **1, 2, 3, 4**

EMERGENCY ACTION LEVEL:

The following conditions exist:

A Unplanned loss of > 50% of the following annunciators for greater than 15 minutes.

<u>Units 1&3</u>	1SA 1, 2, 3, 4, 5, 6, 7, 8, 9, 14, 15, 16, and 18 3SA 1, 2, 3, 4, 5, 6, 7, 8, 9, 14, 15, 16, and 18
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<u>Unit 2</u>	2SA 1, 2, 3, 4, 5, 6, 7, 8, 9, 14, 15, and 16
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AND

A significant plant transient is in progress.

AND

Loss of the OAC and the PAM indications.

AND

Inability to directly monitor any one of the following functions:

- ◆ Subcriticality
- ◆ Inadequate core cooling
- ◆ Heat sink
- ◆ Containment Integrity
- ◆ RCS integrity
- ◆ RCS Inventory

BASIS:

This IC and its associated EAL are intended to recognize the inability of the control room staff to monitor the plant response to a transient. The inability to directly monitor indicates that computer data points or SPDS indicators are not available to monitor the critical safety functions.

ENCLOSURE 4.2

SYSTEM MALFUNCTION

SITE AREA EMERGENCY

"Significant Transient" includes response to automatic or manually initiated functions such as scrams, runbacks involving greater than 25% thermal power change, ECCS injections, or thermal power oscillations of 10% or greater.

Reference

NUMARC/NESP-007, Rev. 2, 01/92, SS6

ENCLOSURE 4.3

ABNORMAL RAD LEVELS/RADIOLOGICAL EFFLUENT

UNUSUAL EVENT	ALERT	SITE AREA EMERGENCY	GENERAL EMERGENCY
Any Unplanned Release of Gaseous or Liquid Radioactivity to the Environment that Exceeds Two Times the SLC Limits for 60 Minutes or Longer	Any Unplanned Release of Gaseous or Liquid Radioactivity to the Environment that Exceeds 200 Times the SLC limits for 15 Minutes or Longer	Boundary 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	Boundary Dose Resulting from an Actual or Imminent Release of Gaseous Radioactivity that Exceeds 1000 mRem TEDE or 5000 mRem CDE thyroid for the Actual or Projected Duration of the Release
Unexpected Increase in Plant Radiation Levels or Airborne Concentration	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 Release of Radioactive Material or Increases in Radiation Levels Within the Facility That Impedes Operation of Systems Required to Maintain Safe Operations or to Establish or Maintain Cold Shutdown		

ENCLOSURE 4.3

ABNORMAL RAD LEVELS/RADIOLOGICAL EFFLUENT

UNUSUAL EVENT

- 1. Any Unplanned Release of Gaseous or Liquid Radioactivity to the Environment that Exceeds Two Times the SLC Limits for 60 Minutes or Longer**

OPERATING MODE APPLICABILITY: ALL
EMERGENCY ACTION LEVELS:

- A. A valid indication on radiation monitor RIA 33 of $\geq 4.06\text{E}+06$ cpm for > 60 minutes. (See Note)
- B. Valid indication on radiation monitor RIA-45 of $\geq 9.35\text{E}+05$ cpm or RP sample reading of $\geq 6.62\text{E}-2\mu\text{Ci/ml}$ Xe 133 eq for > 60 minutes. (See Note)
- C. Confirmed sample analysis of liquid effluent being released exceeds two times SLC 16.11.1 for > 60 minutes as determined by Chemistry procedures.
- D. Confirmed sample analysis of gaseous effluent being released exceeds two times SLC 16.11.2 for > 60 minutes as determined by Radiation Protection procedures.

Note: If monitor reading is sustained for the time period indicated in the EAL AND the required assessments (procedure calculations) cannot be completed within this period, declaration must be made on the valid Radiation monitor reading.

BASIS:

The term "Unplanned", as used in this context, includes any release for which a liquid waste release (LWR) or gaseous waste release (GWR) package was not prepared, or a release that exceeds the conditions (e.g., minimum dilution flow, maximum discharge flow, alarm setpoints, etc.) on the applicable package.

Valid means that a radiation monitor reading has been confirmed to be correct.

ENCLOSURE 4.3

ABNORMAL RAD LEVELS/RADIOLOGICAL EFFLUENT

UNUSUAL EVENT

Chapter 16, Selected Licensee Commitments, of the Oconee Nuclear Station FSAR provides guidance to ensure that the release of liquid or gaseous effluent does not exceed the limits established in 10 CFR 20, Appendix B, Table II and Appendix I, 10 CFR 50. Unplanned releases in excess of two times the selected licensee commitments that continue for 60 minutes or longer represent an uncontrolled situation and hence, a potential degradation in the level of safety. It is not intended that the release be averaged over 60 minutes. The event should be declared as soon as it is determined that the release duration has or will likely exceed 60 minutes.

1. Any Unplanned Release of Gaseous or Liquid Radioactivity to the Environment that Exceeds Two Times the SLC Limits for 60 Minutes or Longer

Monitor indications are based on the methodology of the site Offsite Dose Calculation Manual (ODCM). Annual average meteorology (semi-elevated $1.672\text{E-}06$ sec/m³) has been used. Radiation Protection will use HP/0/B/1009/015 to quantify a gaseous release. Chemistry will use CP/0/A/5200/045 and/or CP/0/A/5200/048 to quantify a liquid release.

BASIS:

References to RIA-45 are intended to be related to unit specific RIA-45 only. 4RIA-45 provides a concentration value, not in cpm, that is used by unit 1, 2, 3 RIA-45. Additionally, a radionuclide concentration value of $6.62\text{E-}2$ uCi/ml cannot be obtained in the Radwaste Facility (RWF) ventilation system discharge without the input of post-accident concentrations of gaseous radionuclides. There are no post-accident inputs to the RWF other than planned batch transfers of liquids and resins that would be transferred in a controlled manner. All gaseous radionuclides would be entrained in the liquids and resins since there are no gas storage tanks in the RWF to accept a transfer of gaseous waste. Unit 1,2,3 RIA-45 could detect a concentration of $6.62\text{E-}2$ uCi/ml post-accident since a LOCA in the Auxiliary Building could provide the source activity.

ENCLOSURE 4.3

ABNORMAL RAD LEVELS/RADIOLOGICAL EFFLUENT

UNUSUAL EVENT

The Radwaste Facility is only used for waste water and resin processing. The type of waste processed, even if it contained entrained gasses from the reactor coolant system, cannot contain sufficient activity during normal operation to result in SLC limits being exceeded. Liquid waste is not transferred to the Radwaste Facility during an event. The Radwaste Facility 4RIA-45 alarm set point is set at 5% of the station release limit. This set point is based on providing a set point that will not cause spurious alarms and will maintain total effluent releases below 100% of the station release limit. It is recognized that the Radwaste Facility is a less significant gaseous release pathway since the 4RIA-45 set point is set at one sixth of the 1, 2, or 3 RIA-45 set points. This EAL is only applicable to 1, 2, or 3 RIA-45 since the accident related source term that enters an intact Auxiliary Building will be released out of the unit vents.

Reference

NUMARC/NESP/-007, Rev. 2, 01/92, AU1

ENCLOSURE 4.3

ABNORMAL RAD LEVELS/RADIOLOGICAL EFFLUENT

UNUSUAL EVENT

2. Unexpected Increase in Plant Radiation or Airborne Concentration.

OPERATING MODE APPLICABILITY: ALL

EMERGENCY ACTION LEVELS:

- A. LT 5 reading 14" and decreasing with makeup not keeping up with leakage **WITH** fuel in the core
- B. Valid indication of *uncontrolled* water decrease in the SFP or fuel transfer canal with all fuel assemblies remaining covered by water **AND** unplanned *valid* RIA 3, 6 or portable area monitor readings increase.
- C. 1 R/hr radiation reading at one foot away from a damaged irradiated spent fuel dry storage module.
- D. Valid area or process monitor exceeds limits stated in Enclosure 4.9 of RP/0/A/1000/001.

BASIS:

Valid means that a radiation monitor reading has been confirmed to be correct.

EAL 1 indicates that the water level in the reactor refueling cavity is uncontrolled. **If the area/process monitors reach the HIGH alarm setpoint, classification should be upgraded to an Alert.**

All of the above events tend to have long lead times relative to potential for radiological release outside the site boundary, thus impact to public health and safety is very low.

In light of reactor cavity seal failure incidents, explicit coverage of these types of events via EALs 1 and 2 is appropriate given their potential for increased doses to plant staff. Classification as an Unusual Event is warranted as a precursor to a more serious event.

EAL 3 applies to licensed dry storage of older irradiated spent fuel to address degradation of this spent fuel.

ENCLOSURE 4.3

ABNORMAL RAD LEVELS/RADIOLOGICAL EFFLUENT

UNUSUAL EVENT

EAL 4 addresses unplanned increases in in-plant radiation levels that represent a degradation in the control of radioactive material, and represent a potential degradation in the level of safety of the plant. The RIA readings for an Unusual Event are 1000 times the normal value. Enclosure 4.9 of RP/0/A/1000/001 will provide the actual readings for the monitors.

Reference

NUMARC/NESP-007, Rev. 2, 01/92, AU2

NEI 99-01, Rev. 4, 08/00, AU2

ENCLOSURE 4.9 (RP/0/A/1000/001)

UNEXPECTED/UNPLANNED INCREASE IN AREA MONITOR READINGS

This initiating condition is not intended to apply to anticipated temporary increases due to planned events (e.g., incore detector movement, radwaste container movement, depleted resin transfers, etc.)

MONITOR NUMBER	UNIT 1, 2, 3	
	UNUSUAL EVENT 1000 x normal levels mRad/hr	ALERT mRad/hr
RIA 7, Hot Machine Shop Elevation 796	150	≥ 5000
RIA 8, Hot Chemistry Lab Elevation 796	4200	≥ 5000
RIA 10, Primary Sample Hood, Elevation 796	830	≥ 5000
RIA 11, Change Room Elevation 796	210	≥ 5000
RIA 12, Chem Mix Tank Elevation 783	800	≥ 5000
RIA 13, Waste Disposal Sink, Elevation 771	650	≥ 5000
RIA 15, HPI Room Elevation 758	NOTE*	≥ 5000

NOTE*: RIA 15 normal readings are approximately 9 mRad/hr on a daily basis. Applying the 1000 x normal readings would put this monitor greater than 5000 mRad/hr just for an Unusual Event. For this reason, an Unusual Event will not be declared for any reading less than 5000 mRad/hr

ENCLOSURE 4.3

ABNORMAL RAD LEVELS/RADIOLOGICAL EFFLUENT

ALERT

- 1. Any Unplanned Release of Gaseous or Liquid Radioactivity to the Environment that Exceeds 200 Times Radiological Technical Specifications for 15 Minutes or Longer.**

OPERATING MODE APPLICABILITY: ALL

EMERGENCY ACTION LEVELS:

- A. Valid indication of RIA-46 of $\geq 2.09\text{E}+04$ cpm or RP sample reading of ≥ 6.62 uCi/ml Xe 133 eq for > 15 minutes (See Note)
- B. RIA 33 HIGH alarm **AND** Liquid effluent being released exceeds 200 times the level of SLC 16.11.1 for > 15 minutes as determined by Chemistry procedure.
- C. Gaseous effluent being released exceeds 200 times the level of SLC 16.11.2 for > 15 minutes as determined by RP procedure.

Note: If monitor reading is sustained for the time period indicated in the EAL AND required assessments (procedure calculations) cannot be completed within this period, declaration must be made on the valid Radiation monitor reading.

BASIS:

The term "Unplanned", as used in this context, includes any release for which a liquid waste release (LWR) or gaseous waste release (GWR) package was not prepared, or a release that exceeds the conditions (e.g., minimum dilution flow, maximum discharge flow, alarm setpoints, etc.) on the applicable package.

Valid means that a radiation monitor reading has been confirmed to be correct.

This event escalates from the Unusual Event by escalating the magnitude of the release by a factor of 100.

ENCLOSURE 4.3

ABNORMAL RAD LEVELS/RADIOLOGICAL EFFLUENT

ALERT

It is not intended that the release be averaged over 15 minutes. The event should be declared as soon as it is determined that the release duration has or will likely exceed 15 minutes.

Monitor indications are based on the methodology of the site Offsite Dose Calculation Manual (ODCM). Annual average meteorology (semi-elevated release $1.672 \text{ E-06 sec/m}^3$) has been used.

Chapter 16, Selected Licensee Commitments, of the Oconee Nuclear Station FSAR outlines the release limits for gaseous effluent is released by the Control Room. Liquid effluent is discharged by Chemistry from the Radwaste Facility. Effluent monitors have setpoints established to alarm should activity be detected that would exceed limits established by 10 CFR 20, Table B, Appendix II. Radiation Protection and/or Chemistry would calculate the release rate and quantify the amount being released.

Reference

NUMARC/NESP-007, Rev. 2, 01/92, AA1

ENCLOSURE 4.3

ABNORMAL RAD LEVELS/RADIOLOGICAL EFFLUENT

ALERT

2. **Release of Radioactive Material or Increases in Radiation Levels Within the Facility That Impedes Operation of Systems Required to Maintain Safe Operations or to Establish or Maintain Cold Shutdown**

OPERATING MODE APPLICABILITY: ALL

EMERGENCY ACTION LEVELS:

- A. Valid radiation reading ≥ 15 mRad/hr in the Control Room, CAS, or Radwaste Control Room.
- B. Unplanned/unexpected valid area radiation monitor readings exceed limits stated in Enclosure 4.9 of RP/0/A/1000/001.

BASIS:

Valid means that a radiation reading has been confirmed by the operators to be correct.

This IC addresses unplanned/unexpected increased radiation levels that impede necessary access to operating stations, or other areas containing equipment that must be operated manually, in order to maintain safe operation or perform a safe shutdown. It is this impaired ability to operate the plant that results in the actual or potential substantial degradation of the level of safety of the plant.

The Control Room, Central Alarm Station (CAS) and the Radwaste Control Room are areas that will need to be continuously occupied. No radiation monitors are in the CAS or the Radwaste Control Room.

Oconee has chosen to use a generic emergency action level of greater than or equal to 5000 mRad/hr for the Alert classification for areas in the plant that would need to be utilized for safe operation or safe shutdown of the unit. Enclosure 4.9 of RP/0/A/1000/001 provides the monitor number and the location of the area monitor.

This IC is not intended to apply to anticipated temporary increases due to planned events (e.g., incore detector movement, radwaste container movement, depleted resin transfers, etc.)

Reference

NUMARC/NESP-007, Rev. 2, 01/92, AA3

ENCLOSURE 4.3

ABNORMAL RAD LEVELS/RADIOLOGICAL EFFLUENT

ALERT

3. **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.**

OPERATING MODE APPLICABILITY: ALL

EMERGENCY ACTION LEVELS:

- A. Valid RIA 3*, 6, 41, or 49* **HIGH** alarm readings
*Applies to Mode 6 and No Mode Only
- B. Valid **HIGH** alarm reading on portable area monitors on the main bridge or spent fuel pool bridge.
- C. Report of visual observation of irradiated fuel uncovered.
- D. Operators determine water level drop in either the SFP or fuel transfer canal will exceed makeup capacity such that irradiated fuel will be uncovered.

BASIS:

This IC applies to spent fuel requiring water coverage and is not intended to address spent fuel which is licensed for dry storage.

The HIGH alarm for RIA 3 (containment area monitor) and RIA 49 (RB gaseous process monitor) corresponds to the setpoints established to assure that 10 CFR 20 limits are not exceeded.

The HIGH alarm setpoint for RIA 6 (SFP bridge area monitor) is designed to make operators aware of increased readings above 10 CFR 20 limits. The HIGH alarm setpoint for RIA 41 (Spent Fuel Pool gaseous atmosphere) is set to alarm if 4 times the limits of 10 CFR 20 are exceeded based upon Xe-133. RIA 49 monitors the reactor building gas. Portable monitors are established during refueling outages and are located on the main bridge, and the spent fuel pool bridge.

ENCLOSURE 4.3

ABNORMAL RAD LEVELS/RADIOLOGICAL EFFLUENT

ALERT

There is time available to take corrective actions, and there is little potential for substantial fuel damage. Thus, an Alert Classification for this event is appropriate. Escalation, if appropriate, would occur via Abnormal Rad Level/Radiological Effluent or Emergency Coordinator Judgment.

Reference

NUMARC/NESP-007, Rev. 2, 01/92, AA2

ENCLOSURE 4.3

ABNORMAL RAD LEVELS/RADIOLOGICAL EFFLUENT

SITE AREA EMERGENCY

- 1. Boundary Dose Resulting from an Actual or Imminent Release of Radioactivity Exceeds 100 mRem TEDE or 500 mRem CDE Adult Thyroid for the Actual or Projected Duration of the Release.**

OPERATING MODE APPLICABILITY: ALL

EMERGENCY ACTION LEVELS:

- A. Valid reading on RIA-46 of $\geq 2.09\text{E}+05$ cpm or RIA 56 reading of ≥ 17.5 R/hr or RP sample reading of $6.62\text{E}+01$ uCi/ml Xe 133 eq for > 15 minutes. (See Note)
- B. Valid reading on RIA 57 or 58 as shown on Enclosure 4.8 of RP/0/A/1000/001. (See Note)
- C. Dose calculations result in a dose projection at the site boundary of 100 mRem TEDE or 500 mRem CDE Adult Thyroid.
- D. Field survey results indicate site boundary dose rates exceeding 100 mRad/hr expected to continue for more than one hour; **OR** analysis of field survey samples indicate adult thyroid dose commitment (CDE) of 500 mRem for one hour of inhalation.

Note: If actual Dose Assessment cannot be completed within 15 minutes, then the valid monitor reading should be used for emergency classification.

BASIS:

Valid means that a radiation monitor reading has been confirmed to be correct. The calculation for RIA 46 (vent monitor) setpoint is based on whole body dose (100 mRem) using ODCM guidance: average annual meteorology (semi-elevated release $1.672\text{E}-6$ sec/m³), vent flow rate of 65,000 cfm, and release duration of 15 minutes. No credit is taken for vent filtration.

The calculation for RIA 57/58 (incontainment monitors) setpoints are based on the following: LOCA conditons which provide the more conservative reading, Committed Dose Equivalent (CDE) thyroid (500 mRem), average annual meteorology ($7.308\text{E}-6$ sec/m³), design basis leakage of $5.6\text{E}6$ ml/hr, release duration of one hour, and time since unit trip. No credit is taken for filtration.

ENCLOSURE 4.3

ABNORMAL RAD LEVELS/RADIOLOGICAL EFFLUENT

SITE AREA EMERGENCY

Dose assessment team members use actual meteorology, release duration, and unit vent flow rate or actual leakage rate from containment. Therefore, the predetermined monitor readings would not be used if dose assessment team calculations are available from the TSC or EOF in a timely manner (within approximately 15 minutes).

The 100 mRem Total Effective Dose Equivalent (TEDE) and the 500 mRem Committed Dose Equivalent (CDE) thyroid in this initiating condition is based on 10 CFR 20 annual average population exposure. The dose projection uses a 4-hour default for time of release. If the real time release time is known it will be used in the calculation. One order of magnitude is the gradient factor between the Site Area Emergency and General Emergency classes. These values are 10% of the EPA PAG values given in EPA-400-R-92-001.

The field monitoring survey results are based on actual hand-held instrument readings at the site boundary. It is assumed that the release will continue for more than one hour. Adult thyroid is considered to be the limiting factor.

Reference

NUMARC/NESP-007, Rev. 2, 01/92, AS1

ENCLOSURE 4.8 (RP/0/A/1000/001)
RADIATION MONITOR READINGS FOR EMERGENCY CLASSIFICATION

NOTE: IF ACTUAL DOSE ASSESSMENT CANNOT BE COMPLETED WITHIN 15 MINUTES, THEN THE VALID MONITOR READING SHOULD BE USED FOR EMERGENCY CLASSIFICATION.

ALL RIA VALUES ARE CONSIDERED TO BE GREATER THAN OR EQUAL TO.

HOURS SINCE REACTOR TRIPPED	RIA 57 R/hr		RIA 58 R/hr*	
	Site Area Emergency	General Emergency	Site Area Emergency	General Emergency
0 - < 0.5	5.9E+003	5.9E+004	2.6E+003	2.6E+004
0.5 - < 1.0	2.6E+003	2.6E+004	1.1E+003	1.1E+004
1.0 - < 1.5	1.9E+003	1.9E+004	8.6E+002	8.6E+003
1.5 - < 2.0	1.9E+003	1.9E+004	8.5E+002	8.5E+003
2.0 - < 2.5	1.4E+003	1.4E+004	6.3E+002	6.3E+003
2.5 - < 3.0	1.2E+003	1.2E+004	5.7E+002	5.7E+003
3.0 - < 3.5	1.1E+003	1.1E+004	5.2E+002	5.2E+003
3.5 - < 4.0	1.0E+003	1.0E+004	4.8E+002	4.8E+003
4.0 - < 8.0	1.0E+003	1.0E+004	4.4E+002	4.4E+003

*Note: RIA 58 is partially shielded.

Assumptions used for calculation of high range in-containment monitors RIA 57 and 58:

1. Average annual meteorology (7.308 E-6 sec/m3)
2. Design basis leakage (5.6 E6 ml/hr)
3. One hour release duration
4. General Emergency PAGs are 1 rem TEDE and 5 rem CDE; SAE determination is based on 10% of the General Emergency PAGs.
5. Calculations for monitor readings are based on CDE (adult thyroid - 500 mRem) because thyroid dose is limiting.
6. No credit is taken for filtration.
7. LOCA conditions are limiting and provide the more conservative reading.

Assumptions used for calculation of vent monitor RIA 46:

1. Average annual meteorology (1.672 E-6 sec/m3), semi-elevated
2. Vent flow rate 65,000 cfm (average daily flow rate)
3. No credit is taken for vent filtration
4. Fifteen minute release duration.
5. General Emergency PAGs are 1 rem TEDE and 5 rem CDE; SAE determination is based on 10% of the General Emergency PAGs.
6. Calculations for monitor readings are based on whole body dose (100 mRem).
7. Calculation is based on ODCM methodology and NUMARC guidance

ENCLOSURE 4.3

ABNORMAL RAD LEVELS/RADIOLOGICAL EFFLUENT

SITE AREA EMERGENCY

- 2. Loss of Water Level in the Reactor Vessel That Has or Will Uncover Fuel in the Reactor Vessel.**

OPERATING MODE APPLICABILITY: 5, 6

EMERGENCY ACTION LEVEL:

Loss of Reactor Vessel Water Level as indicated by:

- A. Failure of heat sink causes loss of Mode 5 (Cold Shutdown) conditions **AND** LT-5 indicates 0 inches after initiation of RCS makeup.
- B. Failure of heat sink causes loss of Mode 5 (Cold Shutdown) conditions **AND** either train ultrasonic level indication less than 0 inches and decreasing after initiation of RCS makeup.

BASIS:

Under the conditions specified by this IC, severe core damage can occur due to prolonged boiling following loss of decay heat removal. Declaration of a Site Area Emergency is warranted under the conditions specified by the IC. Escalation to a General Emergency is via Enclosure 4.3, Abnormal Rad Levels/Radiological Effluent.

Note: Both the LT-5 and the ultrasonic level instrumentation are located in the center line of the hot leg.

Reference

NUMARC/NESP-007, Rev.2, 01/92, SS5

ENCLOSURE 4.3

ABNORMAL RAD LEVELS/RADIOLOGICAL EFFLUENT

GENERAL EMERGENCY

1. **Boundary Dose Resulting from an Actual or Imminent Release of Gaseous Radioactivity that Exceeds 1000 mRem TEDE or 5000 mRem (CDE) Adult Thyroid for the Actual or Projected Duration of the Release Using Actual Meteorology.**

OPERATING MODE APPLICABILITY: ALL

EMERGENCY ACTION LEVELS:

- A. Valid reading on RIA 46 of $\geq 2.09\text{E}+06$ cpm or RIA 56 reading of ≥ 175 R/hr or RP sample reading of $6.62\text{E}+02$ uCi/ml Xe 133 eq for ≥ 15 minutes (See Note)
- B. Valid reading on RIA 57 or 58 as shown on Enclosure 4.8 of RP/0/A/1000/001. (See Note)
- C. Dose calculations result in a dose projection at the site boundary of ≥ 1000 mRem TEDE **OR** ≥ 5000 mRem CDE (Adult Thyroid).
- D. Field survey results indicate site boundary dose rates exceeding 1000 mRad/hr expected to continue for more than one hour; **OR** analyses of field survey samples indicate adult thyroid commitment (CDE) of 5000 mRem for one hour of inhalation.

Note: If actual Dose Assessment cannot be completed within 15 minutes, then the valid monitor reading should be used for emergency classification.

BASIS:

Valid means that a radiation monitor reading has been confirmed to be correct. The calculation for RIA 46 (vent monitor) setpoint is based on the following: whole body dose (100 mRem) using ODCM guidance, average annual meteorology (semi-elevated release $1.672\text{E}-6$ sec/m³), vent flow rate of 65,000 CFM, and release duration of 15 minutes. No credit is taken for vent filtration.

The calculation for RIA 57/58 (incontainment monitors) setpoints are based on the following: LOCA conditions which provide the more conservative reading, Committed Dose Equivalent (CDE-adult thyroid 500 mRem), average annual meteorology ($7.308\text{E}-6$, sec/m³), design basis leakage of $5.6\text{E}6$ ml/hr, release duration of one hour, and time since unit trip. No credit is taken for filtration.

ENCLOSURE 4.3

ABNORMAL RAD LEVELS/RADIOLOGICAL EFFLUENT

GENERAL EMERGENCY

Calculations by the dose assessment team use **actual** meteorology, duration, and unit vent flow rate or actual leakage rate from containment. Therefore, the predetermined monitor readings would not be used if dose assessment calculations are available from the TSC or EOF in a timely manner (within approximately 15 minutes).

The 1000 mRem Total Effective Dose Equivalent (TEDE) and the 5000 mRem Committed Dose Equivalent (CDE) adult thyroid in this initiating condition is based on 10 CFR 20 annual average population exposure. These values are EPA PAG guidelines as expressed in EPA-400-R-92-001. The dose calculation procedure utilizes a default of 4 hours for the release time. This default value will be utilized until a corrected release time is determined.

Field monitoring results will utilize a one hour period of time for calculating survey results.

Enclosure 4.8 of RP/0/A/1000/001 is shown on page 34 of this document.

Reference

NUMARC/NESP-007, Rev. 2, 01/92, AG1

ENCLOSURE 4.4

LOSS OF SHUTDOWN FUNCTION

UNUSUAL EVENT	ALERT	SITE AREA EMERGENCY	GENERAL EMERGENCY
Unexpected increase in plant radiation levels or airborne concentrations	Failure of Reactor Protection System Instrumentation to Complete or Initiate an Automatic Reactor Scram Once a Reactor Protection System Setpoint Has Been Exceeded and Manual Scram Was Successful	Failure of Reactor Protection System Instrumentation to Complete or Initiate an Automatic Reactor Scram Once a Reactor Protection System Setpoint Has Been Exceeded and Manual Scram Was NOT Successful	Failure of the Reactor Protection System to Complete an Automatic Scram and Manual Scram was NOT Successful and There is Indication of an Extreme Challenge to the Ability to Cool the Core
	Inability to Maintain Plant in Cold Shutdown	Complete Loss of Function Needed to Achieve or Maintain Hot Shutdown	
	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	Loss of Water Level in the Reactor Vessel That Has or Will Uncover Fuel in the Reactor Vessel	

ENCLOSURE 4.4

LOSS OF SHUTDOWN FUNCTIONS

UNUSUAL EVENT

- 1. Unexpected Increase in Plant Radiation or Airborne Concentration.**

OPERATING MODE APPLICABILITY: ALL

EMERGENCY ACTION LEVELS:

- A. LT 5 reading 14" and decreasing with makeup not keeping up with leakage **WITH** fuel in the core
- B. Valid indication of *uncontrolled* water decrease in the SFP or fuel transfer canal with all fuel assemblies remaining covered by water **AND** unplanned *valid* RIA 3, 6 or portable area monitor readings increase.
- C. 1 R/hr radiation reading at one foot away from a damaged irradiated spent fuel dry storage module.
- D. Valid area or process monitor exceeds limits stated in Enclosure 4.9 of RP/O/A/1000/001.

BASIS:

Valid means that a radiation monitor reading has been confirmed to be correct.

EAL 1 indicates that the water level in the reactor refueling cavity is uncontrolled. **If the area/process monitors reach the HIGH alarm setpoint, classification should be upgraded to an Alert.**

All of the above events tend to have long lead times relative to potential for radiological release outside the site boundary, thus impact to public health and safety is very low.

In light of reactor cavity seal failure incidents, explicit coverage of these types of events via EALs 1 and 2 is appropriate given their potential for increased doses to plant staff. Classification as an Unusual Event is warranted as a precursor to a more serious event.

EAL 3 applies to licensed dry storage of older irradiated spent fuel to address degradation of this spent fuel.

ENCLOSURE 4.4

LOSS OF SHUTDOWN FUNCTIONS

UNUSUAL EVENT

EAL 4 addresses unplanned increases in in-plant radiation levels that represent a degradation in the control of radioactive material, and represent a potential degradation in the level of safety of the plant. The RIA readings for an Unusual Event are 1000 times the normal value. Enclosure 4.9 of RP/0/A/1000/001 will provide the actual readings for the monitors.

Reference

NUMARC/NESP-007, Rev. 2, 01/92, AU2

NEI 99-01, Rev. 4, 08/00, AU2

ENCLOSURE 4.4

LOSS OF SHUTDOWN FUNCTIONS

ALERT

- 1. Failure of Reactor Protection System Instrumentation to Complete or Initiate an Automatic Reactor Scram Once a Reactor Protection System Setpoint Has Been Exceeded and Manual Scram Was Successful.**

OPERATING MODE APPLICABILITY: 1, 2, 3

EMERGENCY ACTION LEVEL:

The following conditions exist:

- A. VALID reactor trip signal received or required without automatic scram**

AND ONE OF THE FOLLOWING:

DSS has inserted Control Rods

OR

Manual reactor trip from the control room is successful and reactor power is less than 5% and decreasing.

BASIS:

This condition indicates failure of the automatic protection system to scram the reactor. This condition is more than a potential degradation of a safety system in that a front line automatic protection system did not function in response to a plant transient and thus the plant safety has been compromised, and design limits of the fuel may have been exceeded. An Alert is indicated because conditions exist that lead to potential loss of fuel clad or RCS. Reactor protection system setpoint being exceeded (rather than limiting safety system setpoint being exceeded) is specified here because failure of the automatic protection system is the issue. If the reactor protective system fails, the Diverse Scram Signal system (which was installed at Oconee since 10/7/91 as a result of Generic Letter 83-28) will drop control rod groups 5,6,7 into the core.

A manual scram is any set of actions by the reactor operator(s) at the reactor control console which causes control rods to be RAPIDLY inserted into the core and brings the reactor subcritical.

Reference

NUMARC/NESP-007, Rev. 2, 01/92, SA2

ENCLOSURE 4.4

LOSS OF SHUTDOWN FUNCTIONS

ALERT

Operator action to drive rods does **NOT** constitute a reactor trip, (i.e. does not meet the rapid insertion criterion).

Failure of Diverse Scram Signal and the manual scram would escalate the event to a Site Area Emergency.

Reference

NUMARC/NESP-007, Rev. 2, 01/92, SA2

ENCLOSURE 4.4

LOSS OF SHUTDOWN FUNCTIONS

ALERT

2. Inability to Maintain Plant in Mode 5 (Cold Shutdown).

OPERATING MODE APPLICABILITY: 5, 6

EMERGENCY ACTION LEVELS:

A. Loss of LPI and/or LPSW

AND

Inability to maintain RCS temperature below 200 °F as indicated by either of the following:

RCS temperature at the LPI pump suction

OR

Average of the 5 highest CETCs as indicated by ICCM display.

OR

Visual observation

BASIS:

LPI is the low pressure injection system

LPSW is low pressure service water.

This IC is based on concerns raised by Generic Letter 88-17, "Loss of Decay Heat Removal." number of phenomena such as pressurization, vortexing, RCS level differences when operating at a mid-loop condition, decay heat removal system design, and level instrumentation problems can lead to conditions where decay heat removal is lost and core uncover can occur. NRC analyses show sequences that can cause core uncover in 15 to 20 minutes and severe core damage within an hour after decay heat removal is lost.

Loss of the LPI system and/or the LPSW system causes an uncontrolled temperature rise in the reactor coolant system. Uncontrolled is understood to be "not as the result of operator action." Rising temperature of the reactor coolant system can be determined at the LPI pump suction, average of the 5 highest CETCs as indicated by ICCM display or through operator visual observation (steam or boiling) in the reactor building.

ENCLOSURE 4.4

LOSS OF SHUTDOWN FUNCTIONS

ALERT

With a loss of LPI pumps there will be no RCS flow at the LPI pump suction and RCS temperature at that point will not represent RCS temperature in the reactor vessel. Also, with the reactor head in place, visual observation may not be possible.

Escalation to the Site Area Emergency is by, "Loss of Water Level in the Reactor Vessel That Has or Will Uncover Fuel in the Reactor Vessel," or by Abnormal Rad Levels/Radiological Effluent ICs.

Reference

NUMARC/NESP-007, Rev. 2, 01/92, SA3

ENCLOSURE 4.4

LOSS OF SHUTDOWN FUNCTIONS

ALERT

3. **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.**

OPERATING MODE APPLICABILITY: ALL

EMERGENCY ACTION LEVELS:

- A. Valid RIA 3*, 6, 41 or 49* **HIGH** alarm readings
Applies to Mode 6 and No Mode Only.
- B. Valid **HIGH** alarm reading on portable area monitors on the main bridge or spent fuel pool bridge.
- C. Report of visual observation of irradiated fuel uncovered.
- D. Operators determine water level drop in either the SFP or fuel transfer canal will exceed makeup capacity such that irradiated fuel will be uncovered.

BASIS:

This IC applies to spent fuel requiring water coverage and is not intended to address spent fuel which is licensed for dry storage.

The HIGH alarm for RIA 3 (containment area monitor) and RIA 49 (RB gaseous process monitor) corresponds to the setpoints established to assure that 10 CFR 20 limits are not exceeded.

The HIGH alarm setpoint for RIA 6 (SFP bridge area monitor) is designed to make operators aware of increased readings above 10 CFR 20 limits. The HIGH alarm setpoint for RIA 41 (Spent Fuel Pool gaseous atmosphere) is set to alarm if 4 times the limits of 10 CFR 20 are exceeded based upon Xe-133. RIA 49 monitors the reactor building gas. Portable monitors are established during refueling outages and are located on the main bridge, and the spent fuel pool bridge.

ENCLOSURE 4.4

LOSS OF SHUTDOWN FUNCTIONS

ALERT

There is time available to take corrective actions, and there is little potential for substantial fuel damage. Thus, an Alert Classification for this event is appropriate. Escalation, if appropriate, would occur via Abnormal Rad Level/Radiological Effluent, Loss of Shutdown Functions or Emergency Coordinator Judgment.

Reference

NUMARC/NESP-007, Rev. 2, 01/92, AA2

ENCLOSURE 4.4

LOSS OF SHUTDOWN FUNCTIONS

SITE AREA EMERGENCY

1. **Failure of Reactor Protection System Instrumentation to Complete or Initiate an Automatic Reactor Scram Once a Reactor Protection System Setpoint Has Been Exceeded and Manual Scram Was NOT Successful.**

OPERATING MODE APPLICABILITY: 1, 2

EMERGENCY ACTION LEVEL:

The following conditions exist:

- A. VALID reactor trip signal received or required without automatic scram

AND

DSS has NOT inserted Control Rods

AND

Manual reactor trip from the control room was not successful in reducing reactor power to less than 5% and decreasing.

BASIS:

Automatic and manual scram are not considered successful if action away from the reactor control console is required to scram the reactor.

This EAL is met if a reactor trip is required and the manual reactor trip function fails. A failure of the manual reactor trip pushbutton to initiate a reactor trip is indication of a failure of the Reactor Protection System.

Under these conditions, the reactor is producing more heat than the maximum decay heat load for which the safety systems are designed. A Site Area Emergency is indicated because conditions exist that lead to imminent loss or potential loss of both fuel clad and RCS. Although this IC may be viewed as redundant to the Fission Product Barrier Degradation IC, its inclusion is necessary to better assure timely recognition and emergency response. Escalation of this event to a General Emergency would be via Fission Product Barrier Degradation or Emergency Coordinator Judgment ICs.

Reference

NUMARC/NESP-007, Rev. 2, 01/92, SS2

ENCLOSURE 4.4

LOSS OF SHUTDOWN FUNCTIONS

SITE AREA EMERGENCY

2. **Complete Loss of Function Needed to Achieve or Maintain Mode 4 (Hot Shutdown).**

OPERATING MODE APPLICABILITY: 1, 2, 3, 4

EMERGENCY ACTION LEVELS:

Any of the following conditions exist:

- A. Average of the 5 highest CETCs ≥ 1200 °F on ICCM.
- B. Unable to maintain reactor subcritical
- C. EOP directs feeding SG from SSF ASWP or station ASWP

BASIS:

This EAL addresses complete loss of functions, core cooling and heat sink, required for hot shutdown with the reactor at pressure and temperature. Under these conditions, there is an actual major failure of a system intended for protection of the public. Thus, declaration of a Site Area Emergency is warranted. Escalation to General Emergency would be via Abnormal Rad Levels/Radiological Effluent, Emergency Coordinator Judgment, or Fission Product Barrier Degradation ICs.

Core exit thermocouple readings are considered to be the average of the five (5) highest thermocouple readings shown on the Inadequate Core Cooling Monitor.

The SSF can provide the following: (1) makeup to the Reactor Coolant pump seals, (2) low pressure service water to the steam generators (additional method for heat sink), (3) capability to keep the unit in hot shutdown for 72 hours following an Appendix R fire.

Reference

NUMARC/NESP-007, Rev. 2, 01/92, SS4

ENCLOSURE 4.4

LOSS OF SHUTDOWN FUNCTIONS

SITE AREA EMERGENCY

3. **Loss of Water Level in the Reactor Vessel That Has or Will Uncover Fuel in the Reactor Vessel.**

OPERATING MODE APPLICABILITY: 5, 6

EMERGENCY ACTION LEVEL:

Loss of Reactor Vessel Water Level as indicated by:

- A. Failure of heat sink causes loss of Mode 5 (Cold Shutdown) conditions.

AND

LT-5 indicates 0 inches after initiation of RCS makeup.

- B. Failure of heat sink causes loss of Mode 5 (Cold Shutdown) conditions.

AND

Either train ultrasonic level indication less than 0 inches and decreasing after initiation of RCS makeup.

BASIS:

Under the conditions specified by this IC, severe core damage can occur due to prolonged boiling following loss of decay heat removal. Declaration of a Site Area Emergency is warranted under the conditions specified by the IC. Escalation to a General Emergency is via Enclosure 4.3, Abnormal Rad Levels/Radiological Effluent.

Note: Both the LT-5 and the ultrasonic level instrumentation are located in the center line of the hot leg.

Reference

NUMARC/NESP-007, Rev. 2, 01/92, SS5

ENCLOSURE 4.4

LOSS OF SHUTDOWN FUNCTIONS

GENERAL EMERGENCY

1. **Failure of the Reactor Protection System to Complete an Automatic Scram and Manual Scram was NOT Successful and There is Indication of an Extreme Challenge to the Ability to Cool the Core.**

OPERATING MODE APPLICABILITY: 1, 2

EMERGENCY ACTION LEVEL:

The following conditions exist:

- A. VALID reactor trip signal received or required **WITHOUT** automatic scram

AND

Manual reactor trip from the control room was not successful in reducing reactor power to less than 5% and decreasing.

AND

Average of five highest CETCs ≥ 1200 °F on the ICCM.

BASIS:

Automatic and manual scram are not considered successful if action away from the reactor control console is required to scram the reactor. Under the conditions of the IC and its associated EALs, the efforts to bring the reactor subcritical have been unsuccessful and, as a result, the reactor is producing more heat than the maximum decay heat load for which the safety systems were designed. The extreme challenge to the ability to cool the core is intended to mean that the core exit temperatures are at or approaching 1200 °F. (Note: CETCs reading ≥ 1200 °F is also a good indicator that the reactor vessel water level is below the top of the active fuel. Oconee does not have an indication for the reactor vessel water level below the top of the active fuel.)

The General Emergency declaration is intended to be anticipatory of the fission product barrier matrix declaration to permit maximum offsite intervention time.

Reference

NUMARC/NESP-007, Rev. 2, 01/92, SG2

ENCLOSURE 4.5

LOSS OF POWER

UNUSUAL EVENT	ALERT	SITE AREA EMERGENCY	GENERAL EMERGENCY
Loss of All Offsite Power to Essential Busses for Greater Than 15 Minutes	Loss of All Offsite Power and Loss of All Onsite AC Power to Essential Busses During Cold Shutdown Or Refueling Mode	Loss of All Offsite Power and Loss of All Onsite AC Power to Essential Busses	Prolonged Loss of All (Offsite and Onsite) AC Power
Unplanned Loss of Required DC Power During Cold Shutdown or Refueling Mode for Greater than 15 Minutes	AC power to essential busses reduced to a single power source for greater than 15 minutes such that an additional single failure could result in station blackout	Loss of All Vital DC Power	

ENCLOSURE 4.5

LOSS OF POWER

UNUSUAL EVENT

- 1. Loss of All Offsite Power to Essential Busses for Greater Than 15 Minutes.**

OPERATING MODE APPLICABILITY ALL

EMERGENCY ACTION LEVEL:

The following conditions exist:

- A. Unit auxiliaries being supplied from Keowee or CT5.

AND

Inability to energize either MFB from an offsite source (either switchyard) within 15 minutes.

BASIS:

Prolonged loss of AC power reduces required redundancy and potentially degrades the level of safety of the plant by rendering the plant more vulnerable to a complete Loss of AC Power (Station Blackout). Fifteen minutes was selected as a threshold to exclude transient or momentary power losses.

Keowee Hydro station provides the emergency power to the Oconee Nuclear Site. CT5 is powered from the Lee Steam Station and provides back-up power to the site.

Reference

NUMARC/NESP-007, Rev. 2, 01/92, SU1

ENCLOSURE 4.5

LOSS OF POWER

UNUSUAL EVENT

- 2. Unplanned Loss of Required DC Power During Mode 5 (Cold Shutdown) or Mode 6 (Refueling Mode) for Greater than 15 Minutes.**

OPERATING MODE APPLICABILITY: 5, 6

EMERGENCY ACTION LEVEL:

The following conditions exist:

- A. Unplanned Loss of Vital DC power to required DC busses as indicated by bus voltage less than 110 VDC.**

AND

Failure to restore power to at least one required DC bus within 15 minutes from the time of loss.

BASIS:

The purpose of this IC and its associated EALs is to recognize a loss of DC power compromising the ability to monitor and control the removal of decay heat during Cold Shutdown or Refueling operations. This EAL is intended to be anticipatory in as much as the operating crew may not have necessary indication and control of equipment needed to respond to the loss.

"Unplanned" is included in this IC and EAL to preclude the declaration of an emergency as a result of planned maintenance activities.

If this loss results in the inability to maintain cold shutdown, the escalation to an Alert will be per Enclosure 4.4, Loss of Shutdown Functions "Inability to Maintain Plant in Cold Shutdown."

Reference

NUMARC/NESP-007, Rev. 2, 01/92, SU7

ENCLOSURE 4.5

LOSS OF POWER

ALERT

1. **Loss of All Offsite Power and Loss of All Onsite AC Power to Essential Busses During Mode 5 (Cold Shutdown) Or Mode 6 (Refueling Mode).**

OPERATING MODE APPLICABILITY: 5, 6, Defueled

EMERGENCY ACTION LEVEL:

The following conditions exist:

- A. MFB 1 and 2 de-energized.

AND

Failure to restore power to at least one main feeder bus within 15 minutes from the time of loss of both offsite and onsite AC power.

BASIS:

Loss of all AC power compromises all plant safety systems requiring electric power including RHR, ECCS, Containment Heat Removal, Spent Fuel Heat Removal and the Ultimate Heat Sink. When in cold shutdown, refueling, or defueled mode the event can be classified as an Alert, because of the significantly reduced decay heat, lower temperature and pressure, increasing the time to restore one of the emergency busses, relative to that specified for the Site Area Emergency EAL. Escalating to Site Area Emergency, if appropriate, is by Enclosure 4.3, Abnormal Rad Levels/Radiological Effluent, or Enclosure 4.7, Natural Disasters, Hazards, and Other Conditions Affecting Plant Safety, Emergency Coordinator Judgment ICs. Fifteen minutes was selected as a threshold to exclude transient or momentary power losses.

References

NUMARC/NESP-007, Rev. 2, 01/92, SA1

ENCLOSURE 4.5

LOSS OF POWER

ALERT

2. **AC power capability to essential busses reduced to a single power source for greater than 15 minutes such that an additional single failure could result in station blackout.**

OPERATING MODE APPLICABILITY: 1, 2, 3, 4

EMERGENCY ACTION LEVEL:

The following condition exists:

- A. **AC power capability has been degraded to a single power source for > 15 min. due to the loss of all but one of the following:**

- Unit Normal Transformer (backcharged)
- Unit Startup transformer
- Another Unit Startup Transformer (aligned)
- CT4
- CT5

BASIS:

This IC and the associated EAL is intended to provide an escalation from IC, "Loss of All Offsite Power To Essential Busses for Greater Than 15 Minutes." The condition indicated by this IC is the degradation of the offsite and onsite power systems such that an additional single failure could result in a station blackout. In this particular situation, a station blackout applies to the unit in question even though the other units may not be affected. This condition could occur due to a loss of offsite power with a concurrent failure of either CT4 or CT5 to supply power to the main feeder busses.

The subsequent loss of this single power source would escalate the event to a Site Area Emergency in accordance with IC, "Loss of All Offsite and Loss of All Onsite AC Power to Essential Busses."

Reference

NUMARC/NESP-007, Rev. 2, 01/92, SA5

ENCLOSURE 4.5

LOSS OF POWER

SITE AREA EMERGENCY

1. Loss of All Offsite Power and Loss of All Onsite AC Power to Essential Busses

OPERATING MODE APPLICABILITY: 1, 2, 3, 4

EMERGENCY ACTION LEVEL:

Loss of all offsite and onsite AC power as indicated by:

- A. MFB 1 and 2 de-energized

AND

Failure to restore power to at least one main feeder bus within 15 minutes from the time of loss of both offsite and onsite AC power.

BASIS:

Loss of all AC power compromises all plant safety systems requiring electric power including RHR, ECCS, Containment Heat Removal and the Ultimate Heat Sink. Prolonged loss of all AC power will cause core uncovering and loss of containment integrity, thus this event can escalate to a General Emergency.

Escalation to General Emergency is via Enclosure 4.1 Fission Product Barrier Degradation or IC, "Prolonged Loss of All Offsite Power and Prolonged Loss of All Onsite AC Power."

Loss of offsite power (6900V) eliminates the use of power from Duke Power grid and also eliminates distribution of power from the unit generator. Loss of onsite AC (4160V) which includes both Keowee Hydro units, eliminates the use of HPI pumps, LPI pumps, reactor building spray pumps, low pressure service water pumps, CCW pumps, condensate booster pumps, hotwell pumps, heater drain pumps and motor driven emergency feedwater pumps. Turbine driven emergency feedwater pumps are assumed to be available. It is assumed for this scenario that the Standby Shutdown Facility would be available for RCS and secondary inventory control utilizing the RC makeup pump and the auxiliary service water pump.

References

NUMARC/NESP-007, Rev. 2, 01/92, SS1

ENCLOSURE 4.5

LOSS OF POWER

SITE AREA EMERGENCY

2. Loss of All Vital DC Power.

OPERATING MODE APPLICABILITY: 1, 2, 3, 4

EMERGENCY ACTION LEVEL:

The following conditions exist:

- A. Unplanned Loss of Vital DC power to required DC busses as indicated by bus voltage less than 110 VDC.

AND

Failure to restore power to at least one required DC bus within 15 minutes from the time of loss.

BASIS:

Loss of all DC power compromises ability to monitor and control plant safety functions. Prolonged loss of all DC power will cause core uncovering and loss of containment integrity when there is significant decay heat and sensible heat in the reactor system. Escalation to a General Emergency would occur by Enclosure 4.3, Abnormal Rad Levels/Radiological Effluent, Enclosure 4.1, Fission Product Barrier Degradation, Enclosure 4.7, Natural Disasters, Hazards and Other Conditions Affecting Plant Safety or Emergency Coordinator Judgment ICs. Fifteen minutes was selected as a threshold to exclude transient or momentary power losses.

ENCLOSURE 4.5

LOSS OF POWER

SITE AREA EMERGENCY

The purpose of the onsite DC Power system is:

1. Provide a source of reliable, continuous power for instrumentation and controls needed for normal operation and safe shutdown of the unit through the vital DC power distribution system panelboards and essential DC power which feed Inverters for an uninterrupted source of AC power.
2. Supply DC motor operated valves and pumps required during normal operation and a total loss of AC.

Loss of DC power would place the plant in a situation of losing vital instrumentation, valves, and pumps needed to safely operate and shutdown the plant any time the unit is above cold shutdown conditions.

Reference

NUMARC/NESP-007, Rev. 2, 01/92, SS3

ENCLOSURE 4.5

LOSS OF POWER

GENERAL EMERGENCY

1. **Prolonged Loss of All Offsite Power and Prolonged Loss of All Onsite AC Power.**

OPERATING MODE APPLICABILITY: 1, 2, 3, 4

EMERGENCY ACTION LEVEL:

Prolonged loss of all offsite and onsite AC power as indicated by:

- A. MFB 1 and 2 de-energized

AND

Standby Shutdown Facility (SSF) fails to maintain Mode 3 (Hot Standby).

AND

AT LEAST ONE OF THE FOLLOWING:

Restoration of power to at least one MFB within 4 hours is NOT likely

OR

Indication of continuing degradation of core cooling based on Fission Product Barrier monitoring.

BASIS:

Loss of all AC power compromises all plant safety systems requiring electric power including RHR, ECCS, Containment Heat Removal and the Ultimate Heat Sink. Prolonged loss of all those functions necessary to maintain hot shutdown will lead to loss of fuel clad, RCS, and containment.

The Standby Shutdown Facility (SSF) is capable of providing the necessary functions to maintain Mode 3 (Hot Standby) condition for up to 72 hours. No fission product barrier degradation would be expected if the SSF is functioning as intended.

Reference

NUMARC/NESP-007, Rev. 2, 01/92, SG1

ENCLOSURE 4.5

LOSS OF POWER

GENERAL EMERGENCY

Analysis in support of the station blackout coping study indicates that the plant can cope with a station blackout for 4 hours without core damage.

The likelihood of restoring at least one emergency bus should be based on a realistic appraisal of the situation since a delay in an upgrade decision based on only a chance of mitigating the event could result in a loss of valuable time in preparing and implementing public protective actions.

In addition, under these conditions, fission product barrier monitoring capability may be degraded. Although it may be difficult to predict when power can be restored, it is necessary to give the Emergency Coordinator a reasonable idea of how quickly (s)he may need to declare a General Emergency based on two major considerations:

1. Are there any present indications that core cooling is already degraded to the point that Loss or Potential Loss of Fission Product Barriers is IMMINENT?
2. If there are no present indications of such core cooling degradation, how likely is it that power can be restored in time to assure that a loss of two barriers with a potential loss of the third barrier can be prevented?

Thus, indication of continuing core cooling degradation must be based on Fission Product Barrier monitoring with particular emphasis on Emergency Coordinator judgment as it relates to IMMINENT Loss or Potential Loss of fission product barriers and degraded ability to monitor fission product barriers.

Reference

NUMARC/NESP-007, Rev. 2, 01/92, SG1

ENCLOSURE 4.6

FIRE/EXPLOSIONS AND SECURITY EVENTS

UNUSUAL EVENT	ALERT	SITE AREA EMERGENCY	GENERAL EMERGENCY
Fire/Explosion Within the Plant	Fire or Explosion Affecting the operability of plant safety systems required to establish or maintain safe shutdown	HOSTILE ACTION within the Protected Area	
Confirmed Security condition or threat which indicates a potential degradation in the level of safety of the plant	HOSTILE ACTION within the OWNER CONTROLLED AREA or airborne attack threat	Other conditions exist which in the judgment of the Emergency Director warrant declaration of a SITE AREA EMERGENCY	HOSTILE ACTION resulting in Loss of Physical Control of the Facility
Other conditions exist which in the judgment of the Emergency Director warrant declaration of a NOUE	Other conditions exist which in the judgment of the Emergency Director warrant declaration of an ALERT		Other conditions exist which in the judgment of the Emergency Director warrant declaration of a GENERAL EMERGENCY

ENCLOSURE 4.6

FIRE/EXPLOSIONS AND SECURITY EVENTS

UNUSUAL EVENT

1. Explosion or Fire Within the Plant

OPERATING MODE APPLICABILITY: ALL

EMERGENCY ACTION LEVEL: Note: Within the plant means Turbine Building, Auxiliary Building, Reactor Building, Keowee Hydro, Transformer Yard, B3T, B4T, Service Air Diesel Compressors, Keowee Hydro and associated transformers and SSF.

- A. Fire within the plant not extinguished within 15 minutes of control room notification or verification of a control room alarm.
- B. Unanticipated explosion within the plant resulting in visible damage to permanent structures/equipment.
 - Includes steam line break and FDW line break

BASIS:

The purpose of this IC is to address the magnitude and extent of fires/explosions that may be potentially significant precursors to damage to safety systems. This excludes such items as fires within administration buildings, waste-basket fires, and other small fires of no safety consequence. **This IC applies to buildings and areas contiguous to plant vital areas containing safety equipment or other significant buildings or areas.** Verification of the alarm in this context means those actions taken in the control room to determine that the control room alarm is not spurious. **The intent of the 15-minute duration of extinguishing efforts is to size the fire and to discriminate against small fires that are readily extinguished.**

Only those explosions of sufficient force to damage permanent structures or equipment within the plant and **Keowee Hydro** should be considered. As used here, an explosion is a rapid, violent, unconfined combustion, or a catastrophic failure of pressurized equipment, that potentially imparts significant energy to near-by structures and materials. A high energy line break (e.g., Main Steam Line or Main Feedwater Line, Heater Drain Line, etc.) would satisfy this EAL **IF** no additional damage is done to ECCS (safety related systems) equipment/components. No attempt is made in this EAL to assess the actual magnitude of the damage. The occurrence of the explosion with reports of evidence of damage (e.g., deformation, scorching) is sufficient for declaration. The Emergency Coordinator also needs to consider any security aspects of the explosion, if applicable.

ENCLOSURE 4.6

FIRE/EXPLOSIONS AND SECURITY EVENTS

UNUSUAL EVENT

Escalation to a higher emergency class is by, "Fire/Explosion Affecting the Operability of Plant Safety Systems Required to Establish or Maintain Safe Shutdown".

Reference

NUMARC/NESP-007, Rev. 2, 01/92, HU2

ENCLOSURE 4.6

FIRE/EXPLOSIONS AND SECURITY EVENTS

UNUSUAL EVENT

2. **CONFIRMED SECURITY CONDITION or THREAT which indicates a potential degradation in the level of Safety of the plant.**

OPERATING MODE APPLICABILITY: ALL

EMERGENCY ACTION LEVELS:

- A. A SECURITY CONDITION that does **NOT** involve a HOSTILE ACTION as reported by the security shift supervisor.
- B. A credible site-specific security threat notification.
- C. A validated notification from NRC providing information of an aircraft threat.

BASIS:

NOTE: Timely and accurate communication between Security Shift Supervisor and the control room is crucial in the implementation of effective Security EALs.

Security events which do not represent a potential degradation in the level of safety of the plant are reported under 10 CFR 73.71 or in some cases under 10 CFR 50.72. Security events assessed as HOSTILE ACTIONS are classifiable under 4.6.A.2, 4.6.S.1, and 4.6.G.1

A higher initial classification could be made based upon the nature and timing of the threat and potential consequences. The licensee shall consider upgrading the emergency response status and emergency classification in accordance with the Safeguards Contingency Plan and Emergency Plans.

EAL A

Reference is made to site specific security shift supervision because these individuals are the designated personnel on-site qualified and trained to confirm that a security event is occurring or has occurred. Training on security event classification confirmation is closely controlled due to the strict secrecy controls placed on the plant Safeguards Contingency Plan.

This threshold is based on site specific security plans. Site specific Safeguards Contingency Plans are based on guidance provided by NEI 03-12.

ENCLOSURE 4.6

FIRE/EXPLOSIONS AND SECURITY EVENTS

UNUSUAL EVENT

EAL B

This threshold is included to ensure that appropriate notifications for the security threat are made in a timely manner. This includes information of a credible threat. Only the plant to which the specific threat is made need declare the Notification of an Unusual Event.

The determination of "credible" is made through use of information found in the site specific Safeguards Contingency Plan.

EAL C

The intent of this EAL is to ensure that notifications for the aircraft threat are made in a timely manner and that OROs and plant personnel are at a state of heightened awareness regarding the credible threat. It is not the intent of this EAL to replace existing non-hostile related EALs involving aircraft.

This EAL is met when a plant receives information regarding an aircraft threat from NRC. Validation is performed by calling the NRC or by other approved methods of authentication. Only the plant to which the specific threat is made need declare the Unusual Event.

The NRC Headquarters Operations Officer (HOO) will communicate to the licensee if the threat involves an airliner (airliner is meant to be a large aircraft with the potential for causing significant damage to the plant). The status and size of the plane may be provided by NORAD through the NRC.

Escalation to Alert emergency classification level would be via 4.6.A.2 would be appropriate if the threat involves an airliner within 30 minutes of the plant.

Reference

NEI 99-01, Rev. 5, 02/2008, HU4

Frequently asked questions (FAQs) generated by users and developers during conversion from previous classifications schemes to NEI 99-01, Revision 4

Security EALs with the Hostile Action changes endorsed by the NRC in RIS 2006-12 on July 19, 2006 Enhanced guidance related to Security EALs to ensure consistency with NEI 03-12.

ENCLOSURE 4.6

FIRE/EXPLOSIONS AND SECURITY EVENTS

UNUSUAL EVENT

3. Other conditions exist which in the judgment of the Emergency Director warrant declaration of a NOUE.

OPERATING MODE APPLICABILITY: ALL

- A. Other conditions exist which in the judgment of the Emergency Director indicate that events are in progress or have occurred which indicate a potential degradation of the level of safety of the plant or indicate a security threat to facility protection has been initiated. No releases of radioactive material requiring off-site response or monitoring are expected unless further degradation of safety systems occurs.

BASIS

This EAL addresses unanticipated conditions not addressed explicitly elsewhere but that warrant declaration of an emergency because conditions exist which are believed by the Emergency Director to fall under the NOUE emergency classification level.

Reference

NEI 99-01, Rev. 5, 02/2008, HU5

Frequently asked questions (FAQs) generated by users and developers during conversion from previous classifications schemes to NEI 99-01, Revision 4

Security EALs with the Hostile Action changes endorsed by the NRC in RIS 2006-12 on July 19, 2006.

Enhanced guidance related to Security EALs to ensure consistency with NEI 03-12.

ENCLOSURE 4.6

FIRE/EXPLOSIONS AND SECURITY EVENTS

ALERT

- 1. Fire or Explosion Affecting the Operability of Plant Safety Systems Required to Establish or Maintain Safe Shutdown.**

OPERATING MODE APPLICABILITY: ALL

EMERGENCY ACTION LEVEL: Note: Only one train of a system needs to be affected or damaged in order to satisfy this condition.

The following conditions exist:

- A. Fire or explosion **AND ONE OF THE FOLLOWING:**

Affected safety-related system parameter indications show degraded performance

OR

Plant personnel report visible damage to permanent structures or equipment required for safe shutdown of the unit.

BASIS:

With regard to explosions, only those explosions of sufficient force to damage permanent structures or equipment required for safe operation of the plant should be considered. As used here, an explosion is a rapid, violent, unconfined combustion, or a catastrophic failure of pressurized equipment, that potentially imparts significant energy to near-by structures and materials. A fire is combustion characterized by heat and light. Sources of smoke such as slipping drive belts or overheated electrical equipment do not constitute fires. Observation of flames is preferred but is NOT required if large quantities of smoke and heat are observed.

The key to classifying fires/explosions as an Alert is the damage as a result of the incident. The fact that safety-related equipment required for safe shutdown of the unit has been affected or damaged as a result of the fire/explosion is the driving force for declaring the Alert. **It is important to note that this EAL addresses a fire/explosion and not just the degradation of a safety system. The reference to damage of the systems is used to identify the magnitude of the fire/explosion and to discriminate against minor fires/explosions.**

ENCLOSURE 4.6

FIRE/EXPLOSIONS AND SECURITY EVENTS

ALERT

Escalation to a higher emergency class, if appropriate, will be based on System Malfunction, Fission Product Barrier Degradation, Abnormal Rad Levels/Radiological Effluent, or Emergency Coordinator Judgment ICs.

Reference

NUMARC/NESP-007, Rev. 2, 01/92

ENCLOSURE 4.6

FIRE/EXPLOSIONS AND SECURITY EVENTS

ALERT

2. **HOSTILE ACTION within the OWNER CONTROLLED AREA or airborne attack threat.**

OPERATING MODE APPLICABILITY: ALL

EMERGENCY ACTION LEVEL: (A or B)

- A. A HOSTILE ACTION is occurring or has occurred within the OWNER CONTROLLED AREA as reported by the Security Shift Supervisor.
- B. A validated notification from NRC of an airliner attack threat within 30 minutes of the site.

BASIS:

Note: Timely and accurate communication between Security Shift Supervision and the Control Room is crucial for the implementation of effective Security EALs.

These EALs address the contingency for a very rapid progression of events, such as that experienced on September 11, 2001. They are not premised solely on the potential for a radiological release. Rather the issue includes the need for rapid assistance due to the possibility for significant and indeterminate damage from additional air, land or water attack elements.

The fact that the site is under serious attack or is an identified attack target with minimal time available for further preparation or additional assistance to arrive requires a heightened state of readiness and implementation of protective measures that can be effective (such as on-site evacuation, dispersal or sheltering).

EAL A

This EAL addresses the potential for a very rapid progression of events due to a HOSTILE ACTION. It is not intended to address incidents that are accidental events or acts of civil disobedience, such as small aircraft impact, hunters, or physical disputes between employees within the OCA.

ENCLOSURE 4.6

FIRE/EXPLOSIONS AND SECURITY EVENTS

ALERT

Note that this EAL is applicable for any HOSTILE ACTION occurring, or that has occurred, in the OWNER CONTROLLED AREA. This includes ISFSI's that may be outside the PROTECTED AREA but still within the OWNER CONTROLLED AREA.

EAL B

This EAL addresses the immediacy of an expected threat arrival or impact on the site within a relatively short time.

The intent of this EAL is to ensure that notifications for the airliner attack threat are made in a timely manner and that OROs and plant personnel are at a state of heightened awareness regarding the credible threat. Airliner is meant to be a large aircraft with the potential for causing significant damage to the plant.

This EAL is met when a plant receives information regarding an airliner attack threat from NRC and the airliner is within 30 minutes of the plant. Only the plant to which the specific threat is made need declare the Alert.

The NRC Headquarters Operations Officer (HOO) will communicate to the licensee if the threat involves an airliner (airliner is meant to be a large aircraft with the potential for causing significant damage to the plant). The status and size of the plane may be provided by NORAD through the NRC.

Reference

NEI 99-01, Rev. 5, 02/2008, HA4

Frequently asked questions (FAQs) generated by users and developers during conversion from previous classifications schemes to NEI 99-01, Revision 4

Security EALs with the Hostile Action changes endorsed by the NRC in RIS 2006-12 on July 19, 2006

Enhanced guidance related to Security EALs to ensure consistency with NEI 03-12.

ENCLOSURE 4.6

FIRE/EXPLOSIONS AND SECURITY EVENTS

ALERT

3. Other conditions exist which in the judgment of the Emergency Director warrant declaration of an ALERT.

OPERATING MODE APPLICABILITY: **ALL**

EMERGENCY ACTION LEVEL:

- A. Other conditions exist which in the judgment of the Emergency Director indicate that events are in progress or have occurred which involve an actual or potential substantial degradation of the level of safety of the plant or a security event that involves probable life threatening risk to site personnel or damage to site equipment because of HOSTILE ACTION. Any releases are expected to be limited to small fractions of the EPA Protective Action Guideline exposure levels.

BASIS:

This EAL addresses unanticipated conditions not addressed explicitly elsewhere but that warrant declaration of an emergency because conditions exist which are believed by the Emergency Director to fall under the Alert emergency classification level.

Reference

NEI 99-01, Rev. 5, 02/2008, HA6

Frequently asked questions (FAQs) generated by users and developers during conversion from previous classifications schemes to NEI 99-01, Revision 4

Security EALs with the Hostile Action changes endorsed by the NRC in RIS 2006-12 on July 19, 2006

Enhanced guidance related to Security EALs to ensure consistency with NEI 03-12.

ENCLOSURE 4.6

FIRE/EXPLOSIONS AND SECURITY EVENTS

SITE AREA EMERGENCY

1. HOSTILE ACTION within the PROTECTED AREA.

OPERATING MODE APPLICABILITY: ALL

EMERGENCY ACTION LEVELS:

- A. A HOSTILE ACTION is occurring or has occurred within the PROTECTED AREA as reported by the (Security Shift Supervision).

BASIS

This condition represents an escalated threat to plant safety above that contained in the Alert in that a HOSTILE FORCE has progressed from the OWNER CONTROLLED AREA to the PROTECTED AREA.

This EAL addresses the contingency for a very rapid progression of events, such as that experienced on September 11, 2001. It is not premised solely on the potential for a radiological release. Rather the issue includes the need for rapid assistance due to the possibility for significant and indeterminate damage from additional air, land or water attack elements.

The fact that the site is under serious attack with minimal time available for further preparation or additional assistance to arrive requires ORO readiness and preparation for the implementation of protective measures.

This EAL addresses the potential for a very rapid progression of events due to a HOSTILE ACTION. It is not intended to address incidents that are accidental events or acts of civil disobedience, such as small aircraft impact, hunters, or physical disputes between employees within the PROTECTED AREA. Those events are adequately addressed by other EALs.

ENCLOSURE 4.6

FIRE/EXPLOSIONS AND SECURITY EVENTS

SITE AREA EMERGENCY

Reference

NEI 99-01, Rev. 5, 02/2008, HS4

Frequently asked questions (FAQs) generated by users and developers during conversion from previous classifications schemes to NEI 99-01, Revision 4

Security EALs with the Hostile Action changes endorsed by the NRC in RIS 2006-12 on July 19, 2006

Enhanced guidance related to Security EALs to ensure consistency with NEI 03-12.

ENCLOSURE 4.6

FIRE/EXPLOSIONS AND SECURITY EVENTS

SITE AREA EMERGENCY

2. **Other conditions exist which in the judgment of the Emergency Director warrant declaration of a Site Area Emergency**

OPERATING MODE APPLICABILITY: ALL

EMERGENCY ACTION LEVELS:

- A. **Other conditions exist which in the judgment of the Emergency Director indicate that events are in progress or have occurred which involve actual or likely major failures of plant functions needed for protection of the public or HOSTILE ACTION that results in intentional damage or malicious acts: (1) toward site personnel or equipment that could lead to the likely failure of or; (2) that prevent effective access to equipment needed for the protection of the public. Any releases are not expected to result in exposure levels which exceed EPA Protective Action Guideline exposure levels beyond the site boundary.**

BASIS:

This EAL addresses unanticipated conditions not addressed explicitly elsewhere but that warrant declaration of an emergency because conditions exist which are believed by the Emergency Director to fall under the emergency classification level description for Site Area Emergency.

Reference:

NEI 99-01, Rev. 5, 02/2008, HS3

Frequently asked questions (FAQs) generated by users and developers during conversion from previous classifications schemes to NEI 99-01, Revision 4

Security EALs with the Hostile Action changes endorsed by the NRC in RIS 2006-12 on July 19, 2006

Enhanced guidance related to Security EALs to ensure consistency with NEI 03-12.

ENCLOSURE 4.6

FIRE/EXPLOSIONS AND SECURITY EVENTS

GENERAL EMERGENCY

- 1. HOSTILE ACTION resulting in loss of physical control of the facility.**

OPERATING MODE APPLICABILITY: ALL

EMERGENCY ACTION LEVELS: (A or B)

- A A HOSTILE ACTION has occurred such that plant personnel are unable to operate equipment required to maintain safety functions.**
- B. A HOSTILE ACTION has caused failure of Spent Fuel Cooling Systems and IMMINENT fuel damage is likely for a freshly off-loaded reactor core in pool.**

BASIS:

EAL A

This EAL encompasses conditions under which a HOSTILE ACTION has resulted in a loss of physical control of VITAL AREAS (containing vital equipment or controls of vital equipment) required to maintain safety functions and control of that equipment cannot be transferred to and operated from another location.

Typically, these safety functions are reactivity control (ability to shut down the reactor and keep it shutdown) RCS inventory (ability to cool the core), and secondary heat removal (ability to maintain a heat sink).

Loss of physical control of the control room or remote shutdown capability alone may not prevent the ability to maintain safety functions per se. Design of the remote shutdown capability and the location of the transfer switches should be taken into account. Primary emphasis should be placed on those components and instruments that supply protection for and information about safety functions.

If control of the plant equipment necessary to maintain safety functions can be transferred to another location, then the threshold is not met.

ENCLOSURE 4.6

FIRE/EXPLOSIONS AND SECURITY EVENTS

GENERAL EMERGENCY

EAL B

This EAL addresses failure of spent fuel cooling systems as a result of HOSTILE ACTION if IMMINENT fuel damage is likely such as when a freshly off-loaded reactor core is in the spent fuel pool.

Reference:

NEI 99-01, Rev. 5, 02/2008, HG1

Frequently asked questions (FAQs) generated by users and developers during conversion from previous classifications schemes to NEI 99-01, Revision 4

Security EALs with the Hostile Action changes endorsed by the NRC in RIS 2006-12 on July 19, 2006

Enhanced guidance related to Security EALs to ensure consistency with NEI 03-12.

ENCLOSURE 4.6

FIRE/EXPLOSIONS AND SECURITY EVENTS

GENERAL EMERGENCY

2. **Other conditions exist which in the judgment of the Emergency Director warrant declaration of a General Emergency.**

Operating Mode Applicability: All

EMERGENCY ACTION LEVEL:

- A. Other conditions exist which in the judgment of the Emergency Director indicate that events are in progress or have occurred which involve actual or IMMEDIATE substantial core degradation or melting with potential for loss of containment integrity or HOSTILE ACTION that results in an actual loss of physical control of the facility. Releases can be reasonably expected to exceed EPA Protective Action Guideline exposure levels off-site for more than the immediate site area.

BASIS:

This EAL addresses unanticipated conditions not addressed explicitly elsewhere but that warrant declaration of an emergency because conditions exist which are believed by the Emergency Director to fall under the emergency classification level description for General Emergency.

Reference

NEI 99-01, Rev. 5, 02/2008, HG2

Frequently asked questions (FAQs) generated by users and developers during conversion from previous classifications schemes to NEI 99-01, Revision 4

Security EALs with the Hostile Action changes endorsed by the NRC in RIS 2006-12 on July 19, 2006

Enhanced guidance related to Security EALs to ensure consistency with NEI 03-12.

ENCLOSURE 4.7

NATURAL DISASTERS, HAZARDS AND OTHER CONDITIONS AFFECTING PLANT SAFETY

UNUSUAL EVENT	ALERT	SITE AREA EMERGENCY	GENERAL EMERGENCY
Natural and Destructive Phenomena Affecting the Protected Area	Natural and Destructive Phenomena Affecting the Plant Vital Area	Control Room Evacuation Has Been Initiated and Plant Control Cannot Be Established	Other Conditions Existing Which in the Judgment of the Emergency Coordinator Warrant Declaration of General Emergency
Natural and Destructive Phenomena Affecting Keowee Hydro Condition B			
Natural and destructive phenomena affecting Jocassee Hydro Condition B			
Release of Toxic or Flammable Gases Deemed Detrimental to Safe Operation of the Plant	Release of Toxic or Flammable Gases Jeopardizes Operation of Systems Required to Maintain Safe Operations or to Establish or Maintain Cold Shutdown	Keowee Hydro Dam Failure	
	Turbine Building Flood	Other Conditions Existing Which in the Judgment of the Emergency Coordinator Warrant Declaration of Site Area Emergency	
Other Conditions Existing Which in the Judgment of the Emergency Coordinator Warrant Declaration of an Unusual Event	Control Room Evacuation Has Been Initiated		
Natural and Destructive Phenomena Affecting Keowee Hydro	Other Conditions Existing Which in the Judgment of the Emergency Coordinator Warrant Declaration of an Alert		

ENCLOSURE 4.7

NATURAL DISASTERS, HAZARDS AND OTHER CONDITIONS AFFECTING PLANT SAFETY

UNUSUAL EVENT

1. Natural and Destructive Phenomena Affecting the Protected Area.

OPERATING MODE APPLICABILITY: ALL

EMERGENCY ACTION LEVELS:

- A. Tremor felt and valid alarm on the "strong motion accelerograph".
- B. Tornado striking within protected area boundary.
- C. Vehicle crash into plant structures or systems within protected area boundary.
- D. Turbine failure resulting in casing penetration or damage to turbine or generator seals.

BASIS:

The protected area boundary is typically that part within the security isolation zone and is defined in the site security plan.

EAL 1. Damage may be caused to some portions of the site, but should not affect ability of safety functions to operate. Strong motion accelerograph will begin to record at .01g. As defined in the EPRI-sponsored "Guidelines for Nuclear Plant Response to an Earthquake", dated October 1989, a "felt earthquake" is:

An earthquake of sufficient intensity such that: (a) the vibratory ground motion is felt at the nuclear plant site and recognized as an earthquake based on a consensus of control room operators on duty at the time, and (b) valid alarm on seismic instrumentation occurs.

EAL 2. A tornado striking (touching down) within the protected boundary may have potentially damaged plant structures containing functions or systems required for safe shutdown of the plant. If such damage is confirmed visually or by other in-plant indications, the event may be escalated to Alert.

ENCLOSURE 4.7

NATURAL DISASTERS, HAZARDS AND OTHER CONDITIONS AFFECTING PLANT SAFETY

UNUSUAL EVENT

EAL 3 Addresses such items as a car, truck, plane, or helicopter crash, or train crash that may potentially damage plant structures containing functions and systems required for safe shutdown of the plant. If the crash is confirmed to affect a plant area containing equipment required for safe shutdown of the unit, the event may be escalated to Alert.

EAL 4 Addresses main turbine rotating component failures of sufficient magnitude to cause observable damage to the turbine casing or to the seals of the turbine generator. Of major concern is the potential for leakage of combustible fluids (lubricating oils) and gases (hydrogen cooling) to the plant environs. Actual fires and flammable gas build up are appropriately classified via other EALs. This EAL is consistent with the definition of an Unusual Event while maintaining the anticipatory nature desired and recognizing the risk to non-safety related equipment. Escalation of the emergency classification is based on potential damage done by the missiles generated by the failure.

Reference

NUMARC/NESP-007, Rev. 2, 01/92, HU1

ENCLOSURE 4.7

NATURAL DISASTERS, HAZARDS AND OTHER CONDITIONS AFFECTING PLANT SAFETY

UNUSUAL EVENT

2. Natural and Destructive Phenomena Affecting Keowee Hydro Condition B.

OPERATING MODE APPLICABILITY: ALL

EMERGENCY ACTION LEVELS:

- A. Reservoir elevation greater than or equal to 805.0 feet with all spillway gates open and the lake elevation continues to rise.
- B. Seepage readings increase or decrease greatly or seepage water is carrying a significant amount of soil particulates.
- C. New area of seepage or wetness, with large amounts of seepage water observed on dam, dam toe, or the abutments.
- D. A slide or other movements of the dam or abutments which could develop into a failure.
- E. Developing failure involving the powerhouse or appurtenant structures and the operator believes the safety of the structure is questionable.
- F. Emergency Coordinator judgment

BASIS:

Keowee Hydro is the emergency AC power source for the Oconee Nuclear Station and is covered by the site emergency plan. The conditions cited above are considered to be situations where dam failure may develop. The potentially hazardous situation may allow days or weeks for mitigative actions to prevent failure.

ENCLOSURE 4.7

NATURAL DISASTERS, HAZARDS AND OTHER CONDITIONS AFFECTING PLANT SAFETY

UNUSUAL EVENT

3. Natural and Destructive Phenomena Affecting Jocassee Hydro Condition B.

OPERATING MODE APPLICABILITY: ALL

EMERGENCY ACTION LEVELS:

A. Condition B has been declared for Jocassee

BASIS:

Jocassee Hydro is located upstream of the Oconee Nuclear Station. The mitigation strategies for a Condition B for the Jocassee Dam includes shutdown of all operating Oconee Nuclear units and relocation and installation of other equipment in anticipation of the Condition B escalating to a Condition A.

ENCLOSURE 4.7

NATURAL DISASTERS, HAZARDS AND OTHER CONDITIONS AFFECTING PLANT SAFETY

UNUSUAL EVENT

- 4. Release of Toxic or Flammable Gases Deemed Detrimental to Safe Operation of the Plant.**

OPERATING MODE APPLICABILITY: ALL

EMERGENCY ACTION LEVELS:

- A. Detection of toxic or flammable gases that could enter within the site area boundary in amounts that can affect normal operation of the plant.**
- B. Report by Local, County or State Officials for potential evacuation of site personnel based on offsite event.**

BASIS:

This IC is based on releases in concentrations within the site boundary that will affect the health of plant personnel or the safe operation of the plant with the plant being within the evacuation area of an offsite event (i.e., tanker truck accident releasing toxic gases, etc.) The evacuation area is as determined from the DOT Evacuation Tables for Selected Hazardous Materials in the DOT Emergency Response Guide for Hazardous Materials.

Reference

NUMARC/NESP-007, Rev. 2, 01/92, HU3

ENCLOSURE 4.7

NATURAL DISASTERS, HAZARDS AND OTHER CONDITIONS AFFECTING PLANT SAFETY

UNUSUAL EVENT

- 5. Other Conditions Exist Which in the Judgment of the Emergency Coordinator Warrant Declaration of an Unusual Event.**

OPERATING MODE APPLICABILITY: ALL

EMERGENCY ACTION LEVEL:

Other conditions exist which in the judgment of the Emergency Coordinator indicate a potential degradation of the level of safety of the plant.

BASIS:

This EAL is intended to address unanticipated conditions not addressed explicitly elsewhere but that warrant declaration of an emergency because conditions exist which are believed by the Emergency Coordinator to fall under the Unusual Event emergency class.

Reference

NUMARC/NESP-007, Rev. 2, 01/92, HU5

ENCLOSURE 4.7

NATURAL DISASTERS, HAZARDS AND OTHER CONDITIONS AFFECTING PLANT SAFETY

ALERT

1. Natural and Destructive Phenomena Affecting the Plant Vital Area.

OPERATING MODE APPLICABILITY: ALL

EMERGENCY ACTION LEVELS:

A. Tremor felt and seismic trigger actuates (.05g)

Note: Only one train of a safety related system needs to be affected or damaged in order to satisfy these conditions.

B. Tornado, high winds, missiles resulting from turbine failure, vehicle crashes, or other catastrophic events **AND** one of the following:

Plant personnel report visible damage to permanent structures or equipment required for safe shutdown of the unit

OR

Affected safety related system parameter indications show degraded performance

BASIS:

EAL 1 Based on the FSAR design basis. Seismic events of this magnitude can cause damage to safety functions.

EAL 2 is intended to address the threat to safety related structures or equipment from uncontrollable and possibly catastrophic events. Damage to safety-related equipment and or structures housing safety-related equipment caused by natural phenomena after striking the site is the key point of this EAL. Only one train of a safety-related system needs to be affected or damaged in order to satisfy this condition. This EAL is, therefore, consistent with the definition of an ALERT in that if events have damaged areas containing safety-related equipment the potential exists for substantial degradation of the level of safety of the plant.

ENCLOSURE 4.7

NATURAL DISASTERS, HAZARDS AND OTHER CONDITIONS AFFECTING PLANT SAFETY

ALERT

Structures/equipment which provide safety functions are designed to withstand sustained wind force of 95mph. These structures are designed to withstand external wind forces resulting from a tornado having a velocity of 300mph. Because high winds may disable the meteorological instrumentation well before the design basis speed is reached, the meteorological tower should not be used for assessment of tornado winds for emergency classification. For tornados, damage would be the prima facie evidence of winds exceeding design basis.

Reference

NUMARC/NESP-007, Rev. 2, 01/92, HA1

ENCLOSURE 4.7

NATURAL DISASTERS, HAZARDS AND OTHER CONDITIONS AFFECTING PLANT SAFETY

ALERT

2. **Release of Toxic or Flammable Gases Jeopardizes Operation of Systems Required to Maintain Safe Operations or to Establish or Maintain Mode 5 (Cold Shutdown).**

OPERATING MODE APPLICABILITY: ALL

EMERGENCY ACTION LEVELS:

- A. Report or detection of toxic gases in concentrations that will be life threatening to plant personnel.
- B. Report or detection of flammable gases in concentrations that will affect the safe operation of the plant.

Reactor Building
Auxiliary Building
Turbine Building
Control Room

BASIS:

EAL 1 is based on toxic gases that have entered a plant structure that are life-threatening to plant personnel. This EAL applies to structures required to maintain safe operations or to establish or maintain cold shutdown. It is appropriate that increased monitoring be done to ascertain whether consequential damage has occurred. Escalation to a higher emergency class, if appropriate, will be based on System Malfunction, Fission Product Barrier Degradation, Abnormal Rad Levels/Radioactive Effluent, or Emergency Coordinator Judgment ICs.

ENCLOSURE 4.7

NATURAL DISASTERS, HAZARDS AND OTHER CONDITIONS AFFECTING PLANT SAFETY

ALERT

EAL 2 is based on the detection of flammable gases in areas containing equipment required for safe shutdown of the unit. It is appropriate that increased monitoring be done to ascertain whether consequential damage has occurred. Escalation to a higher emergency class, if appropriate, will be based on System Malfunction, Fission Product Barrier Degradation, Abnormal Rad Levels/Radioactive Effluent, or Emergency Coordinator Judgment ICs.

Reference

NUMARC/NESP-007, Rev. 2, 01/92, HA3

ENCLOSURE 4.7

NATURAL DISASTERS, HAZARDS AND OTHER CONDITIONS AFFECTING PLANT SAFETY

ALERT

3. TURBINE BUILDING FLOOD

OPERATING MODE APPLICABILITY: **ALL**

EMERGENCY ACTION LEVEL:

- A. Turbine building flood requiring use of AP/1,2,3/A/1700/010, Turbine Building Flood.

BASIS:

This initiating condition is discussed in the Oconee Probabilistic Risk Assessment report. A flood caused by the rupture of the Jocassee Dam could flood the turbine building basement which could disable the main feedwater pumps and the turbine and motor driven emergency feedwater pumps. Also, rupture of some portions of the condenser intake piping could result in a flood in the turbine building basement. Water tight doors have been provided to prevent the water from seeping into the auxiliary building. This scenario assumes that the Standby Shutdown Facility (SSF) would be available to provide water to the steam generators. Escalation of the event to a higher category would be based on the ability to maintain core cooling or shutdown functions.

ENCLOSURE 4.7

NATURAL DISASTERS, HAZARDS AND OTHER CONDITIONS AFFECTING PLANT SAFETY

ALERT

4. Control Room Evacuation Has Been Initiated.

OPERATING MODE APPLICABILITY: ALL

EMERGENCY ACTION LEVEL:

A. Evacuation of control room **AND** one of the following:

Plant control is established from the Aux SD panel or the SSF

OR

Plant control is being established from the Aux SD panel or the SSF

BASIS:

The auxiliary shutdown panel will allow operators to use turbine bypass valves to maintain RCS temperature, one HPI pump for RCS inventory control, pressurizer heaters to maintain RCS pressure and control of the feedwater startup valves but not control over the feedwater pumps.

The standby shutdown facility can maintain hot shutdown by using auxiliary service water to the steam generators for primary heat removal and also to provide makeup to the reactor coolant system. The SSF is only used under extreme conditions since it may involve pumping lake water into the steam generators for heat removed purposes.

With the control room evacuated, additional support, monitoring and direction through the Technical Support Center and/or other Emergency Operations Facility is necessary. Inability to establish plant control from outside the control room, as evidenced by the inability to maintain RCS or SG inventories, will escalate this event to a Site Area Emergency.

Reference

NUMARC/NESP-007, Rev. 2, 01/92, HA5

ENCLOSURE 4.7

NATURAL DISASTERS, HAZARDS AND OTHER CONDITIONS AFFECTING PLANT SAFETY

ALERT

5. **Other Conditions Existing Which in the Judgment of the Emergency Coordinator Warrant Declaration of an Alert.**

OPERATING MODE APPLICABILITY: ALL

EMERGENCY ACTION LEVEL:

- A. Other conditions exist which in the Judgment of the Emergency Coordinator indicate that plant safety systems may be degraded **AND** that increased monitoring of plant functions is warranted.

BASIS:

This EAL is intended to address unanticipated conditions not addressed explicitly elsewhere but that warrant declaration of an emergency because conditions exist which are believed by the Emergency Coordinator to fall under the Alert emergency class.

Reference

NUMARC/NESP-007, Rev. 2, 01/92, HA6

ENCLOSURE 4.7

NATURAL DISASTERS, HAZARDS AND OTHER CONDITIONS AFFECTING PLANT SAFETY

SITE AREA EMERGENCY

- 1. Control Room Evacuation Has Been Initiated and Plant Control Cannot Be Established.**

OPERATING MODE APPLICABILITY: ALL

EMERGENCY ACTION LEVEL:

The following conditions exist:

- A. Control room evacuation has been initiated

AND

Control of the plant cannot be established from the Aux SD panel or the SSF within 15 minutes.

BASIS:

The timely transfer of control to alternate control areas has not been accomplished. This failure to transfer control would be evidenced by deteriorating reactor coolant system or steam generator parameters. For most conditions RCP seal LOCAs or steam generator dryout would be indications of failure to accomplish the transfer in the necessary time.

Escalation of this event, if appropriate, would be by Fission Product Barrier Degradation, Abnormal Rad Levels/Radiological Effluent, or Emergency Coordinator Judgment ICs

Reference

NUMARC/NESP-007, Rev. 2, 01/92, HS2

ENCLOSURE 4.7

NATURAL DISASTERS, HAZARDS AND OTHER CONDITIONS AFFECTING PLANT SAFETY

SITE AREA EMERGENCY

2. Keowee Hydro Dam Failure

OPERATING MODE APPLICABILITY: ALL

EMERGENCY ACTION LEVEL:

- A. Imminent/actual dam failure exists involving any of the following:
- Keowee Hydro Dam
 - Little River Dam
 - Dikes A,B,C,D
 - Intake Canal Dike
 - Jocassee Dam - Condition A

BASIS:

The Keowee Hydro Dam project includes the Keowee Hydro Dam, Little River Dam and Dikes A, B, C, D, and the Intake Canal Dike. Dam failure of any portion of the Keowee Hydro Dam would result in loss of the emergency AC power supply AND the potential to lose the ultimate heat sink source. Some flooding of the site may result. Evaluation of the plant status following failure of the dam would determine the need to escalate to a General Emergency. Failure of the Jocassee Dam has the potential to result in the failure of the Keowee Hydro Project Dams/Dikes.

ENCLOSURE 4.7

NATURAL DISASTERS, HAZARDS AND OTHER CONDITIONS AFFECTING PLANT SAFETY

SITE AREA EMERGENCY

3. **Other Conditions Existing Which in the Judgment of the Emergency Coordinator Warrant Declaration of Site Area Emergency.**

OPERATING MODE APPLICABILITY: ALL

EMERGENCY ACTION LEVEL:

- A. Other conditions exist which in the Judgment of the Emergency Coordinator indicate actual or likely major failures of plant functions needed for protection of the public.

BASIS:

This EAL is intended to address unanticipated conditions not addressed explicitly elsewhere but that warrant declaration of an emergency because conditions exist which are believed by the Emergency Coordinator/EOF Director to fall under the emergency class description for Site Area Emergency.

Reference

NUMARC/NESP-007, Rev. 2, 01/92, HS3

ENCLOSURE 4.7

NATURAL DISASTERS, HAZARDS AND OTHER CONDITIONS AFFECTING PLANT SAFETY

GENERAL EMERGENCY

- 1. Other Conditions Existing Which in the Judgment of the Emergency Coordinator Warrant Declaration of General Emergency.**

OPERATING MODE APPLICABILITY: ALL

EMERGENCY ACTION LEVEL:

- A. Other conditions exist which in the Judgment of the Emergency Coordinator/EOF DIRECTOR indicate:

(1) Actual or imminent substantial core degradation with potential for loss of containment

OR

(2) Potential for uncontrolled radionuclide release that would result in a dose projection at the site boundary greater than 1000 mRem TEDE or 5000 mRem CDE Adult Thyroid.

BASIS:

This EAL is intended to address unanticipated conditions not addressed explicitly elsewhere but that warrant declaration of an emergency because conditions exist which are believed by the Emergency Coordinator/EOF Director to fall under the General Emergency class.

Releases (if made) can reasonably be expected to exceed EPA PAG levels outside the site boundary.

Reference

NUMARC/NESP-007, Rev. 2, 01/92, HG2

ENCLOSURE 4.8

Radiation Monitor Readings for Emergency Classification

All RIA values are considered GREATER THAN or EQUAL TO

HOURS SINCE REACTOR TRIPPED	RIA 57 R/hr		RIA 58 R/hr*	
	Site Area Emergency	General Emergency	Site Area Emergency	General Emergency
0.0 - < 0.5	5.9E+003	5.9E+004	2.6E+003	2.6E+004
0.5 - < 1.0	2.6E+003	2.6E+004	1.1E+003	1.1E+004
1.0 - < 1.5	1.9E+003	1.9E+004	8.6E+002	8.6E+003
1.5 - < 2.0	1.9E+003	1.9E+004	8.5E+002	8.5E+003
2.0 - < 2.5	1.4E+003	1.4E+004	6.3E+002	6.3E+003
2.5 - < 3.0	1.2E+003	1.2E+004	5.7E+002	5.7E+003
3.0 - < 3.5	1.1E+003	1.1E+004	5.2E+002	5.2E+003
3.5 - < 4.0	1.0E+003	1.0E+004	4.8E+002	4.8E+003
4.0 - < 8.0	1.0E+003	1.0E+004	4.4E+002	4.4E+003

*** RIA 58 is partially shielded**

Assumptions used for calculation of high range in-containment monitors RIA 57 and 58:

1. Average annual meteorology ($7.308 \text{ E}^{-6} \text{ sec/m}^3$)
2. Design basis leakage ($5.6 \text{ E}^6 \text{ ml/hr}$)
3. One hour release duration
4. *General Emergency* PAGs are 1 rem TEDE and 5 rem CDE; *Site Area Emergency* determination is based on 10% of the *General Emergency* PAGs
5. Calculations for monitor readings are based on CDE because thyroid dose is limiting
6. No credit is taken for filtration
7. LOCA conditions are limiting and provide the more conservative reading

G. Public Information and Education

Information will be made available to the public on a yearly basis concerning notification of a nuclear plant emergency and the response that will be required from the public sector.

G.1 Public Education and Information Program (G-1) & G.2

On an annual basis, the licensee will update and distribute to residents within the plume exposure pathway emergency planning zone, emergency planning information concerning Oconee Nuclear Station. It will provide educational information on radiation, emergency planning contacts, protective actions, primary emergency alert system radio station, evacuation routes, pick-up points for school children, relocation centers, shelters, and information for residents with special needs. Local telephone numbers to call with questions will also be listed.

Public information for the transient population includes lake-access signs, one-mile exclusion signs, and emergency planning information. Transient locations will be identified by the Emergency Planning Manager/designee, the site public affairs staff, and state and county emergency management officials. These locations may include but are not limited to motels, hotels, marinas, lake access (signs), and one-mile site exclusion area.

The list of transient locations will be reviewed quarterly and updated as needed. Locations will be contacted periodically to ensure adequate copies of materials are available.

G.3.a Public Affairs - Location and Contacts

During a drill or emergency, public information at Oconee Nuclear Station will be coordinated and disseminated through the on-site media center located on Rochester Highway, Seneca, S. C. or the Joint Information Center (JIC) and Oconee media center located on Issaqueena Trail, Clemson, S.C. During the initial stages of an emergency situation, response to media questions relative to plant status will be provided at the on-site media center. The Oconee media center will be activated as needed. The news release will indicate the location of the primary media center. The news manager and public spokesperson are the primary contacts for the news media.

G. Public Information and Education (Continued)

If the Emergency Operations Facility (EOF) is not activated, the normal Duke Energy news release process is followed. If the EOF is activated, then the Standard Procedure for Public Affairs Response To The Emergency Operations Facility (SR/0/B/2000/001), and the Duke Energy Company Communications and Community Relations World of Energy Emergency Response Plan (RP/0/B/1000/028) are implemented for gathering and disseminating information.

G.3.b Public Affairs – Media Centers

In a nuclear plant emergency, the licensee relies on the news media to provide prompt, accurate information to local residents and the public. To provide ready access to current information on plant status, a media center is promptly established. An on-site media center will provide space for a limited number of media. A larger media center at the Oconee media center, located on Issaqueena Trail, Clemson, S.C., can be activated as needed to support additional media.

G.4.a Public Spokesperson

A public spokesperson will provide plant status and company information during scheduled news conferences and media briefings at a designated media center. Designated public spokespersons are the chief nuclear officer and his direct reports, and their designees.

G.4.b Spokesperson Information Exchange

State, county and licensee spokespersons/public information officers are co-located in the Joint Information Center (JIC) to promote a timely exchange and coordination of emergency information.

G.4.c Rumor Control

A licensee liaison will work with state, county, and federal public information officers in the JIC to acknowledge rumors and determine the origin. A coordinated response will be made to deal with rumors or correct misinformation.

G. Public Information and Education

G.4.c Rumor Control (continued)

Customer inquiries are handled by our Customer Contact Centers. Employees are updated via the company intranet/portal. Elected officials and regulatory agencies are updated through our public affairs and governmental affairs departments. Industry groups would assist in disseminating information to other industry groups.

G.5 News Media Training Sessions

The licensee will annually provide the news media with information about emergency planning, radiation, and points of contact for release of public information in an emergency.

FIGURE G-1

**DUKE ENERGY COMPANY
OCONEE NUCLEAR SITE**

PUBLIC EMERGENCY NOTIFICATION BROCHURE

(Calendar)

Calendar is included by reference only. Current year calendar is maintained on file in the Emergency Planning Department files.

FIGURE G-2

**DUKE ENERGY COMPANY
OCONEE NUCLEAR SITE**

LOCATIONS FOR LAKE WARNING AND ONE-MILE EXCLUSION AREA SIGNS

Emergency Planning Functional Area Manual 3.6

Emergency Facilities And Equipment

H.1.a Technical Support Center

A Technical Support Center has been designated for the Oconee Nuclear Station in the area known as the Operations Center, together with the nearby offices adjacent to the Control Rooms 1&2 on the fifth floor of the Auxiliary Building. This area has the same ventilation and shielding as the Control Room enabling plant management and supporting technical and engineering personnel to evaluate plant status and support operations in conjunction with the Operational Support Center.

The Technical Support Center has the capability to display and transmit plant status to those individuals who are knowledgeable of and responsible for engineering and management support of the reactor operations in the event of an accident, and those persons who are responsible for the management of the accident. Upon activation, this facility will provide the main communication link between the Plant, Operational Support Center, the Nuclear Regulatory Commission Regional Headquarters, and the Emergency Operations Facility. The Technical Support Center is staffed by plant management and technical personnel.

The Technical Support Center has access to the following capabilities and characteristics: (Figure H-1).

1. Redundant two-way communication With the Control Room, the Emergency Operations Facility and the Nuclear Regulatory Commission Operations Center.
2. Monitoring for direct radiation and airborne radioactive contaminants, with local readout of radiation level and alarms if preset levels are exceeded. Laboratory analysis is required if it becomes necessary to detect radioiodines at concentrations as low as 1.0 E-7 microcurie/cc.
3. Display, printout or trending of comprehensive data necessary to monitor reactor systems status and to evaluate plant system abnormalities; in-plant radiological parameters and meteorological parameters are also available. This capability is provided via each unit's Operator Aid Computer.

Offsite radiological conditions are provided via radio from the field monitoring teams.

H. EMERGENCY FACILITIES AND EQUIPMENT

4. Ready access to as-built plant drawings such as general arrangement, flow diagrams, electrical one-lines, instrument details, etc.
5. Habitability during postulated radiological accidents to the same degree as the Control Room.

H.1.b Operational Support Center (Figure H-2)

An Operational Support Center has been established in the Operations Center located in the control room area of Unit #3. Personnel assigned to this support center will include the following:

- Work Control
- Chemistry
- Radiation Protection
- Maintenance
- Safety
- Operations
- Engineering
- Nuclear Supply Chain
- Security

The Operational Support Center has shielding and ventilation to the same degree as the Control Room. Breathing equipment and protective clothing are available in the Operational Support Center should any craftsman/technician be required to perform a task or function in an area that would require protective clothing and breathing apparatus.

H.1.c Alternate Facilities

An alternate Technical Support Center has been established at the Oconee Office Building, Room 316. Radio and telephone communications are available to offsite agencies and the NRC to the same extent as the designated TSC.

An alternate Operational Support Center has been established in the Oconee Office Building, Room 316 A. Communication links are provided for information flow both to the Control Room and Technical Support Center.

H. EMERGENCY FACILITIES AND EQUIPMENT

The Issaqueena Trail Facility serves as an alternate facility that would be accessible even if the site is under threat of or experiencing hostile action, to function as a staging area for augmentation of emergency response staff and having the following characteristics required collectively of the alternate facilities for use when onsite emergency facilities cannot be safely accessed during hostile action:

- The capability for communication with the emergency operations facility, control room, and plant security.
- The capability to perform offsite notifications.
- The capability for engineering assessment activities, including damage control team planning and preparation.

H.2 Emergency Operations Facility

The Emergency Operations Facility is located at the Charlotte General Office in North Carolina. The facility is located approximately 120 miles from the Oconee Nuclear Station. See Figures H3A thru H3-E.

The EOF has the following capabilities:

- a. The capability for obtaining and displaying plant data and radiological information for each reactor at a nuclear power reactor site and for each nuclear power reactor site that the facility serves.
- b. The capability to analyze plant technical information and provide technical briefings on event conditions and prognosis to licensee and offsite response organizations for each reactor at a nuclear power reactor site and for each nuclear power reactor site that the facility serves.
- c. The capability to support response to events occurring simultaneously at more than one nuclear power reactor site if the emergency operations facility serves more than one site.

H. EMERGENCY FACILITIES AND EQUIPMENT

Two utility circuits feed Energy Center Phase 1 where the EOF is located. Primary power to the Power Building is provided by commercial power. All electrical outlets, as well as lighting fixtures and the wiring closet that supports both the voice and data communications in the Energy Center EOF are on generator backed up power. A loss of commercial power should not impact any of the voice or data communications equipment located in the EOF. All common Duke Energy telecom infrastructures that support EOF functions, including, but not limited to, fiber optic transmission equipment, telephone switching equipment and data network routers, is configured to operate from at least one and usually multiple backup power sources in the event of a loss of commercial power. These backup sources include generator, DC battery and UPS systems. EOF HVAC loads are not backed up.

H.3 County, State Emergency Operations Center

See Oconee County FNF Plan.
See Pickens County, FNF Plan.
See State of South Carolina FNF Plan, Site Specific.

H.4 Activation and Staffing of the Emergency Response Organization

Activation and staffing of the Emergency Response Organization will be in accordance with the emergency action levels and the procedures developed for determining emergency response.

Division/Section Directives describe the Emergency Response Organization. Figures A-2A, A-2B depicts the procedure for recall of the Emergency Organization.

H.5 Monitoring Systems

On Site - If an emergency situation occurs at the plant, plant personnel continually monitor plant parameters with regard to limits and surveillance requirements specified in the appropriate Technical Specifications, Operating Procedures and Emergency Procedures. These parameters will affect the emergency classification and therefore affect decisions implementing specific emergency measures. In addition to monitoring plant parameters, radiological surveys may be used to verify, augment and/or delineate the assessment of the emergency. (Figure H-20).

H. EMERGENCY FACILITIES AND EQUIPMENT

H.5.a Natural Phenomena Monitors

Natural phenomena instrumentation to monitor wind speed and direction, temperature and vertical temperature gradient (Figure H-4); and seismic activity (Figure H-18).

H.5.b Radiological Monitors (H-5)

Area Radiation Monitoring System

The area radiation monitoring system detectors are located throughout the plant in locations where significant radiation levels may exist, which may change with time and with the operation being performed. They are designed primarily for the protection of personnel performing such operations as routine coolant sampling, refueling, reactor building entry, radioactive waste disposal operations and for certain other operating and maintenance work. The system has sufficient range and flexibility to permit readout during routine operations and during any transient or emergency conditions that may exist. The equipment is self checking for proper operation and alarms both in the local area and in the respective control room. Where necessary or desirable, readout is also provided locally.

Process Radiation Monitoring System

Radiation monitoring of process systems provides early warning of equipment, component, or system malfunctions or potential radiological hazards. The Process Radiation Monitoring System includes alarms, indications, and recording of data in the control rooms. In some cases automatic action is taken upon an alarm condition; in others the alarm serves as a warning to the operator so that manual corrective action can be taken.

Radioactive liquid and gaseous waste effluent are monitored, coordinated between Operations and Radwaste Chemistry and controlled to assure that radioactivity released does not exceed 10 CFR 20 limits for the plant as a whole.

H. EMERGENCY FACILITIES AND EQUIPMENT

Personnel Monitoring System

Personnel monitoring equipment consisting of film badges and/or their equivalent (thermo-luminescent dosimeters, TLD's), are assigned by the Radiation Protection Section and worn by all personnel at Oconee whose job involves significant levels of radiation exposure as defined in 10 CFR 20. In addition, pocket chambers, electronic dosimeters, self-reading dosimeters, pocket high radiation alarms, wrist badges, and/or finger tabs are readily available for use by those persons who ordinarily work in the Controlled Area or whose job requires frequent access to this area.

Portable Monitors - sufficient numbers are available for use in assessing radiological conditions. (Figure H-6).

Sampling Equipment - sufficient numbers are available for use in assessing radiological conditions. (Figure H-7).

H.5.c Process Monitors - Non-radiological Monitoring

Non-radiological monitoring capabilities include reactor coolant system pressure, temperatures, flows, and water level for detection of inadequate core cooling. Containment pressure, temperature, liquid levels, flow rates, and status of equipment components are monitored to assess containment integrity.

H.5.d Fire and Combustion products detectors - (Figure H-8).

H.6 Offsite Monitoring and Analysis for Emergency Response

H.6.a Natural-Phenomena Monitors

Facilities and equipment include two onsite meteorological towers. Also, an agreement has been established with the Greenville-Spartanburg National Weather service to provide meteorological information should our system become inoperable.

H.6.b Radiological monitors for emergency environmental monitoring are provided in emergency kits. The established environmental monitoring network and sampling equipment in the surrounding area are also available to provide emergency assessment data.

The existing radiological monitoring program will provide base line information as well as in-place monitoring for early assessment data. (Figure A) (H-9 and H-10).

H. EMERGENCY FACILITIES AND EQUIPMENT

Normal environmental monitoring equipment includes radioiodine and particulate continuous air samplers and thermo-luminescent dosimeters, located and collected according to pre-established criteria. Environmental monitoring will be expanded as necessary during an emergency situation in accordance with offsite monitoring procedures.

- H.6.c Laboratory Facilities - Include mobile emergency monitoring capabilities available through the S.C. Department of Health and Environmental Control, Bureau of Solid and Hazardous Waste Management and the DOE Radiological Assistance Team. In addition, Oconee Nuclear Station (ONS) has emergency vehicles for mobile assessment purposes. Fixed facilities are available for gross counting and spectral analysis in the ONS counting laboratory (Figure H-11) and at the Duke Energy Environmental Laboratory near the McGuire Nuclear Station, Charlotte, North Carolina.

Should the plant lose the capability to use the count room onsite, samples can be counted at the backup count room or in one of the mobile assessment field monitoring vans. Portable equipment would be relocated to this area. (Figure H-3)

- H.7 Offsite radiological monitoring equipment is located in the storage area outside the protected area. Emergency kits are available for off-site monitoring teams who would be monitoring for radiation offsite. (Figure H-12).

H.8 Meteorological Instrumentation

A primary and one auxiliary meteorological tower provides the basic parameters on display in the Control Room. (Figure H-4 shows the meteorological equipment.)

Meteorological measurement equipment meets the criteria of the milestones addressed in Appendix 2 of NUREG 0654 and Proposed Revision 1 to Regulatory Guide 1.23.

An operable dose calculation methodology is in use in the Control Room, Technical Support Center and the Emergency Operations Facility.

The dose assessment methodology for the Oconee Nuclear STATION consists of calculations for three separate source terms. The first source term is based on the activity that has been or is actually being released through the unit vent; the second source term is based on a potential release using the reactor building dose rate and design basis assumptions for containment leakage; the third source term is based on the activity that has been or is actually being released through the steam relief valves.

H. EMERGENCY FACILITIES AND EQUIPMENT

The release rate is calculated for each source term using relative atmospheric dispersion factors calculated by the meteorological model and either actual sample data or radiation monitor readings. These release rates are then added together and used to calculate the dose rate or a projected dose over the duration of the release or over 4 hours if release duration is unknown at 1, 2, 5 and 10 miles downwind from the plant.

These dose assessment methods provide the capability to calculate the dose from actual or potential releases following an accident. A fifty-year committed dose equivalent (CDE) to the thyroid and a total effective dose equivalent (TEDE) from exposure to a semi-infinite cloud and a four-day ground shine as applicable are determined. The dose conversion factors are derived from EPA-400. Near real time radiation monitor readings, sample data, and meteorological data are combined to provide timely, realistic dose calculations. This model will provide the capability to assess and monitor actual or potential offsite consequences of a radiological emergency condition.

Direct telephone access to the person responsible for making offsite dose calculations is available to the Nuclear Regulatory Commission through the use of the NRC Health Physics Network line. The physical location of this person is in the Emergency Operations Facility.

H.9 Operational Support Center - Emergency Supplies

The Operational Support Center will have the same shielding, and ventilation as the Control Room. Protective clothing and breathing equipment are available to the personnel assembled in these areas. (See Figures H-13, H-14, H-17)

H.10 Inspection and Inventory of Emergency Equipment and Supplies

All emergency equipment designated by the Oconee Station Emergency Plan shall be inventoried and inspected on a quarterly basis or in agreement with established procedures. Supplies will be inventoried/replaced after each drill and/or exercise or actual emergency where supplies might have been used.

Calibration of any/all emergency equipment shall be at the intervals recommended by the supplier of the equipment. Procedures used to calibrate and inventory emergency equipment are not considered as implementing procedures of the emergency plan but are included as a part of the normal site administration procedures.

H. EMERGENCY FACILITIES AND EQUIPMENT

H.11 Identification of Emergency Kits

Emergency kits are located in the World of Energy, the Control Rooms, Technical Support Center, and the Operational Support Center

Protective Equipment Kits - Figures H-13, H-14, H-17

Communications Equipment - Figures H-12, H-16

Radiological Monitoring Equipment - Figures H-12, H-16, H-17

Emergency Supplies - Figures H-16, Figure H-17

Emergency Medical Supplies - L-1, L-2, L-3

Decontamination Supplies - K-3

Spill Cleanup Equipment/Supplies - H-19

H.12 Field Monitoring Data Collection

The Emergency Operations Facility has been designated as the central point for the receipt and analysis of all field monitoring data and coordination of sample media. The Radiological Assessment Manager at the Emergency Operations Facility will be responsible for the coordination efforts.

FIGURE H-1

OCONEE NUCLEAR STATION TYPICAL TECHNICAL SUPPORT CENTER PRIMARY LOCATION UNIT 1&2 OPS CENTER

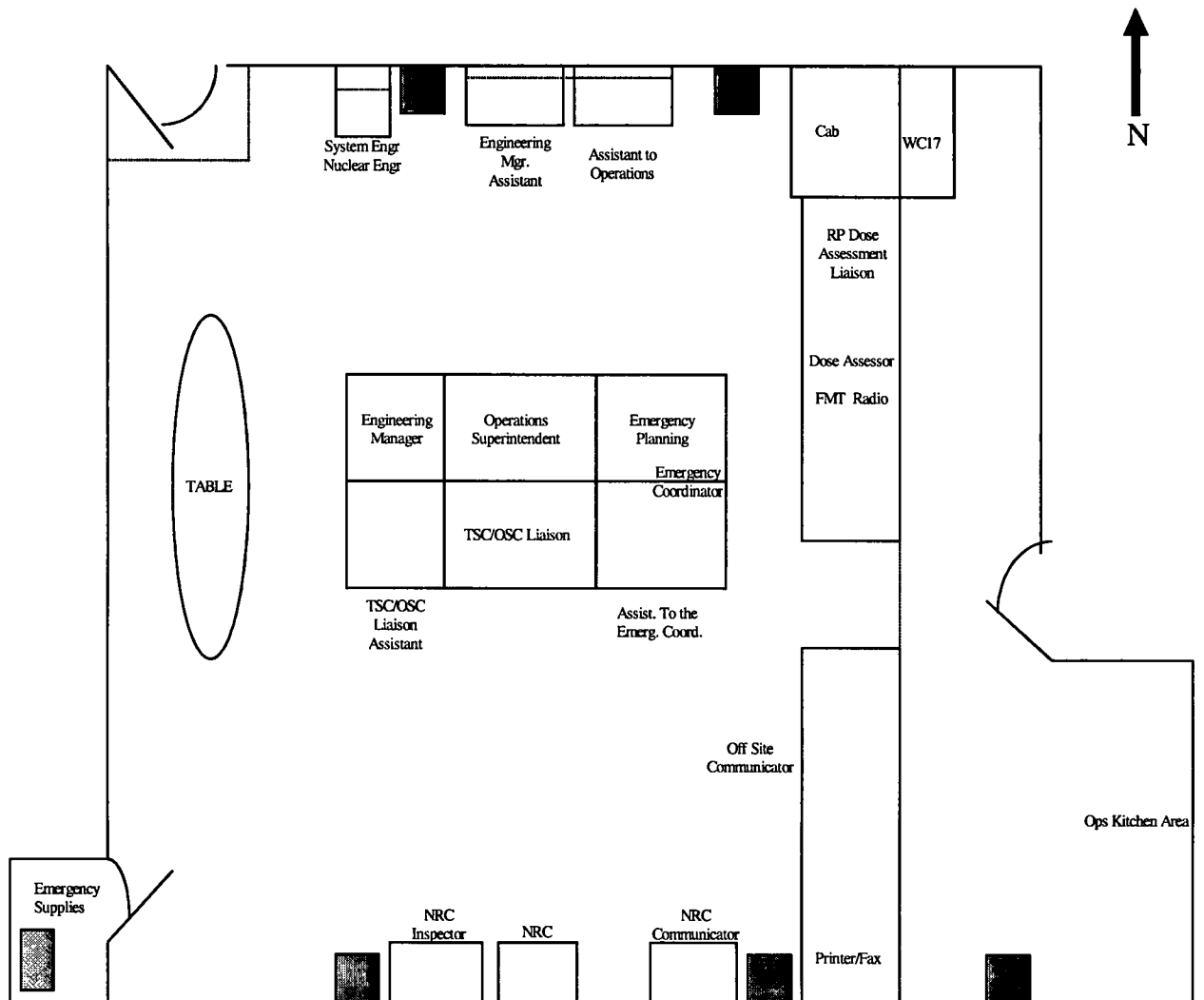
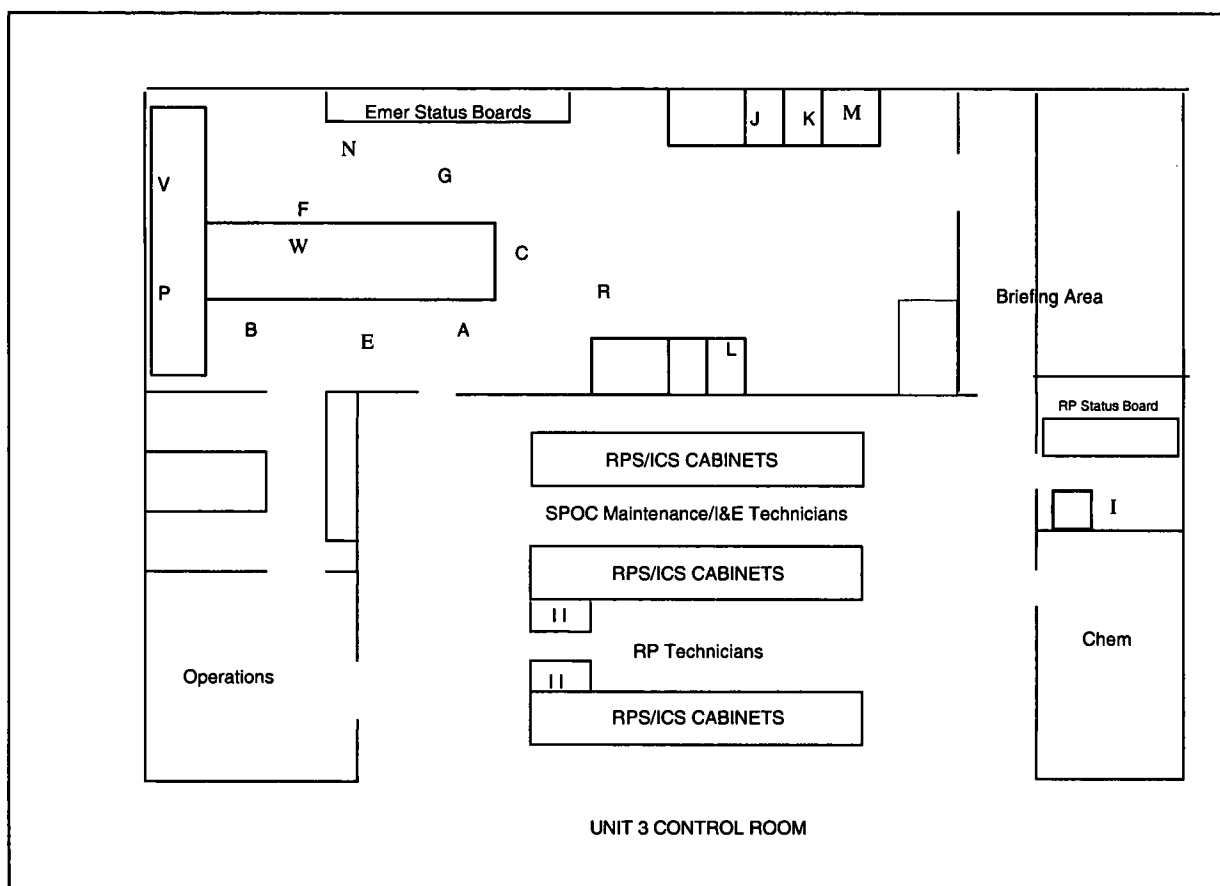


FIGURE H-1A

NO LONGER USED

FIGURE H-2

OCONEE NUCLEAR STATION TYPICAL OPERATIONAL SUPPORT CENTER PRIMARY LOCATION UNIT 3 OPERATIONS CENTER



- A. OSC Manager
- B. Ops Liaison
- C. RP Manager
- D. Unassigned
- E. Technical Assistant I
- F. Chemistry Manager
- G. Maintenance Manager
- H. RP
- I. SPOC
- J. Electrical Engineering
- K. Maintenance Supervisor (SPOC)
- L. Chemistry Supervisor
- M. SPOC
- N. Technical Assistant II
- O. RP Admin. Supervisor
- P. Nuclear Supply Chain Liaison
- Q. RP Shift
- R. Assistant to RP Mgr.
- V. Security Liaison

FIGURE H-2A

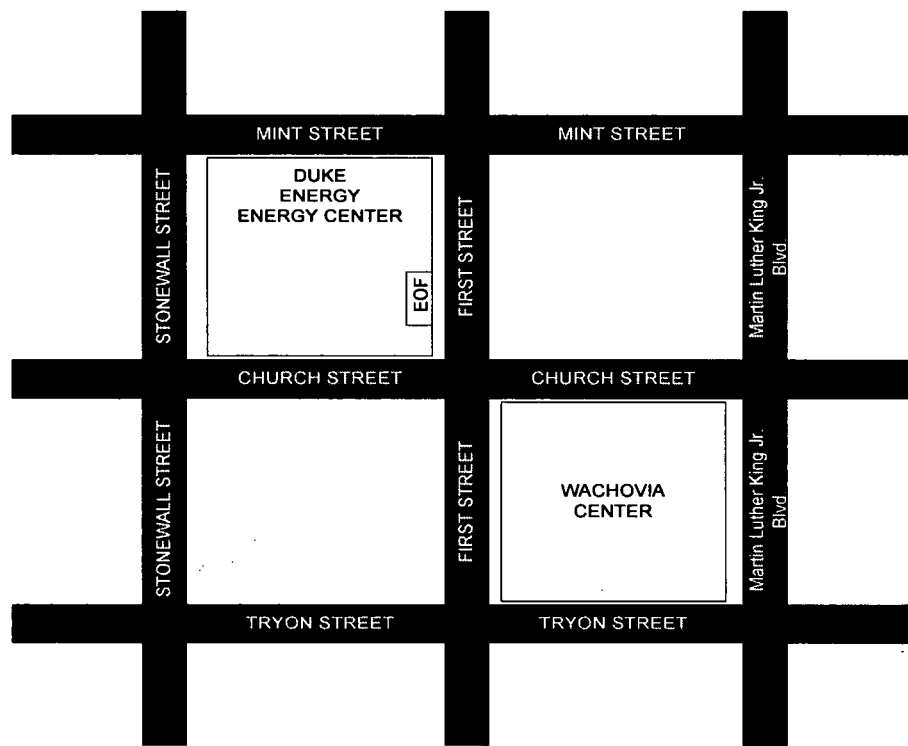
NO LONGER USED

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FIGURE H-3A

**DUKE ENERGY
OCONEE NUCLEAR STATION**

**CHARLOTTE EOF
GENERAL OFFICE BUILDING LAYOUT – CHARLOTTE, NC**



The EOF is on the 1st Floor of the Energy Center.

**FIGURE H-3B
DUKE ENERGY COMPANY
OCONEE NUCLEAR STATION
CHARLOTTE EMERGENCY OPERATIONS FACILITY LAYOUT**

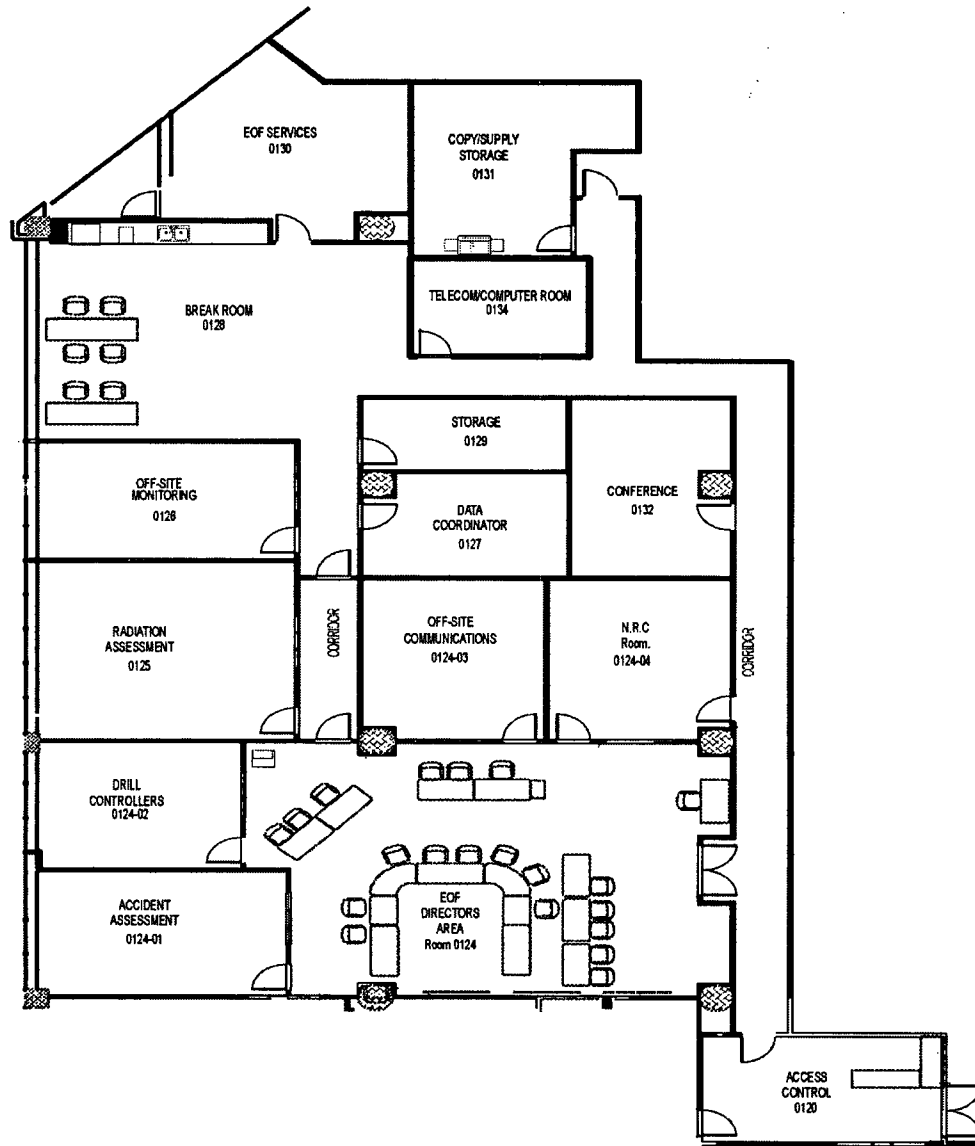


FIGURE H-3C

DUKE ENERGY COMPANY
OCONEE NUCLEAR STATION

TYPICAL OCONEE JIC SET UP

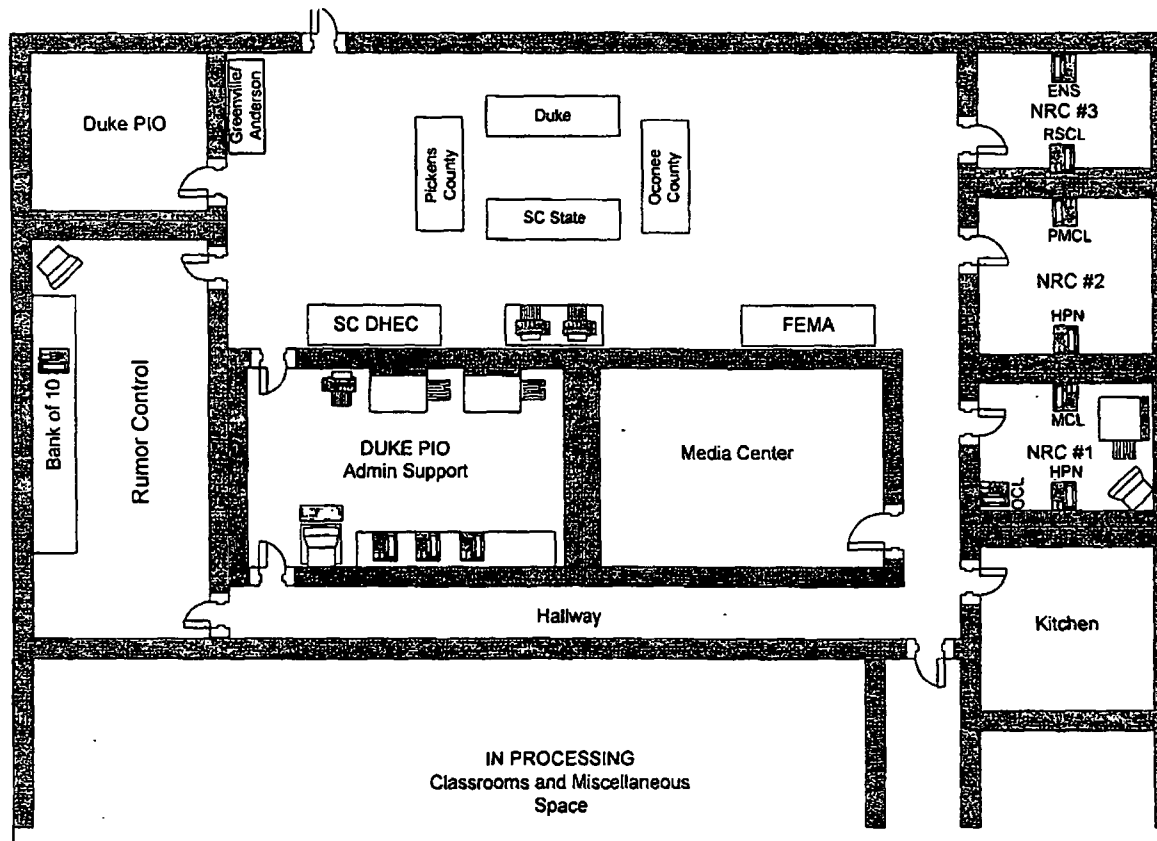


FIGURE H-3D

DUKE ENERGY COMPANY
OCONEE NUCLEAR STATION

OCONEE MEDIA CENTER

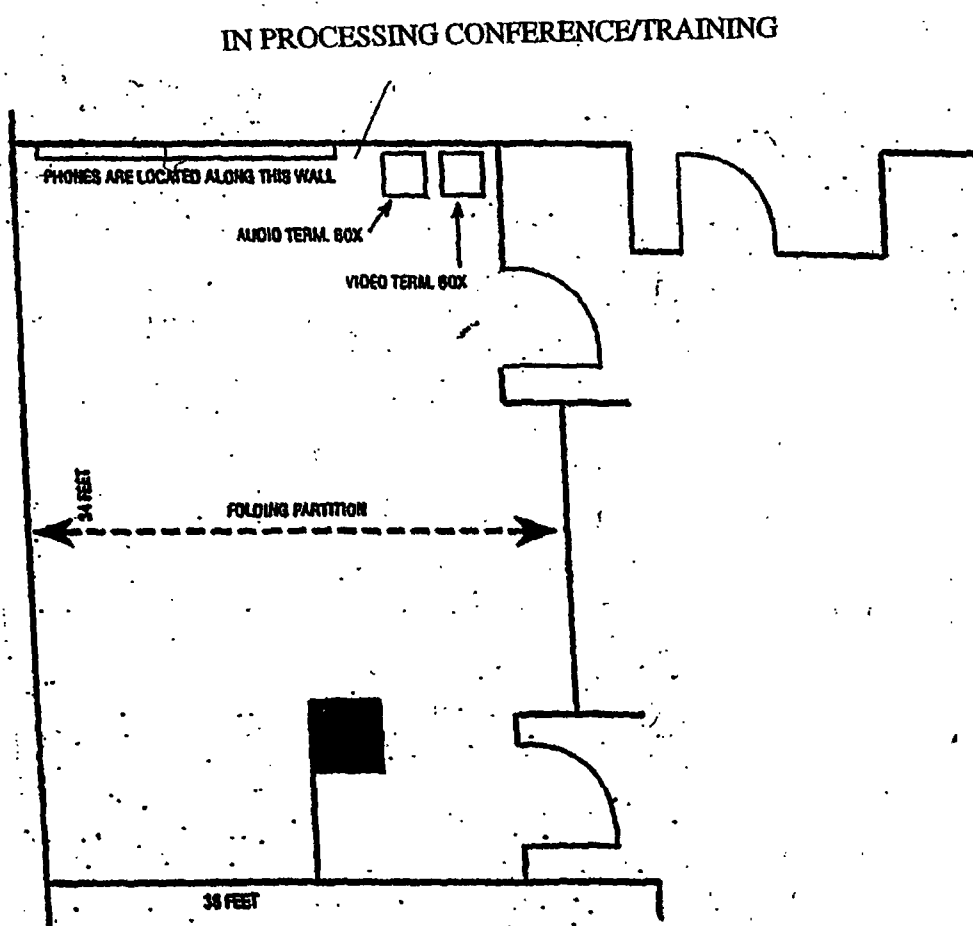


FIGURE H-3E

**DUKE ENERGY COMPANY
OCONEE NUCLEAR STATION**

OCONEE JIC GENERAL LAYOUT

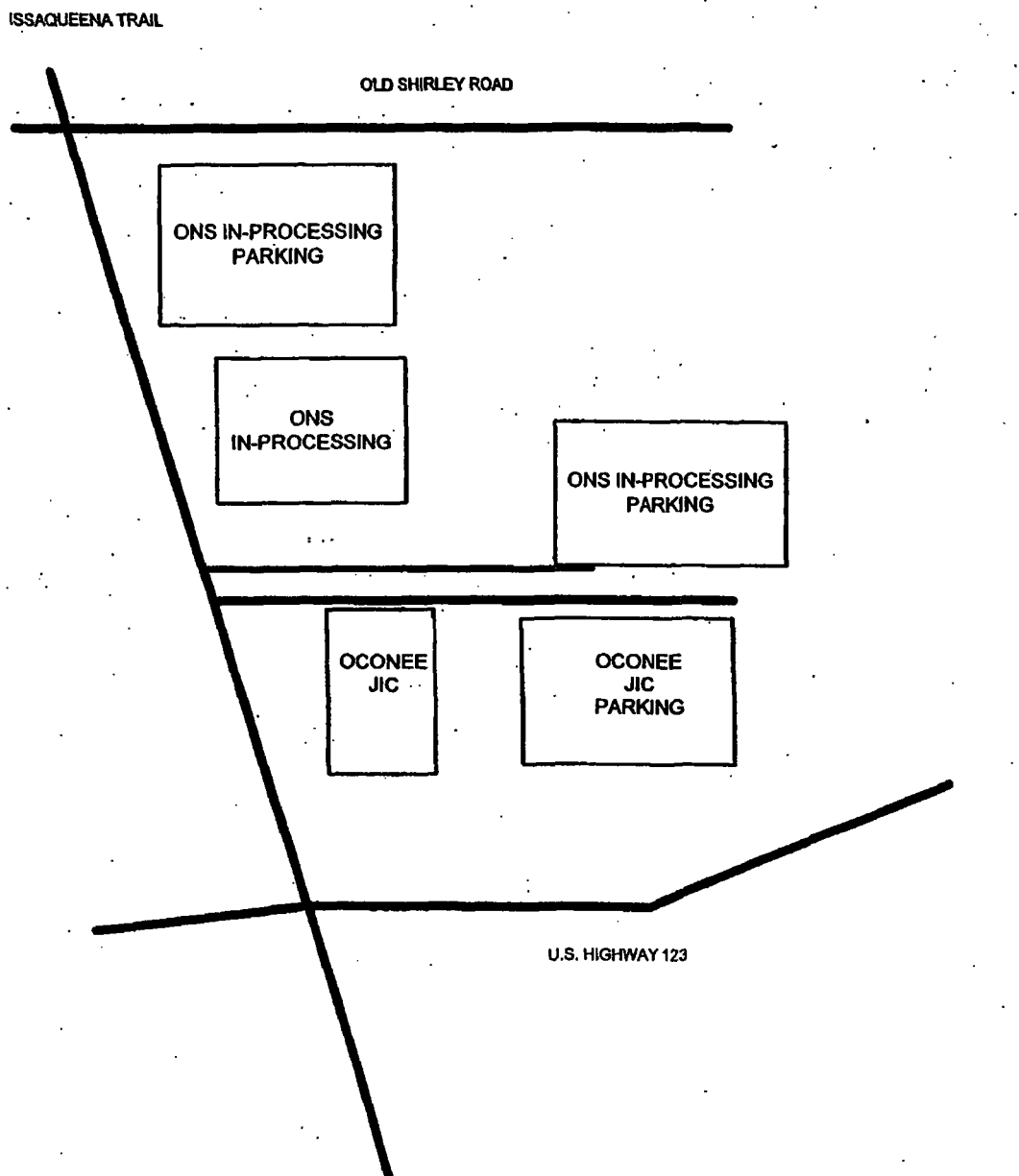


FIGURE H-3F

DUKE ENERGY COMPANY OCONEE NUCLEAR STATION

OCONEE BACKUP COUNT ROOM LOCATION ONS ADMIN BUILDING

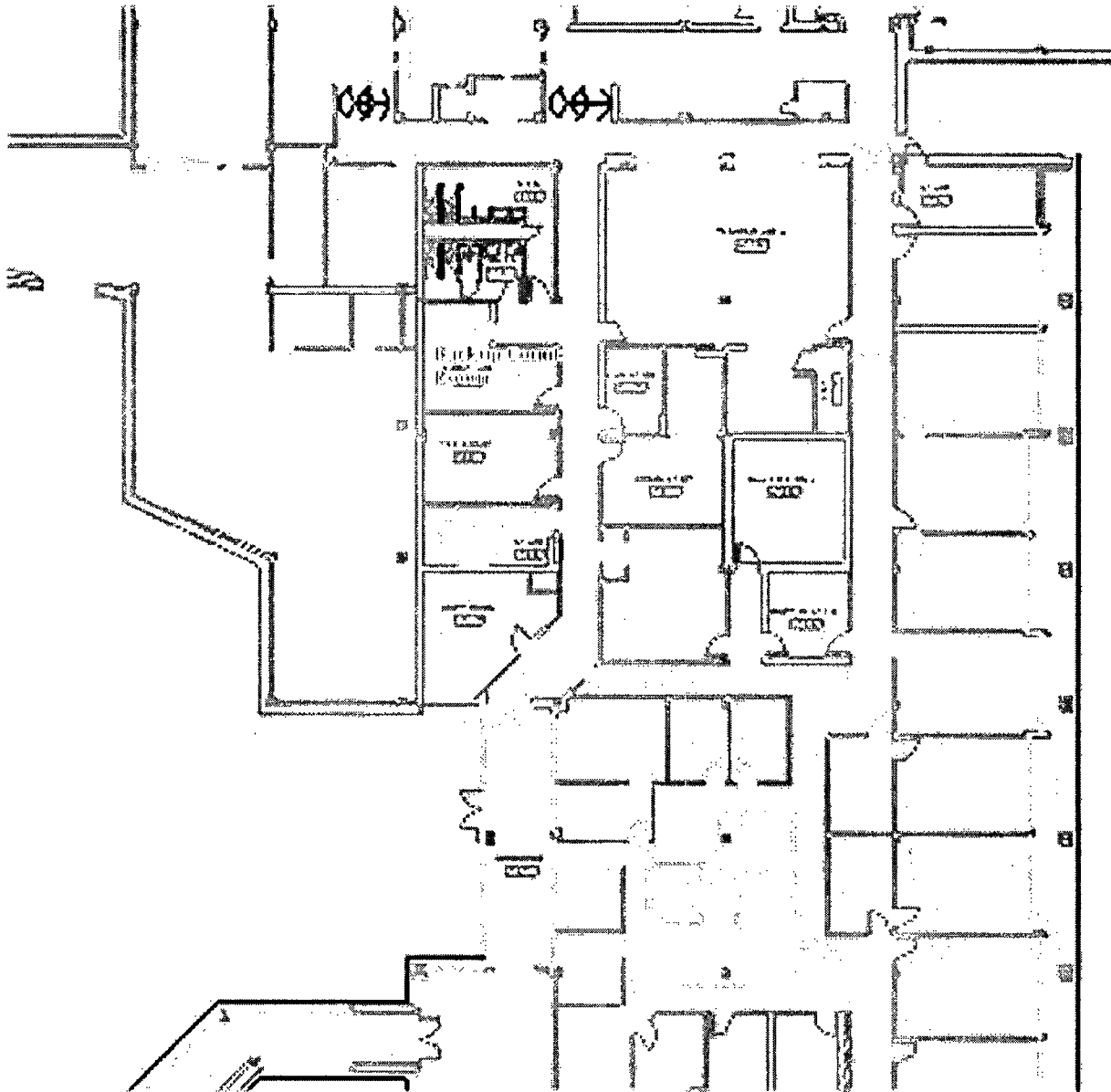


FIGURE H-4

**DUKE ENERGY COMPANY
OCONEE NUCLEAR STATION**

METEOROLOGY EQUIPMENT

Wind Speed Monitoring Systems

Wind Direction Monitoring Systems

Platinum (RTD) T Delta or T/ Δ T Monitoring System

Precipitation Monitoring System

NOTE: The Meteorological Monitoring System monitors and records continuous data for upper and lower levels of wind speed and direction, ambient air temperature and temperature differential at Site #1 (Northwest Met Tower). Wind speed, wind direction and precipitation is recorded at Site #2 (Keowee River Tower). All data points are included on each of the Units OAC computers where the data is averaged over a 15 minute period of time, except for precipitation.

IP/0/B/1601/003 gives range, accuracy and location.

FIGURE H-5

DUKE ENERGY COMPANY OCONEE NUCLEAR STATION

RADIATION INDICATING ALARMS (RIA)

RIA#	UNIT#	TYPE	RANGE	FUNCTION	LOCATION	CLASS
1	1,3	GM	.1 -1E4mRad/hr	Control Room	Control Room	Area
PAM*	1,2,3	GM	.1 -1E4mRad/hr	Main Bridge	Reactor Building	Area
PAM*	1,2,3	GM	.1 -1E4mRad/hr	Aux. Bridge	Reactor Building	Area
3	1,2,3	GM, IC	.1 -1E7mRad/hr	Refuel Canal	Transfer Canal	Area
4	1,2,3	GM, IC	.1 -1E7mRad/hr	RB Entrance	Personnel Hatch	Area
5	1,2,3	GM	.1 -1E4mRad/hr	Incore Tank	Outside Incore Tk Hatch	Area
PAM*	1,3	GM	.1 -1E4mRad/hr	Spent Fuel	SF Bridge	Area
6	1,3	GM, IC	.1 -1E7mRad/hr	Spent Fuel Area/Pool	SF Pool Area	Area
7	1	GM	.1 -1E4mRad/hr	Hot Machine Shop	East Wall	Area
8	1	GM	.1 -1E4mRad/hr	Hot Lab/ Chemistry	Hot Chem. Lab	Area
10	1,3	GM	.1 -1E4mRad/hr	Sample Hood/Primary	Primary Sample hood	Area
11	1,3	GM	.1 -1E4mRad/hr	Corridor 796(3rd Level)	Unit 1/2 Change Room, Unit 3 Change Room	Area
12	1,3	GM	.1 -1E4mRad/hr	Chem Addition	Unit 1/2/3 Mix Tank	Area
13	1,3	GM	.1 -1E4mRad/hr	Waste Disposal Sink	Waste disposal Tk	Area
15	1,3	GM, IC	.1 -1E7mRad/hr	HPI	HPI Rooms	Area
16	1,3	GM, IC	.01 -1E7mRad/hr	"A" Main Steam Line	"A" Main Steam Lines	Area
17	1,3	GM, IC	.01 -1E7mRad/hr	"B" Main Steam Line	"B" Main Steam Lines	Area
31	1	NaI	10 -1E7cpm	LPI cooler LPSW Discharge	Turbine Building Basement	Effl

Figure H-5
DUKE ENERGY COMPANY
OCONEE NUCLEAR STATION

RADIATION INDICATING ALARMS (RIA)

RIA#	UNIT#	TYPE	RANGE	FUNCTION	LOCATION	CLASS
32	1	P.Beta	10 - 1E7cpm	Aux. Bldg. Gas	AB-1 SF Resin Tank	Area
32	3	P.Beta	10 - 1E7cpm	Aux. Bldg. Gas	AB-2 Elevator Lobby	Area
33		NaI	10 - 1E7cpm	Normal LWD	Radwaste Facility	Effl
35	1,2,3	NaI	10 - 1E7cpm	LPSW Disch. Aux Building	Turbine Building Basement	Effl
37	1,3	P.Beta	10 - 1E7cpm	Normal GWD	Purge Equipment or Pen Room near elevator	Effl
38	1,3	GM	10 - 1E7cpm	High GWD	Purge Equipment or Pen Room near elevator	Effl
39	1,3	P.Beta	10 - 1E7cpm	CR-Gas	6th Fl. behind Em. Air Booster Pumps	Area
40	1,2,3	P.Beta	10 - 1E7cpm	Air ejector off gas	Purge Equip. room	Effl
41	1,3	P.Beta	10 - 1E7cpm	SF Bldg. Gas	Purge Equip. room	Area
42	1,3	NaI	10 - 1E7cpm	RCW return	Behind backwash pumps	Sys
43	1,2,3	P.Beta	10 - 1E7cpm	Unit vent particulates	Purge Equip. room	Effl
44	1,2,3	NaI	10 - 1E7cpm	Unit vent iodine	Purge Equip. room	Effl
45	1,2,3	P.Beta	10 - 1E7cpm	Unit vent gas normal	Purge Equip. room	Effl
46	1,2,3	CdTe	10 - 1E7cpm	Unit vent gas high	Purge Equip. room	Effl
47	1,2,3	P.Beta	10 - 1E7cpm	RB particulate	Purge Equip. room	Effl
48	1,2,3	NaI	10 - 1E7cpm	RB iodine	Purge Equip. room	Effl
49	1,2,3	P.Beta	10 - 1E7cpm	RB gas normal	Purge Equip. room	Effl
49A	1,2,3	CdTe	10 - 1E7cpm	RB gas high	Purge Equip. room	Effl
50	1,2,3	NaI	10 - 1E7cpm	Component Cooling	AB-1	Sys

Figure H-5
DUKE ENERGY COMPANY
OCONEE NUCLEAR STATION

RADIATION INDICATING ALARMS (RIA)

RIA#	UNIT#	TYPE	RANGE	FUNCTION	LOCATION	CLASS
53	IB	P.Beta	10 - 1E7cpm	Interim Bldg. Gas	Interim Bldg.	Effl
54	1,3	Nal	10-1E7cpm	TB Sump	TB Basement	Effl
56	1,2,3	IC	1-1E8Rad/hr	Vent Stack Effluent	Vent Stack (Midway)	Effl
57	1,2,3	IC	1 -1E8Rad/hr	Containment High range monitor	Reactor Bldg. Penetration	Area
58	1,2,3	IC	1 -1E8Rad/hr	Containment High range monitor	Reactor Bldg. Penetration	Area

GM = Geiger Mueller

IC = Ion Chamber

PAM = Portable Area Monitor

* Portable area monitors do not have assigned RIA numbers and are local readout only.

IB = Interim Building

FIGURE H-6

DUKE ENERGY COMPANY OCONEE NUCLEAR STATION

PORTABLE SURVEY INSTRUMENTS

INSTRUMENT TYPE	RESPONSE TIME	DETECTOR TYPE	RANGES	RADIATION DETECTED	TUBE SATURATION	ADDITIONAL INFORMATION
Ludlum 3	4-22 seconds	Halogen quenched GM	X0.1 = 0-0.2 mR/hr X1.0 = 0-2.0 mR/hr X10 = 0-20 mR/hr X100 = 0-200 mR/hr	Beta & Gamma	Indicates offscale	Typically 1200 cpm per mR/hr. Speaker indication. Contains battery check position.
Eberline RM14	2.2 - 22 seconds variable	Halogen quenched GM	X1=0-500 cpm X10=0-5000 cpm X100=0-50000 cpm	Beta & Gamma	Indicates offscale	Has alarm setting. Speaker indication. 50 hr operation on fully charged battery.
MGPI Telepole	2-30 seconds variable	Two GM tubes 1 low range 1 high range	0.05 mR/hr - 1000 R/hr	Gamma	Indicates over range	Automatic switching between GM tubes. 11' extension probe. Battery self check.
Eberline RO20	5 seconds	Ion-chamber Air filled. Vented to atmosphere	0-50Rad/hr.	Beta & Gamma	Indicates offscale	Has battery check information
Eberline RO7	Variable	Air filled ion chamber	Med range: 0.1-199.9 Rad/hr Hi range: 0-.01 - 19,900 Rad/hr	Beta & Gamma	Indicates over range	Digital ion chamber with cables to extend detection up to 60' away or under water.

FIGURE H-6

DUKE ENERGY COMPANY OCONEE NUCLEAR STATION

PORTABLE SURVEY INSTRUMENTS

Instrument Type	Response Time	Detector Type	Ranges	Radiation Detected	Tube Saturation	Additional Information
Ludlum-12	4-22 seconds	Cadmium loaded polyethylene sphere with He tube in center. Tube operates in proportional region	0 - 100,000 mRad/hr	Neutron	Rejects Gamma up to 10 Rad/hr.	Detector can be attached or moved from meter.
AMP-100	Variable	Energy Compensated GM tube	0 - 1000 R/hr	Gamma	Over range alarm	Can be used with variable length of cable.
AMP-200	Variable	Energy Compensated GM tube	1 - 10,000 R/hr	Gamma	Over range alarm	Can be used with variable length of cable.
ESP 2	Variable	Sodium Iodide Scintillator	Variable	Gamma	Over range alarm	Single channel analyzer w/pulse height analysis Nal detectors

FIGURE H-7

DUKE ENERGY COMPANY OCONEE NUCLEAR STATION

AIR SAMPLERS

INSTRUMENT NAME	EXPECTED FLOW RATE	AIR PUMP TYPE	MAXIMUM LENGTH OF OPERATION
HD29A	2 CFM	Centrifugal Carbon Vane Pump air-cooled motor	Continuous, constant flow
H-809V	2 CFM	Two-stage turbine blower air- cooled motor	15 minutes
RAP-1	2 CFM	Oil Free, Carbon Vane	Continuous, constant flow

FIGURE H-8

DUKE ENERGY COMPANY OCONEE NUCLEAR STATION

FIRE AND COMBUSTION PRODUCTS AND DETECTORS

FIRE DETECTION SYSTEM - Inaccessible Detectors

The purpose of this fire detection system is to detect visible and/or invisible smoke or other products of combustion in any space covered by detectors.

The principal parts of this system; Fire indicating unit, zone indicating units and detectors, with up to 8 zone indicating units-for each fire Indicating unit. Up to 4 detectors circuits (zones) on each zone indicating unit. Each detector circuit (zone) has up to 12 detectors.

When products of combustion are detected a flashing lamp on the detector base is turned on. The zone lamp for the zone covering that detector will come on. The Red "Alarm" lamp on the fire indicating unit will come on. The statalarm in the control room will come on.

In the event of a failure in the system which makes the system inoperative, an amber "Trouble" lamp will come on, a buzzer will sound and the statalarm will come on.

FIRE DETECTION SYSTEM - Accessible Detectors

The purpose of this fire detection system is to detect visible and/or invisible smoke or other products of combustion in any space covered by detectors.

The principal parts of this system include; Fire indicating unit, Zone indication units and detectors, with up to 8 zone indicating units for each fire indicating unit. Up to 4 detector circuits (zones) are on each zone indicating unit. Each detector circuit (zone) has up to 99 detectors.

When products of combustion are detected a red "LED" on the Honeywell detector will come on. The zone lamp for that detector will come on. The Red "Alarm" lamp on the fire indicating unit will come on. The statalarm in the control room will come on.

In the event of a failure in the system which makes the system inoperative, an amber "Trouble" lamp on the Honeywell will come on, a buzzer will sound and the statalarm will come on.

FIGURE H-9

DUKE ENERGY COMPANY OCONEE NUCLEAR STATION

NORMAL ENVIRONMENTAL MONITORING PROGRAM

ONSITE/OFFSITE TLD LOCATIONS

See: Oconee Offsite Dose Calculation Manual

FIGURE H-10

DUKE ENERGY COMPANY OCONEE NUCLEAR STATION

NORMAL ENVIRONMENTAL MONITORING PROGRAM

AIR SAMPLE LOCATIONS

OFFSITE LOCATIONS

See: Oconee Offsite Dose Calculation Manual

FIGURE H-11

DUKE ENERGY COMPANY OCONEE NUCLEAR STATION

COUNT ROOM EQUIPMENT (ONSITE)

INSTRUMENT TYPE	DESCRIPTION
Canberra 9900 Gamma Spectroscopy System	Computer based gamma spectroscopy system with solid state germanium detectors for analysis of various sample media.
Canberra 9900/WBC6000 Body Burden Analyzer and Nuclear Data people mover	Computer based gamma spectroscopy system with three sodium detectors mounted in a shielded chair which can analyze the thyroid, lungs, and lower torso simultaneously, along with a stand-up total body analyzer using large sodium iodine detectors.
Tennelec APC Automatic Smear Counter	An automatic smear counter using a GM detector which performs beta only analyses on up to 50 smears.
Packard Liquid Scintillator	Multiple sample liquid scintillation analysis systems that detect and quantify H-3 and gross beta using a computer to correct for quench and activity.
Tennelec Alpha Scintillator	An automatic smear counter using a zinc sulfide scintillator detector to detect alpha only. Analyzes up to 50 smears/air samples at a time.
Tennelec Series V XLB Proportional Smear Counter	An automatic smear counter using a gas flow proportional detector. This instrument performs alpha and beta analyses.

FIGURE H-12

**DUKE ENERGY COMPANY
OCONEE NUCLEAR STATION**

CONTENTS OF EMERGENCY KITS FOR FIELD MONITORING TEAMS

(Location World of Energy)

SEE HP/0/B/1009/001

FIGURE H-13

**DUKE ENERGY COMPANY
OCONEE NUCLEAR STATION**

EMERGENCY KIT INVENTORY SHEET

Control Room Locations

See HP/0/B/1009/001

FIGURE H-14

**DUKE ENERGY COMPANY
OCONEE NUCLEAR STATION**

EMERGENCY KIT INVENTORY SHEET

Respiratory Equipment

See HP/0/B/1009/001

FIGURE H-15

**DUKE ENERGY COMPANY
OCONEE NUCLEAR STATION**

EMERGENCY SUPPLIES INVENTORY LIST

Technical Support Center

Operational Support Center

Emergency Operation Facility

See PT/0/B/2000/008 and ST/0/A/4600/086

|

FIGURE H-16

**DUKE ENERGY COMPANY
OCONEE NUCLEAR STATION**

EMERGENCY CABINET INVENTORY SHEET

INPLANT SURVEILLANCE EQUIPMENT

(WORLD OF ENERGY)

SEE HP/0/B/1009/001

FIGURE H-17

**DUKE ENERGY COMPANY
OCONEE NUCLEAR STATION**

INVENTORY LIST FOR OPERATIONAL SUPPORT CENTER

EMERGENCY CABINET

See HP/0/B/1009/001

FIGURE H-18

DUKE ENERGY COMPANY OCONEE NUCLEAR STATION

SEISMIC INSTRUMENTATION PROGRAM

SEISMIC EQUIPMENT	UNIT 1 CABLE ROOM	UNIT 1 TENDON ACCESS GALLERY	UNIT 1 REACTOR BUILDING
Seismic Trigger (1) (Setpoint .05g and actuates a statalarm and computer alarm in Control Room 1 & 3. Also actuates Unit 1 & 2 Events Recorder.		x	
<u>STRONG-MOTION ACCELEROGRAPH SYSTEM.</u> <u>Starter (1)</u> Setpoint .01g for 1 sec will actuate accelerometers and recorders on Control Panel. Also actuates a computer alarm in Control Room 1.		x	
<u>Accelerometers (2)</u> Actuates recorders on Control Panel at .01g for 1 sec		x	x
<u>Recorders (2)</u> Records for 10 additional sec following completion of seismic events up to 30 minutes	x		
<u>Control Panel (1)</u> Event alarm-alarm light turns yellow to indicate system is recording approximately 10 sec. Event Indicator-normally black but after an event is recorded, it is white	x		
<u>PEAK ACCELERATION RECORDER (6)</u> Records the peak acceleration experienced. Capability to measure up to 2g. Uses no power supply.		x	x

FIGURE H-19

DUKE ENERGY COMPANY OCONEE NUCLEAR STATION

SPILL CONTROL EQUIPMENT/SUPPLIES

SEE THE FOLLOWING PROCEDURES/DOCUMENTS:

Emergency Planning:

PT/0/B/0250/045
PT/0/B/0250/030
ONS Prefire Plan

Chemistry:

CP/0/B/2001/008

Safety Assurance:

Spill Prevention Control Countermeasures Plan (SPCC)

FIGURE H-20

DUKE ENERGY COMPANY OCONEE NUCLEAR STATION

SURVEYS

Emergency	Control Room Instrumentation	In Station Radiological	Site and Site Boundary	Environs
Unusual	X	X	*	*
Alert	X	X	X	*
Site Area	X	X	X	X
General	X	X	X	X

* Conducted in the event effluent technical specifications are exceeded.

J. PROTECTIVE RESPONSE

To assure that a range of protective actions is available for the plume exposure pathway for emergency workers and the public. Guidelines for protective actions during an emergency, consistent with Federal guidance, are developed and in place and protective actions for the ingestion exposure pathway appropriate to the locale have been developed.

To protect onsite personnel during hostile action and ensure the continued ability to safely shutdown the reactor and perform the functions of the emergency plan a range of protective actions are in place.

J. 1 Accountability

The Oconee Nuclear Site has a Site Assembly Procedure that gives specific instructions to follow during a site assembly. Also, each division/section has specific directives that provide guidance for their personnel. (Site Assembly locations, Figure J-5)

Methods to notify and alert onsite personnel (essential and non-essential) during hostile action activities are described in AP/0/A/1700/045, "Site Security Threats". RP/0/A/1000/010 "Procedure for Emergency Evacuation/Relocation of Site Personnel". RP/0/A/1000/009, "Procedure for Site Assembly".

J. 2 Relocation Assembly Areas and Evacuation Routes

Should it be determined that non-essential personnel would need to be relocated onsite or evacuated from the site, procedures are in place to handle this process. Agreements have been reached with local authorities for the use of the Oconee and Pickens school facilities for evacuation of personnel. (Appendix 5)

Site directives and procedures establish onsite relocation areas as well as evacuation routes (Figure J-2) to suitable offsite locations.

J. 3 Site Evacuation Procedures - Personnel

The site evacuation procedure establishes guidelines for evacuation from the station site. This procedure outlines the radiological exposure limits. All station personnel inside the protected area will be monitored before being evacuated from the station. Records will be kept of the individual's exposure/contamination level prior to evacuation. All personnel, so designated, will then be evacuated to pre-designated areas for thorough personnel monitoring and decontamination.

Records will be kept for the station and personnel files. All personnel will be required to sign a copy of the monitor readings that will be recorded in personnel files. (Figures J-3, J-4)

During hostile threat conditions relocation of personnel away from the hazard areas are performed in accordance with AP/0/A/1700/045, "Site Security Threats". RP/0/A/1000/010, "Procedure for Emergency Evacuation/Relocation of Site Personnel". RP/0/A/1000/009, "Procedure for Site Assembly".

J. 4 Site Evacuation Procedures-Decontamination/Non Essential/Essential Personnel Criteria

Personnel who have been determined to be non-essential may be evacuated from the plant site in the event of a Site Area Emergency Classification. However, non-essential personnel are always evacuated from the site during a General Emergency Classification. Provisions are made for the decontamination of vehicles and personnel at an offsite location if the situation should warrant that to be necessary.

EPZ - Population Alerting and Notification

See Oconee County FNF Plans.

See Pickens County FNF Plans.

See State of South Carolina FNF Plans, Site Specific.

See Appendix 3.

J.5 Site Evacuation Procedures-Personnel Accountability

&

J.6 Within thirty minutes of a Site Assembly, all persons at the Oconee Nuclear Station shall be accounted for and any person(s) determined to be missing from their control station, will be identified by name. To assist in the location of missing person(s), the Emergency Coordinator will appoint a Search and Rescue Team. Search procedures will be coordinated through the Operational Support Center.

After all non-essential personnel have been evacuated from the site, logsheets will be kept by Radiation Protection personnel in the Operational Support Center of all persons onsite together with their Radiation Protection records to include the following:

- a. Individual respiratory protection
- b. Protective clothing
- c. Use of Radioprotective drugs

During hostile threat conditions personnel accountability is performed in accordance with AP/0/A/1700/045, "Site Security Threats" and RP/0/A/1000/009, "Procedure for Site Assembly".

J. 7 Protective Actions Recommendations

The Emergency Coordinator (Operations Shift Manager or Station Manager) or the EOF Director (depending on the facility activation) will be responsible for contacting the State and/or local governments to give prompt notification for implementing protective measures within the plume exposure pathway, and beyond it if necessary. Procedure RP/0/A/1000/024, "Protective Action Recommendations" and SR/0/A/2000/003, "Activation of the Emergency Operations Facility" has been written to provide specific guidance for issuing protective action recommendations under various plant conditions to the Emergency Coordinator in the TSC and the EOF Director in the EOF Figure (J-1) respectively. The decision to use sheltering as an alternative to evacuation for impediments and special populations is one that will be made by offsite officials. If dose projections show that PAGs have been exceeded at 10 miles, the dose assessment code and in-field measurements, when available, shall be used to calculate doses at various distances down wind to determine how far from the site PAG levels are exceeded. The Radiological Assessment Manager shall forward the results to the EOF Director who will communicate this information to the offsite authorities.

Figure J-1A (Protective Action Guides) is adopted from EPA 400 and guidance in state plans on use of KI and considers protective action based on projected avoided dose.

Per Appendix 2, initial protective actions are predetermined for Control Room use for general emergency conditions. Meteorological conditions at Oconee require a complex method for determining appropriate sectors to evacuate. The Control Room will evacuate out to five miles and shelter out to ten miles which will simplify the process for determining the appropriate sectors to evacuate and to shelter.

J. 8 Evacuation Time Estimates

A description of the methods and assumptions used in developing the analysis of evacuation time estimates is included in the current Evacuation Time Estimate Study for the Oconee Nuclear Site. (ONS-ETE-12142012, Rev. 000; ONS Evacuation Time Estimates (ETE) Dated 12/14/2012.) The Evacuation Time Estimates will be considered in evaluating protective action recommendations from the Technical Support Center or the Emergency Operations Facility. A copy of the most recent study is available in the Technical Support Center and the Emergency Operations Facility.

An updated ETE analysis will be submitted to the NRC under §50.4 no later than 365 days after ONS determination that the criteria for updating the ETE have been met and at least 180 days before using it to form protective action recommendations and providing it to State and local governmental authorities for use in developing offsite protective action strategies.

The criteria for determination that an updated ETE analysis have been met:

- a. The availability of the most recent decennial census data from the U.S. Census Bureau;
- OR
- b. If at any time during the decennial period, the EPZ permanent resident population increases such that it causes the longest ETE value for the 2-mile zone or 5-mile zone, including all affected Emergency Response Planning Areas, or for the entire 10-mile EPZ to increase by 25 percent or 30 minutes, whichever is less, from the currently NRC approved or updated ETE.

During the years between decennial censuses ONS will estimate EPZ permanent resident population changes once a year, but no later than 365 days from the date of the previous estimate, using the most recent U.S. Census Bureau annual resident population estimate and State/local government population data, if available. ONS will maintain these estimates so that they are available for NRC inspection during the period between decennial censuses and shall submit these estimates to the NRC with any updated ETE analysis.

ONS' ETE analysis, using the 2010 decennial census data from the U.S. Census Bureau, was submitted to the NRC via §50.4 on December 14, 2012.

J.9 Implementing Protective Measures

See Pickens County FNF Plans.
See Oconee County FNF Plan.
See State of South Carolina FNF Plans, Site Specific.

For hostile action events, a range of protective actions for onsite workers including evacuation of essential personnel from potential target buildings, timely evacuation or relocation of non-essential site personnel, dispersal of critical personnel to safe locations, sheltering of personnel away from potential site targets and accountability of personnel after the attack are provided in emergency plan implementing procedures AP/0/A/1700/045, "Site Security Threats", RP/0/A/1000/010, "Procedure for Emergency Evacuation/Relocation of Site Personnel", RP/0/A/1000/009, "Procedure for Site Assembly".

J.10 Implementation of Protective Measures for Plume Exposure Pathway

J.10.a EPZ - Maps of Oconee EPZ.
See Figure A, page i-5.

J.10.b EPZ - Population Distribution Charts
See Appendix 4 Evacuation Time Estimates

J.10.c EPZ - Population Alerting and Notification

See Oconee County FNF Plans.
See Pickens County FNF Plans.
See State of South Carolina FNF Plans, Site Specific.

See Appendix 3.

J.10.d EPZ - Protecting Immobile Persons

See Oconee County FNF Plans.
See Pickens County FNF Plans.
See State of South Carolina FNF Plans, Site Specific.

J.10.e Use of Radioprotective Drugs for Persons in EPZ

See Oconee County FNF Plans.
See Pickens County FNF Plans.
See State of South Carolina Operational Radiological Emergency
Response Plan - SCOREP, (FNF Plans, Site Specific).

J.10.f Conditions For Use of Radioprotective Drugs

See Oconee County FNF Plans.
See Pickens County FNF Plans.
See State of South Carolina SCOREP, (FNF Plans, Site Specific).

J.10.g Means of Relocation and
J.10.h State/County Relocation Center Plans

See Oconee County FNF Plans.
See Pickens County FNF Plans.
See State of South Carolina FNF Plans, Site Specific.

- J.10.i Evacuation Route - Traffic Conditions
- See Oconee County FNF Plans.
See Pickens County FNF Plans.
See State of South Carolina FNF Plans, Site Specific.
- J.10.j Evacuated Area Access Control
- See Oconee County FNF Plans.
See Pickens County FNF Plans.
See State of South Carolina FNF Plans, Site Specific.
- J.10.k Planning for Contingencies in Evacuation
- See Oconee County FNF Plans.
See Pickens County FNF Plans.
See State of South Carolina FNF Plans, Site Specific.
- J.10.l State/County Evacuation Time Estimates
- See Oconee County FNF Plans.
See Pickens County FNF Plans.
See State of South Carolina FNF Plans, Site Specific.
- J.10.m Bases for Protective Action Recommendations
- DUKE ENERGY uses the following considerations in determining protective action recommendations:
- 1) Protective Action Guides (PAG)
 - 2) Core Condition
- See State of South Carolina FNF Plan, Site Specific
- J.11 Ingestion Pathway Planning:
- See State of South Carolina FNF Plans.
See State of Georgia FNF Plans.
See State of North Carolina FNF Plans.
- J. 12 Relocation Center - Registering: & Monitoring
- See Oconee County FNF Plans.
See Pickens County FNF Plans.
See State of South Carolina FNF Plans.

FIGURE J-1

DUKE ENERGY COMPANY OCONEE NUCLEAR SITE

PROTECTIVE ACTION RECOMMENDATION FLOW CHART

CONDITION	FUEL DAMAGE SYMPTOMS	CONTAINMENT STATUS	PROTECTIVE ACTION RECOMENDED
General Emergency Declared	<ul style="list-style-type: none"> ◆ Loss of critical functions required for core protection ◆ High CETCs ◆ RB High rad levels 	Not applicable	Evacuate 2- mile radius and 5- miles downwind unless conditions make evacuation dangerous. (See Note 1). Shelter any sector not evacuated.
Additional protective recommendations will be based on the following conditions from either the Technical Support Center or the Emergency Operations Facility. TSC or the EOF shall continue assessment based on all available plant and field monitoring information. Modify protective actions as necessary. Locate and evacuate people from hot spots. Do not relax protective actions until the source of the threat is clearly under control.			
Fuel Damage Detected by Monitors	<ul style="list-style-type: none"> ◆ High rad levels as determined by Reactor Building and unit vent monitors 	Known containment breach or RB pressure greater than 1 PSIG	<p>Dose calculations required to determine additional evacuation requirements and recommendations on use of stable iodine.</p> <p>Shelter any sector not evacuated.</p>
Condition 2 failed fuel as determined by RP/0/B/1000/018	<ul style="list-style-type: none"> ◆ RB high rad levels ◆ H-2 increasing ◆ Clad >1200° F 	No credit is taken for containment.	Evacuate 5-mile radius and 10-miles downwind. Shelter any sector not evacuated.

Note 1. Dangerous travel conditions or immobile infirmed population.

FIGURE J-1A

DUKE ENERGY COMPANY OCONEE NUCLEAR SITE

PROTECTIVE ACTION GUIDES

Protective Action	Recommended Actions	Comments
Evacuation	1-5 rem TEDE from significant external and internal exposure from gamma radiation from the plume and from deposited material	Although the PAG is expressed as a range, under normal conditions evacuation of the public is usually justified when the projected dose to an individual is one rem.
Evacuation	5-25 rem thyroid CDE from significant inhalation of activity in the plume	Although the PAG is expressed as a range, under normal conditions evacuation of the public is usually justified when the projected dose to an individual is five rem.
Administration of stable iodine (e.g. KI)	5 rem thyroid CDE from radioiodine	Duke Energy will recommend that offsite agencies consider the use of KI at 5 rem thyroid CDE.

Sheltering Concepts:

Duke Energy will make evacuation recommendations to the offsite agencies. However, if hazardous environmental conditions exists, Oconee emergency personnel will provide information (plant status, release magnitude, release duration, consequences) for the offsite agencies to use in making their decisions as to whether or not the public will be evacuated or sheltered.

FIGURE J-2

DUKE ENERGY COMPANY
OCONEE NUCLEAR SITE
EVACUATION ROUTES CHART

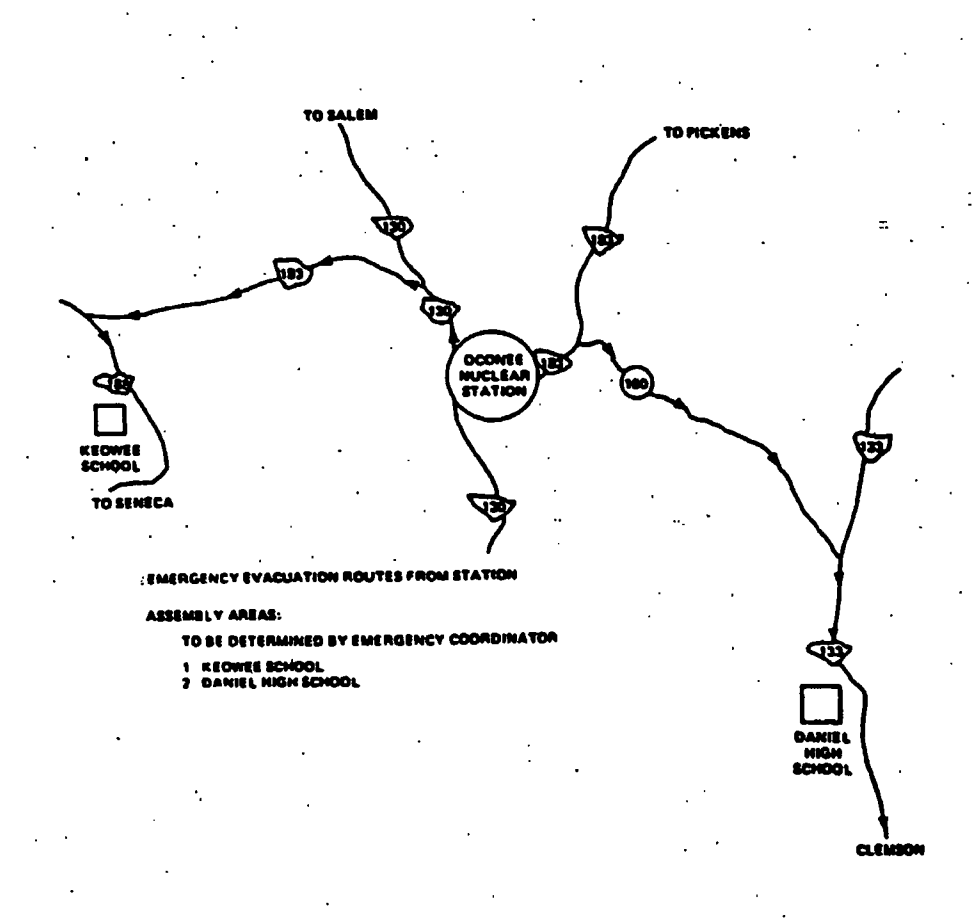


FIGURE J-3

DUKE ENERGY COMPANY OCONEE NUCLEAR SITE

INDIVIDUAL CONTAMINATION EXPOSURE LEVELS

LICENSEE: DUKE ENERGY COMPANY

IDENTIFICATION INFORMATION

Name: _____ Date: _____

Social Security Number _____ Time: _____

Employer: _____ R.P. Badge _____

CONTAMINATION EXPOSURE LEVELS

Instrument Used: _____ Instrument Reading: _____
(RM-14 with thin window detector or equivalent)

Date: _____ Employee Signature: _____

Remarks: _____

Address: _____

To the individual named above _____, this report is furnished to you
so that you have a prompt record of your radioactive contamination level.

Radiation Protection Manager

Date: _____

Copies to:
Individual
Individual File
(New Form)

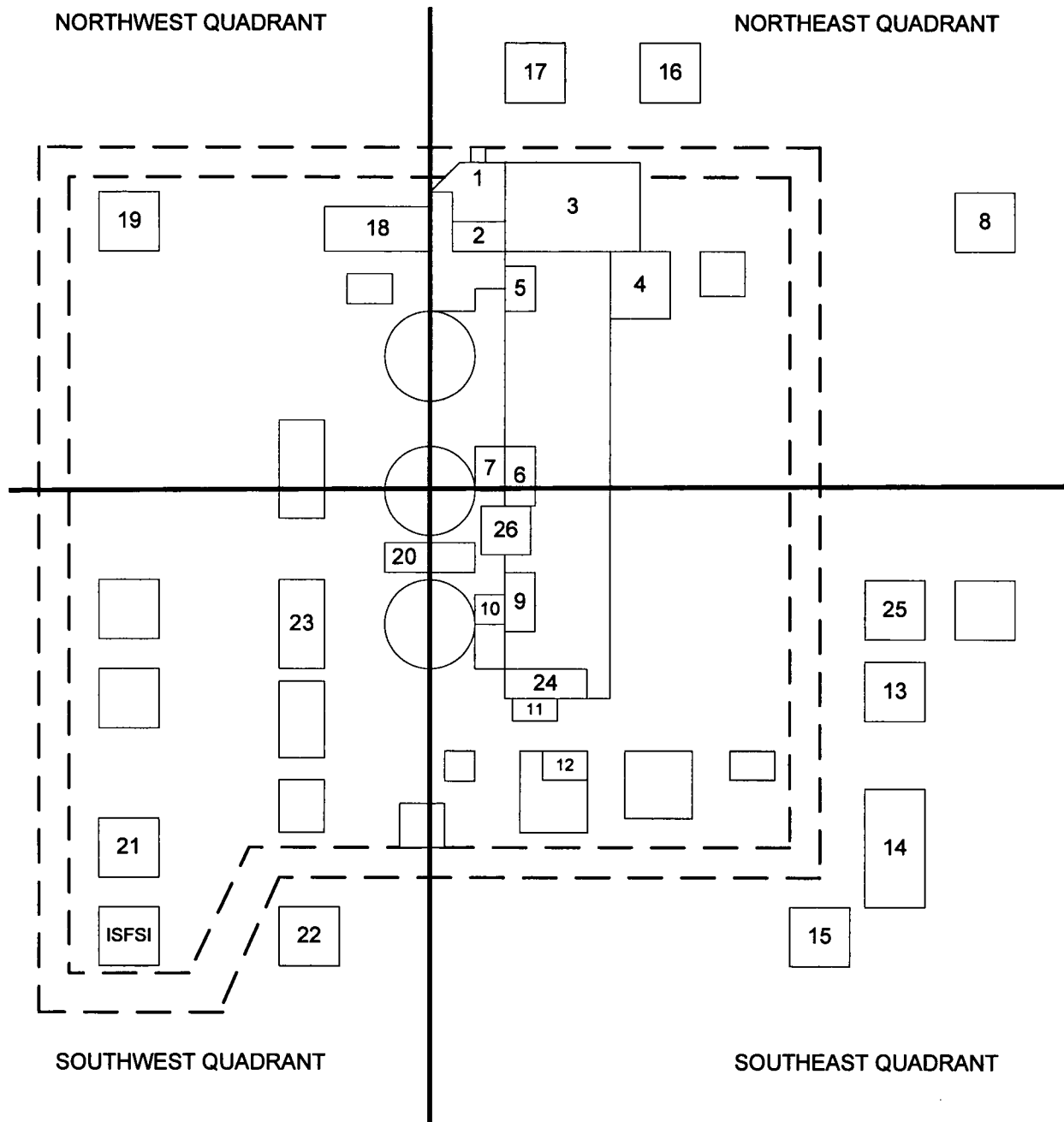
FIGURE J-4

DUKE ENERGY COMPANY OCONEE NUCLEAR SITE

INITIAL PERSONNEL CONTAMINATION RECORD (ONSITE)

NAME	RP BADGE NUMBER	INITIAL DOSE RATE (mRad/hr)	DOSE RATE (mRad/hr) After Decon

FIGURE J-5
Oconee Nuclear Site
Building Layout



NORTHWEST QUADRANT	NORTHEAST QUADRANT
<p>18. Administrating Building 19. Oconee Office Building</p> <p><u>SOUTHWEST QUADRANT</u> 20. RP Assembly Building 21. Interim Outage Building 22. Operations Center (Geo-Technical Ctr.) 23. Warehouse Offices</p> <p><u>SOUTHEAST QUADRANT</u> 9. Turbine Bd. 3 Offices 10. Unit 3 CR 11. Technical Support Bd. 12. Radwaste Facility 13. Oconee Garage</p> <p>14. Oconee Complex 15. L-1 Storage Yard 24. Turbine Bd. South Offices 25. Maintenance Training Facility 26. SPA, RP Assembly Area</p>	<p>1. Security Building 2. Locker Building 3. Maintenance Service Bd./Clean Machine Shop 4. Maintenance Support Building 5. Turbine Building North Offices 6. Turbine Building 1&2 Offices/WCC 7. Unit 1&2 Control Room 8. Keowee Hydro Station 16. World of Energy 17. Oconee Training Center</p>

M. RECOVERY AND REENTRY PLANNING AND POST-ACCIDENT OPERATIONS

M.1 Reentry/Recovery Plans and Procedures

After the EOF is activated, it is the EOF Director's responsibility to determine when it is appropriate to enter into Recovery and to terminate from an emergency event. Emergency Plan procedures identify criteria that must be addressed before terminating the emergency condition and initiating recovery operations. The decision to terminate from a General Emergency condition must be discussed with the Senior NRC and State(s) representatives.

Decisions to relax protective actions for the public will be made by the appropriate State representatives. The EOF Director will provide information to the appropriate State agencies to facilitate the decision.

Recovery from a serious emergency situation is guided by the following principles:

The protection of the public health and safety is the foremost consideration in formulating recovery plans.

Public officials would be kept informed of recovery plans so that they can properly carry out their responsibilities to the public,

Periodic information would be provided to the news media so that they can provide information to the public regarding recovery plans and progress made.

Periodic status reports would be given to company employees at other locations and to government and industry representatives.

Reentry Planning

The plans and procedures for area reentry will consider existing as well as potential conditions inside containment. Prior to reentry, the following actions shall be taken.

1. Review all available radiation survey data.
2. Determine site areas potentially affected by radiological hazards.

3. Review radiation dose history of all personnel scheduled to participate in recovery operations. Determine the need for additional personnel. The radiation doses to employees and other radiation workers would be kept as low as reasonably achievable.
4. Review the adequacy of radiation survey equipment available. Determine the need for additional equipment and a source of procurement.
5. Preplan team activities, including areas to be surveyed, anticipated radiation levels, survey equipment required, protective clothing requirements, access control procedures, dose control procedures and communication capabilities.
6. Conduct comprehensive radiation survey of site facilities and define all radiological problem areas.
7. Isolate and post with appropriate warning signs all radiation and contamination areas.
8. Perform visual inspection of site areas and equipment.
9. All radiological conditions discovered and existing in the facility as determined by the reentry survey will be evaluated by site management.
10. Upon evaluation of the radiological condition, site management will determine what procedures are required to restore the site to a normal status.
11. Personnel radiation dose will be closely controlled and documented.
12. Recovery coordinators will take appropriate actions to ensure emergency personnel and equipment are properly monitored and controlled prior to leaving the radiation control area. Radiological conditions at the scene of the emergency should be properly defined, barricaded, and posted with appropriate signs.

M.2 Recovery Organization

Before entering the recovery phase, the EOF Director and the Emergency Coordinator shall establish a Recovery organization that is appropriate for the existing on-site and off-site conditions. Figure M-1 and M-2 describe suggested organization structures. They may be modified or supplemented as necessary to fit the particular circumstances. In some situations (such as no core damage), the normal onsite outage organization is adequate and the need for an offsite recovery organization is not anticipated.

M.3 Initiation of Recovery Operation - Radiological

Guidance concerning recovery operations are provided in the following procedures:

TSC/OSC - RP/0/A/1000/019, RP/0/B/1000/027

EOF - SR/0/B/2000/003

JIC - RP/0/B/1000/031 (Note: Information carried in plan has now been placed in this procedure)

Initiation of Recovery Operation - Hazardous Wastes/Materials

Recovery will be provided as directed by Oconee Environmental Work Practice, Section 2.0.

M.4 Total Population Exposure Estimates

The Radiological Assessment Group will periodically update the estimate of total population exposure.

FIGURE M-1
DUKE ENERGY COMPANY
OCONEE NUCLEAR STATION

ONSITE RECOVERY ORGANIZATION

RECOVERY ORGANIZATION (ONSITE)

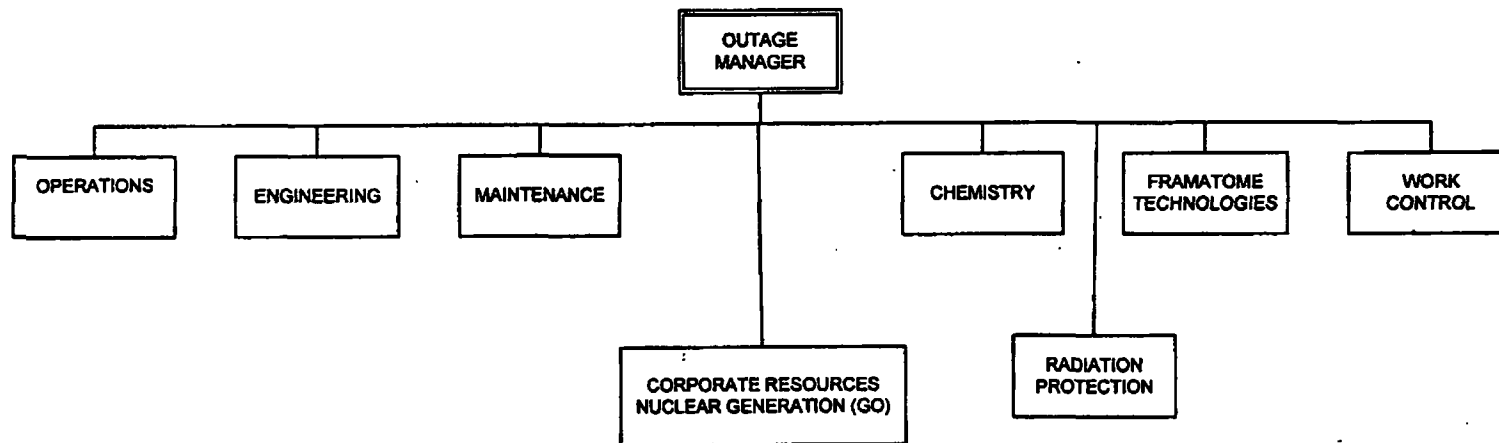
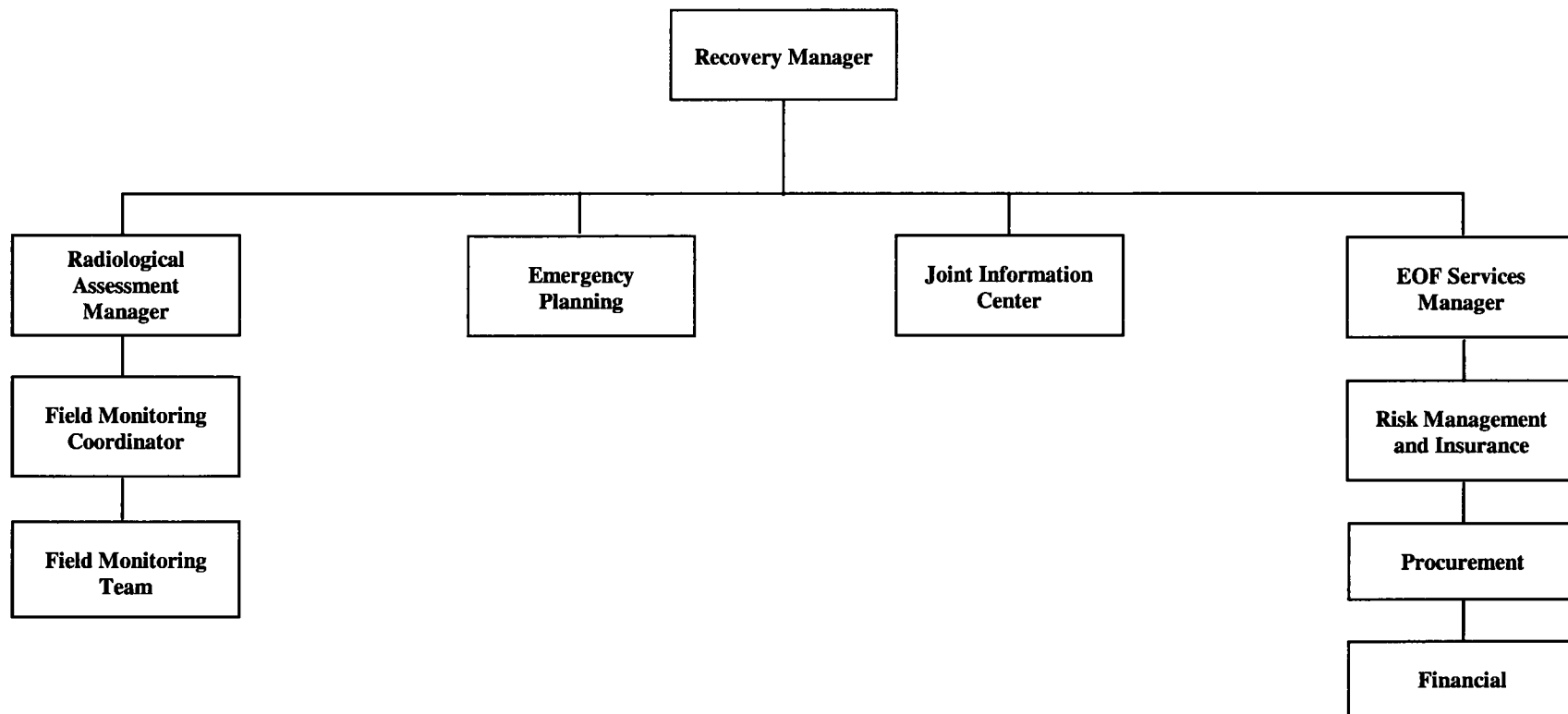


FIGURE M-2
DUKE ENERGY COMPANY
OCONEE NUCLEAR STATION
OFFSITE RECOVERY ORGANIZATION



P. Responsibility for the Planning Effort: Development, Periodic Review and Distribution of the Emergency Plans

To assure that responsibilities for plan development, review and distribution of emergency plans are established and that planners are properly trained:

P.1 Training for Emergency Planning Personnel

Training for emergency planning personnel shall be provided in the form of workshop/seminar sessions on an annual basis. Courses developed by the Duke Training Center are also available in technically related subjects that will enhance the working knowledge of these people.

P.2 & P.3 Overall Authority

The Site Vice-President has the overall authority and responsibility for all hazards emergency response planning. The planning effort is delegated to the Manager, Emergency Planning.

The Manager of Emergency Planning at the Oconee Nuclear Site shall have the responsibility for the development, review and coordination of the site emergency plans with other response organizations and shall be responsible for conducting the biennial exercise, drills and training sessions to test the Oconee Nuclear Site Emergency Plan. This person is employed in the Safety Assurance Group.

P.4 & P.5 Review and Update of Emergency Plan

The ONS Emergency Plan shall be reviewed and updated annually. An in-depth review of the Emergency Plan will be made to determine if any/all changes have been made as a result of drills, exercises, commitments, audits, new regulatory requirements, and any other identified mechanism used to determine the appropriateness of the Emergency Plan. The Manager of Emergency Planning or designee is responsible for conducting the review and updating/revising the Emergency Plan and/or Implementing Procedures, as required. Once the review has been completed and changes made as determined, the Emergency Plan shall be certified as current.

Approved revisions of the Emergency Plan and Implementing Procedures shall be distributed according to Appendix 6, (Distribution of Emergency Plan and Implementing Procedures). Appendix 6 carries an itemized list of all organizations and individuals receiving copies of the Emergency Plan and Implementing Procedures. Revised pages of the Emergency Plan shall be dated and marked to show where changes have been made.

P.6 Supporting: Plans

Figure P-2 lists plans in support of the ONS Emergency Plan.

P.7 Implementing Procedures

Written procedures will be established, implemented and maintained covering the activities associated with emergency plan implementation. Each procedure and changes thereto, shall be approved by the responsible manager prior to implementation.

Implementing procedures are indexed and cross referenced to the section applicable in NUREG 0654. (Figure P-1)

P.8 Table of Contents

The Oconee Nuclear Site Emergency Plan and Implementing Procedures contain a table of contents and an index tab system.

P.9 Independent Audit

The Nuclear Safety Review Board Chairman will arrange for an independent review of Oconee Nuclear Station's Emergency Preparedness Program as necessary, based on an assessment against performance indicators, and as soon as reasonably practicable after a change occurs in personnel, procedures, equipment, or facilities that potentially could adversely affect emergency preparedness, but no longer than 12 months after the change. In any case, all elements of the emergency preparedness program will be reviewed at least once every 24 months. Guidance for performing the assessment against the performance indicators is provided in the Emergency Preparedness Administrative Procedure AD-EP-ALL-0001. The independent review will be conducted by the Independent Nuclear Oversight Division, which will include the following plans, procedures, training programs, drills/exercises, equipment, and State/local government interfaces:

1. Oconee Nuclear Station Emergency Plan
2. Oconee Nuclear Station Emergency Plan Implementing Procedures
3. State/Local Support Agency Training Program
4. Site Emergency Response Training Program
5. Public & Media Training/Awareness
6. Equipment: Communications, Monitoring, Meteorological, Public Alerting
7. State/Local Plan Interface

The review findings will be submitted to the appropriate corporate and nuclear site management. The part of the review involving the evaluation of the adequacy of interface with State and local governments will be reported to the appropriate State and local governments. Corporate or nuclear site management, as appropriate, will evaluate the findings affecting their area of responsibility and ensure effective corrective actions are taken. The results of the review, along with recommendations for improvements, will be documented, and retained for a period of five (5) years.

The review findings will be submitted to the appropriate corporate and nuclear site management. Appropriate portions of the review findings will be reported to the involved federal, state, and local organizations. The corporate or nuclear site management, as appropriate, will evaluate the findings affecting their area of responsibility and ensure effective corrective actions are taken. The result of the review, along with recommendations for improvements, will be documented and retained for a period of five years.

P.10 Phone Number Update

The Emergency Telephone Directory is updated quarterly. The Emergency Telephone Directory is a separate document and is not a part of the Oconee Nuclear Site Implementing Procedures.

FIGURE P-1

DUKE ENERGY COMPANY OCONEE NUCLEAR STATION

IMPLEMENTING PLAN CROSS REFERENCE

A.1.a	Appendix 5 - Agreement Letters	
A.1.b	RP/0/A/1000/002, RP/0/A/1000/019, SR/0/A/2000/003, RP/0/A/1000/025, SAD 6.1	
A.2.a	Appendix 5 - Agreement Letters	
B.1	CSM 5.1, MD 9.1, WPG 1.5, OMP 1-7, RPSM 11.1, Business Management Emergency Plan, SSG-102, NSC-110, EM-5.1, DTG-007	
B.4	SAD 6.1, RP/0/A/1000/019, RP/0/A/1000/002, SR/0/B/2000/003	
B.5	RP/0/A/1000/019, RP/0/A/1000/025, SR/0/B/2000/003	
C.1	RP/0/B/1000/031, Appendix 5 - Agreement Letters	
D.1.a	RP/0/A/1000/002, RP/0/A/1000/019, SR/0/A/2000/003	
D.1.b	RP/0/A/1000/002, RP/0/A/1000/019, SR/0/A/2000/003, AP/0/A/1700/045	
D.1.c	RP/0/A/1000/002, RP/0/A/1000/019, SR/0/A/2000/003, AP/0/A/1700/045	
D.1.d	RP/0/A/1000/002, RP/0/A/1000/019, SR/0/A/2000/003, AP/0/A/1700/045	
E.1	RP/0/A/1000/002	
E.2	Division/Section Directives	
E.3	RP/0/A/1000/015 A, RP/0/A/1000/015 B, SR/0/B/2000/004, RP/0/A/1000/001, RP/0/A/1000/002, RP/0/A/1000/019, SR/0/A/2000/003	
E.6	EP Functional Area Manual 3.3	

FIGURE P-1

DUKE ENERGY COMPANY OCONEE NUCLEAR STATION

E.7	RP/0/A/1000/024, SR/0/A/2000/003	
E.8	RP/0/A/1000/017	
F.1.a	RP/0/A/1000/002	
F.1.e	Division/Section Directives	
F.2	RP/0/A/1000/001	
G.3a	SR/0/B/2000/001, RP/0/A/1000/028	
H.1	RP/0/A/1000/002	
H.4	RP/0/A/1000/002, RP/0/A/1000/019, SR/0/A/2000/003	
H.7	HP/0/B/1009/023	
H.8	HP/0/B/1009/018, SH/0/B/2005/001, IP/0/B/1601/003	
H.12	HP/0/B/1009/023, SH/0/B/2005/002	
I.1	RP/0/A/1000/010	
I.2	HP/0/B/1009/015, HP/0/B/1009/009, HP/0/B/1009/018, CSM 5.2, CP/1,2,3/A/2002/002, RP/0/B/1000/018, SH/0/B/2005/001, SH/0/B/2005/002, HP/0/B/1009/026	
I.3.a	RP/0/A/1000/024, RP/0/A/1000/001, HP/0/B/1009/022	
I.3.b	HP/0/B/1009/018, HP/0/B/1009/022, SH/0/B/2005/001	
I.4	RP/0/A/1000/001, HP/0/B/1009/018, HP/0/B/1009/022, SH/0/B/2005/001	
I.5	RP/0/A/1000/001	
I.6	RP/0/A/1000/001, HP/0/B/1009/018, SH/0/B/2005/001	
I.7 & 8	SH/0/B/2005/002, HP/0/B/1009/026	
I.9	SH/0/B/2005/002, HP/0/B/1009/026	

FIGURE P-1

DUKE ENERGY COMPANY OCONEE NUCLEAR STATION

I.10	HP/0/B/1009/018, SH/0/B/2005/001
J.1	RP/0/A/1000/009
J.2	HP/0/B/1009/016, HP/0/B/1009/018, HP/0/B/1009/009, SH/0/B/2005/001
J.3	HP/0/B/1009/016, HP/0/B/1009/018, RP/0/A/1000/010, Site Directive, SH/0/B/2005/001
J.4	HP/0/B/1009/016, HP/0/B/1009/018, SH/0/B/2005/001
J.5	HP/0/B/1009/009
J.6	Radiation Protection Manual, SH/0/B/2005/003
J.7	RP/0/A/1000/024, SH/0/B/2000/003
J.10.a	Radiation Protection Manual
J.10.e	SH/0/B/2005/003
J.10.m	RP/0/A/1000/024, SR/0/A/2000/003
K.2	RP/0/B/1000/011
K.3.a	Radiation Protection Manual
K.5.a	Radiation Protection Manual
K.5.b	Radiation Protection Manual
K.7	HP/0/B/1009/018, HP/0/B/1009/016, SH/0/B/2005/001
L.2	RP/0/B/1000/016

FIGURE P-1

DUKE ENERGY COMPANY OCONEE NUCLEAR SITE

L.4	RP/0/B/1000/016
O.1	Oconee Training Division Training Guide ERTG-001
O.2	Oconee Training Division Training Guide ERTG-001
O.3	Security Training Plan, Oconee Training Division Training Guide ERTG-001
P.9	AD-EP-ALL-0001, Emergency Preparedness Key Performance Indicators
Appendix 4	Evacuation Time Estimates
Appendix 5	Letters of Agreement
Appendix 6	Distribution List
Appendix 7	Data System
Appendix 8	SPCC Plan (Spill Prevention Control And Countermeasure Plan)
Appendix 9	Oconee Nuclear Station Chemical Treatment Ponds 1, 2 and 3, Groundwater Monitoring Sampling And Analysis Plan
Appendix 10	Hazardous Materials Response Plan

FIGURE P-2

DUKE ENERGY COMPANY OCONEE NUCLEAR SITE

SUPPORTING PLANS

State of South Carolina

Oconee County

Pickens County

DOE-IRAP Plan

INPO-Fixed Facility Agreement

NRC Region II

APPENDIX 2

DUKE ENERGY COMPANY OCONEE NUCLEAR SITE

Meteorology And Offsite Dose Assessment Program

I. Meteorological Instrumentation (Figure H-4)

Basic meteorological parameters (wind speed, wind direction and delta temperature) averaged over a 15-minute period of time are available in each control room and in the Technical Support Center through a computer display. This information is also available to the Emergency Operations Facility and the Nuclear Regulatory Commission through the Emergency Response Data System (ERDS).

Meteorological data for dose calculation consists of a primary digital recording/storage system and a secondary data chart recording system both of which meet system accuracies and other specifications as suggested in Regulatory Guide 1.23, Proposed Revision 1. In the digital system meteorological variables are sampled at 60 second intervals from which 15 minute total or average quantities are computed. Digital data is placed on a 12-hour recall for emergency effluent dispersion modeling and dose calculation. The data recording system is maintained on the plant's OAC as a backup to the digital system. Therefore, the meteorological information is available on separated systems.

The river tower has wind speed, wind direction and precipitation instrumentation. In daytime conditions (1000 - 1559) a delta temperature of ≥ -0.26 degrees C (Stability Class D) is assumed if the primary tower delta temperature instrumentation is out of service. In nighttime conditions (1600 - 0959) a delta temperature of $>+2.0$ degrees C (Stability Class G) is assumed anytime the primary tower delta temperature instrumentation is out of service. Oconee Nuclear Site meets all the milestone requirements of NUREG 0654, Appendix 2; therefore, no additional compensatory meteorological actions are required.

Lightning protection is provided for all sensors and signal conditioning equipment; wind sensors are outfitted with heating jackets, when necessary, for protection against icing conditions. Signal conditioners are housed in an environmentally controlled enclosure at both high and low level towers. Signal cables to the OACs and analog recorders are shielded to minimize electrical interference.

Meteorological components have been designed, procured and installed as a non-safety related system. Equipment has been purchased from suppliers which have provided high quality, reliable products in the past. Surveillance during construction was provided as for any other non-safety system.

II. Calibration Requirements And Field Checks

A new primary meteorological tower and equipment were installed in 1988. Instrumentation accuracy for this tower meets the requirements of Proposed Revision 1, Reg. Guide 1.23. Meteorological instrumentation will be checked and calibrated in accordance with the guidance of this regulatory document as referenced in NUREG 0654, Appendix 2.

III. Offsite Dose Assessment

A. Class A Atmospheric Dispersion Model/Dose Calculation System

This system plots the movement and concentration of effluent during accident radiological conditions. The system uses meteorological data and Operational Aid Computer data from the applicable unit. The user is actively involved in the selection of data for the model input file.

The Class A Model which simulates the transport and diffusion of released effluent is a puff-advection model which incorporates a horizontal wind field that can vary in time but is consistent in space. It is assumed in the puff-type model that the spread within a puff along the direction of flow is equal to the spread in the lateral direction (i.e., horizontal Gaussian Symmetry). In the model, concentration averages are obtained by summing concentrations of individual elements for the grid points over which the puffs pass. Features incorporated into the model include the use of primary, backup ground release mode. Appropriate persistence would be used for initial releases until a meteorologist is notified to provide predictive data.

B. Back-Up Methodology

(1) Control Room Procedures

Enclosure 4.3 of RP/0/A/1000/001 provides the Operations Shift Manager in the Control Room with a conservative method of determining general emergency conditions based on reactor building and unit vent radiation monitors.

Initial protective actions are predetermined for Control Room use for general emergency conditions. Meteorological conditions at Oconee require a complex method for determining appropriate sectors to evacuate. The control room will evacuate out to five miles and shelter out to ten miles which will simplify the process for determining the appropriate sectors to evacuate and to shelter.

(2) TSC/EOF Procedures

Procedure HP/0/B/1009/018, provides personnel with methods of projecting offsite doses for unit vent releases, containment building releases and steam relief valve releases at 1, 2, 5 and 10 miles unless otherwise directed.

Unit Vent Release

This method calculates a four-hour dose projection for total effective dose equivalent (TEDE) and committed dose equivalent (CDE thyroid) based on either unit vent radiation monitors and flow rate monitors or actual unit vent sample data and flow rate monitors.

Containment Building Release

This method calculates a four-hour TEDE and CDE dose projection based on the design leak rate and the reactor building dose rate which is determined by the reading from the containment high range monitor or a hand held survey instrument.

Steam Relief Valve Release

This method calculates a TEDE and CDE dose projection based on the activity released using the readings from the main steam line radiation monitors and the volume of steam released.

CDE (thyroid) doses calculated by these procedures are based on I-131 equivalent concentrations and are calculated for an adult. The dose conversion factor are obtained from EPA-400.

APPENDIX 5

DUKE ENERGY COMPANY OCONEE NUCLEAR STATION

LETTERS OF AGREEMENT

This Appendix contains a list of written agreements between Duke Energy and other organizations that may be required to provide support to the Oconee Nuclear Plant in the event of an on-site radiological emergency. The actual agreements are maintained on file by ONS Emergency Planning.

Agreement Organization

1. Oconee County Sheriff's Department
2. Pickens County Sheriff's Department
3. S.C. Highway Patrol - Greenville, South Carolina
4. S.C. Law Enforcement Division
5. Oconee Medical Center (formerly Oconee Memorial Hospital)
6. Blue Ridge Emergency Physicians
7. Oconee Medical Center Emergency Dept. Director (formerly Oconee Memorial Hospital)
8. Oconee County Emergency Services Fire/ Chemical Spill
9. Pickens County Emergency Management Agency
10. Oconee County Emergency Management Agency
11. Oconee County School District
12. Pickens County School District
13. Six-Mile Volunteer Fire Department
14. Keowee-Ebenezer Volunteer Fire Department
15. Corinth-Shiloh Volunteer Fire Department
16. INPO - Fixed Nuclear Facility Voluntary Assistance Agreement
17. DELETED - Dominion Nuclear Connecticut, Inc. (DNC) Superseded by letter from GO RP
18. REAC/TS (Radiation Emergency Assistance Center/Training Site/Oak Ridge, TN)

APPENDIX 5

LETTERS OF AGREEMENT

19. U. S. Department of Energy (DOE) Savannah River Site, Aiken, SC
20. State of South Carolina
21. SC/GA/NC Dose Assessment Agreements
22. Memorandum of Understanding (Joint Information Center)
23. Bartlett Nuclear, Inc.
24. Keowee-Fire Tax District
25. G & G Metal Fabrication, Inc.
26. Duke Power's Lincoln Combustion Turbine Facility

These agreements are verified current through annual recertification of the ONS E Plan. A copy of the annual recertification (including the agreements) is maintained on file by ONS Emergency Planning. The actual agreements are re-confirmed every 3 years and maintained on file by ONS Emergency Planning.

§50.54(q) Screening Evaluation Form

Activity Description and References: Revision 2014-01 to ONS E Plan Volume A		BLOCK 1
Activity Scope:		BLOCK 2
<input checked="" type="checkbox"/> The activity <u>is</u> a <i>change</i> to the <i>emergency plan</i> <input type="checkbox"/> The activity <u>is not</u> a <i>change</i> to the <i>emergency plan</i>		
Change Type:	BLOCK 3	Change Type:
<input type="checkbox"/> The change <u>is</u> editorial or typographical <input checked="" type="checkbox"/> The change <u>is not</u> editorial or typographical		<input type="checkbox"/> The change <u>does</u> conform to an activity that has prior approval <input checked="" type="checkbox"/> The change <u>does not</u> conform to an activity that has prior approval
Planning Standard Impact Determination:		BLOCK 5
<input checked="" type="checkbox"/> §50.47(b)(1) – Assignment of Responsibility (Organization Control) <input checked="" type="checkbox"/> §50.47(b)(2) – Onsite Emergency Organization <input type="checkbox"/> §50.47(b)(3) – Emergency Response Support and Resources <input checked="" type="checkbox"/> §50.47(b)(4) – Emergency Classification System* <input type="checkbox"/> §50.47(b)(5) – Notification Methods and Procedures* <input type="checkbox"/> §50.47(b)(6) – Emergency Communications <input checked="" type="checkbox"/> §50.47(b)(7) – Public Education and Information <input type="checkbox"/> §50.47(b)(8) – Emergency Facility and Equipment <input type="checkbox"/> §50.47(b)(9) – Accident Assessment* <input checked="" type="checkbox"/> §50.47(b)(10) – Protective Response* <input type="checkbox"/> §50.47(b)(11) – Radiological Exposure Control <input type="checkbox"/> §50.47(b)(12) – Medical and Public Health Support <input checked="" type="checkbox"/> §50.47(b)(13) – Recovery Planning and Post-accident Operations <input type="checkbox"/> §50.47(b)(14) – Drills and Exercises <input type="checkbox"/> §50.47(b)(15) – Emergency Responder Training <input checked="" type="checkbox"/> §50.47(b)(16) – Emergency Plan Maintenance *Risk Significant Planning Standards <input type="checkbox"/> The proposed activity does not impact a Planning Standard		
Commitment Impact Determination:		BLOCK 6
<input type="checkbox"/> The activity <u>does</u> involve a site specific EP commitment Record the commitment or commitment reference: _____ <input checked="" type="checkbox"/> The activity <u>does not</u> involve a site specific EP commitment		
Results:		BLOCK 7
<input type="checkbox"/> The activity <u>can</u> be implemented without performing a §50.54(q) effectiveness evaluation <input checked="" type="checkbox"/> The activity <u>cannot</u> be implemented without performing a §50.54(q) effectiveness evaluation		
Preparer Name: John Kaminski	Preparer Signature 	Date: 3/26/14
Reviewer Name: Don Crowl	Reviewer Signature 	Date: 4/3/14

§50.54(q) Effectiveness Evaluation Form**Activity Description and References:** Revision 2014-01 to ONS E Plan Volume A.**BLOCK 1****Activity Type:****BLOCK 2**

- ☒ The activity is a *change* to the *emergency plan*
- ☐ The activity affects implementation of the *emergency plan*, but is not a *change* to the *emergency plan*

Impact and Licensing Basis Determination:**BLOCK 3**Licensing Basis:

1. **10CFR50.47b (1)** Primary responsibilities for emergency response by the nuclear facility licensee and by State and local organizations within the Emergency Planning Zones have been assigned, the emergency responsibilities of the various supporting organizations have been specifically established, and each principal response organization has staff to respond and to augment its initial response on a continuous basis.
2. **10CFR50.47b (2)** On-shift facility licensee responsibilities for emergency response are unambiguously defined, adequate staffing to provide initial facility accident response in key functional areas is maintained at all times, timely augmentation of response capabilities is available and the interfaces among various onsite response activities and offsite support and response activities are specified.
3. **10CFR50.47b (4)** A standard emergency classification and action level scheme, the bases of which include facility system and effluent parameters, is in use by the nuclear facility licensee, and State and local response plans call for reliance on information provided by facility licensees for determinations of minimum initial offsite response measures.
4. **10CFR50.47b (7)** Information is made available to the public on a periodic basis on how they will be notified and what their initial actions should be in an emergency (e.g., listening to a local broadcast station and remaining indoors), the principal points of contact with the news media for dissemination of information during an emergency (including the physical location or locations) are established in advance, and procedures for coordinated dissemination of information to the public are established.
5. **10CFR50.47b (10)** A range of protective actions has been developed for the plume exposure pathway EPZ for emergency workers and the public. In developing this range of actions, consideration has been given to evacuation, sheltering, and, as a supplement to these, the prophylactic use of potassium iodide (KI), as appropriate. Evacuation time estimates have been developed by applicants and licensees. Licensees shall update the evacuation time estimates on a periodic basis. Guidelines for the choice of protective actions during an emergency, consistent with Federal guidance, are developed and in place, and protective actions for the ingestion exposure pathway EPZ appropriate to the locale have been developed.
6. **10CFR50.47b (13)** General plans for recovery and reentry are developed.
7. **10CFR50.47b (16)** Responsibilities for plan development and review and for distribution of emergency plans are established, and planners are properly trained.
8. **NUREG 0654II.A.3** Each plan shall include written agreements referring to the concept of operations developed between Federal, State, and local agencies and other support organizations having an emergency response role within the Emergency Planning Zones. The agreements shall identify the emergency measures to be provided and the mutually acceptable criteria for their implementation, and specify the arrangements for exchange of information. These agreements may be provided in an appendix to the plan or the plan itself may contain descriptions of these matters...
9. **NUREG 0654II.B.5.** Each licensee shall specify the positions or title and major tasks to be performed by the persons to be assigned to the functional areas of emergency activity. For emergency situations, specific assignments shall be made for all shifts and for plant staff members, both onsite and away from the site.
10. **NUREG 0654II.D.1.** An emergency classification and emergency action level scheme as set forth in Appendix 1 must be established by the licensee. The specific instruments, parameters or equipment status shall be shown for establishing each emergency class, in the in-plant emergency procedures. The plan shall identify the parameter values and equipment status for each emergency class.

11. **NUREG 0654II.G.1** Each organization shall provide a coordinated periodic (at least annually) dissemination of information to the public regarding how they will be notified and what their actions should be in... Means for accomplishing this dissemination may include, but are not necessarily limited to: information in the telephone book; periodic information in utility bills; posting in public areas; and publications distributed on an annual basis.

12. **NUREG 0654II.J.** A range of protective actions have been developed for the plume exposure pathway EPZ for emergency workers and the public. Guidelines for the choice of protective actions during an emergency, consistent with Federal guidance, are developed and in place, and protective actions for the ingestion exposure pathway EPZ appropriate to the locale have been developed.

13. **NUREG 0654 ILM.2.** Each licensee plan shall contain the position/title, authority and responsibilities of individuals who will fill key positions.

14. **NUREG 0654II.P.7** Each plan shall contain as an appendix listing, by title, procedures required to implement the plan. The listing shall include the section(s) of the plan to be implemented by each procedure.

Compliance Evaluation and Conclusion:

BLOCK 4

1. Evaluation:

The ONS E Plan Volume A revision 2014 -01 continues to comply with all applicable regulations and codes as identified above. The majority of the changes were editorial in that they revised procedure numbers and or titles consistent with changes made to those procedure numbers and titles. Any changes made to the actual procedure outside of the number or title has been analyzed under a separate 50.54q evaluation for each procedure changed.

- Changes made to the List of Effective pages and List of Figures keeps the ONS E Plan list current and is editorial.
- Changes made to the Record of Changes keeps the ONS E Plan record of changes current and is editorial.
- Changes made to Section B provides for updating of titles, clarifies some reporting relationships and is editorial as it does not add to or reduce current staffing levels.
- Change associated with Section D provides for clarification of instrumentation to be used to classify the event in the basis of the EAL. This is consistent with regulatory guidance.
- Changes made to Section G in which the Annual Calendar was removed and listed as included by reference, retained on file with EP staff does not change any annual requirements nor reviews and distribution.
- Changes made to Section H -removed implementation details as these details are contained in implementing procedures and are not necessary to ensure compliance of the E Plan to the regulations.
- Changes made to Section J brought information from Appendix 2 to be included in J.8 to ensure that there is a more clear tie to Appendix 2.
- Changes made to Section M clarify reporting relationships for EOF Services Manager and are consistent with Section B.
- Changes made to Section P provided updating of implementing procedure references as appropriate to keep the ONS E Plan current. The reference to the HR Emergency Plan is appropriate as the actions for HR personnel are implemented by appropriate RP procedures.
- Changes to Appendix 2 updated procedure numbers and is an editorial change.
- Appendix 5 in which the actual Letters of Agreement were removed and a statement indicating that the Agreements are retained on file with the ONS EP Staff is consistent with regulations and requirements. No changes were made to the requirements of reviewing and update and no changes were made to any of the Letters of Agreement.

Changes made as indicated above are consistent with current rules and regulations and serve to maintain the ONS E plan current and up to date.

Conclusion:

The proposed activity ☒ does / ☐ does not continue to comply with the requirements.

1. Evaluation:

The changes made to Section B and Section M clarified staffing roles and titles along with reporting structure. No changes were made to the number of staff and no changes were made to the timing/timeliness of reporting or activation and operation of the OSC and or TSC, and no changes to any of the functions accomplished in the TSC and or OSC.

The changes in Section D provide additional clarification in the bases of the EAL to clarify which instruments are expected to be used. This clarification does not alter the EAL, does not impact the timing or timeliness of any classification and serves to enhance operators ability to classify by clearly indicating which instruments are to be used and why.

The change made to Section G and Appendix 5 to remove the actual Calendar and the actual Letters of Agreement and replacing those with a statement indicating these were retained on file with the ONS E Plan Staff continues to be consistent with the regulations and requirements. There has been no change to the review and or updating requirements and no changes made to either the Calendar or any of the agreement letters themselves. There has been no changes in any commitments made within any of the Letters of Agreements

The changes made to Section J and P and Appendix 2 provided for editorial updates to implementing procedures and procedure numbers serving to ensure the ONS E Plan remains current and accurate. For Section J.8 the change brought information forward from Appendix 2 with respect to protective actions to ensure a more clear tie between Section J and Appendix 2.

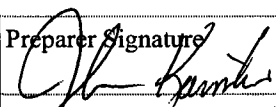
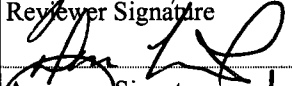
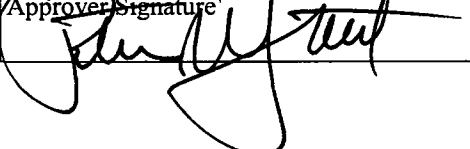
Therefore as can be seen above there has been no changes that increase or decrease number of staff, no changes that impact the timing or timeliness of any activities in the E Plan , no changes to functions being performed and therefore no reduction in the effectiveness of the ONS E Plan as a result of this revision.

Conclusion:

The proposed activity ☐ does / ☒ does not constitute a RIE.

Effectiveness Evaluation Results

- ☒ The activity does continue to comply with the requirements of §50.47(b) and §50 Appendix E **and** the activity does not constitute a reduction in effectiveness. Therefore, the activity can be implemented without prior approval.
- ☐ The activity does not continue to comply with the requirements of §50.47(b) and §50 Appendix E **or** the activity does constitute a reduction in effectiveness. Therefore, the activity cannot be implemented without prior approval.

Preparer Name: John Kaminski	Preparer Signature: 	Date: 3/20/14
Reviewer Name: Don Crowl	Reviewer Signature: 	Date: 4/9/14
Approver Name: Pat Street	Approver Signature: 	Date: 4/24/14