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ONS-2015-050

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May 20, 2015

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 Revision 2015-003

Please find attached for your use and review copies of the revisions to the Oconee Nuclear Station Emergency Plan 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. If there are any questions or concerns pertaining to this revision please call Pat Street, Emergency Preparedness 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
Emergency Plan Revision 2015-003
10 CFR 50.54(q) Evaluation(s)

AV45
nkl

ONS-2015-050

U. S. Nuclear Regulatory Commission
May 20, 2015

xc: w/2 copies of attachments

Mr. Victor McCree, Regional Administrator
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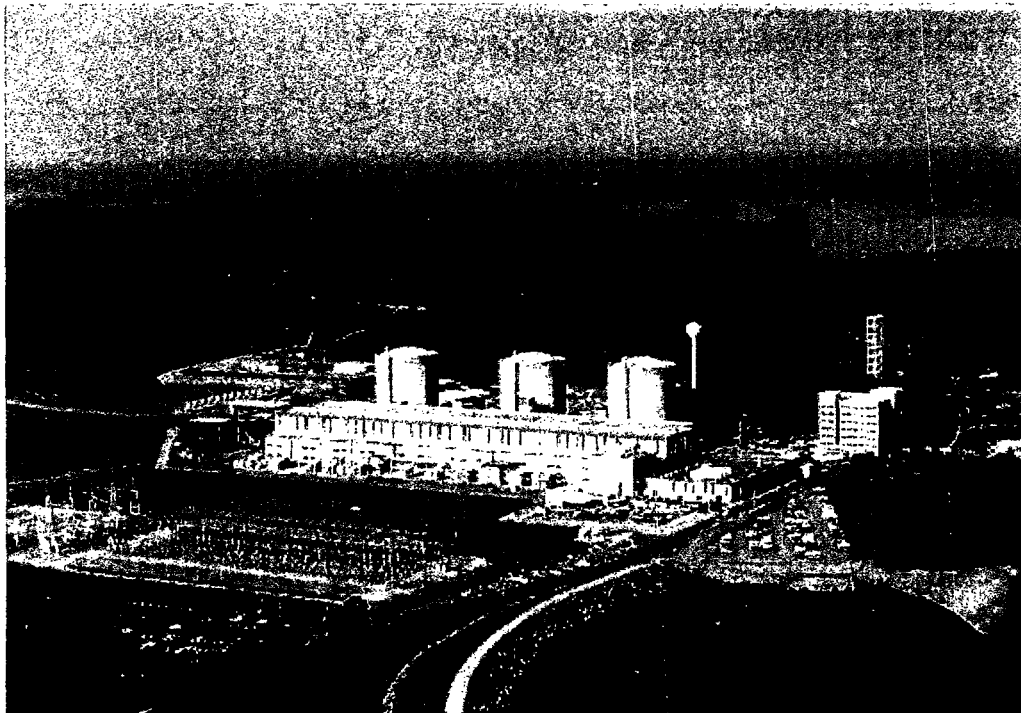
w/o attachments

Mr. Eddy Crowe
NRC Senior Resident Inspector
Oconee Nuclear Station

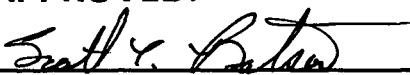
ELL - EC2ZF



OCONEE NUCLEAR STATION EMERGENCY PLAN



APPROVED:



Scott L. Batson

05-20-2015

Date Approved

**REVISION 2015-003
April 2015**

April 20, 2015

OCONEE NUCLEAR STATION

SUBJECT: Emergency Plan Revision 2015-003

Please make the following changes to the Emergency Plan:

REMOVE

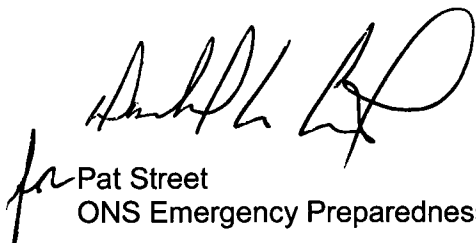
Cover Sheet Rev. 2015-002

EPA Record of Changes Rev 013
EPA Section D Rev 008

INSERT

Cover Sheet Rev 2015-003

EPA Record of Changes Rev 014
EPA Section D Rev 009


for Pat Street
ONS Emergency Preparedness Manager

Duke Energy
Oconee Nuclear Station
EMERGENCY PLAN A - RECORD OF CHANGES

Procedure No.

EPA RECORD OF CHANGES

Revision No.

014

Electronic Reference No.

OAP000HP

PDF Format

Prepared By* _____ Date _____

Requires Applicability Determination? ☐ Yes ☐ No

Reviewed By* _____ (QR) Date _____

Cross-Disciplinary Review By* _____ (QR) NA _____ Date _____

Reactivity Mgmt. Review By* _____ (QR) NA _____ Date _____

Additional Reviews

Reviewed By* _____ Date _____

Reviewed By* _____ Date _____

Approved By* _____ Date _____

** Printed Name and Signature*

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	<p>The ONS Technical Specifications have been converted to a set of Technical Specifications based on NUREG 1430. "Standard Technical Specifications Babcock and Wilcox Plants."</p> <p>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.</p> <p>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.</p>

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	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. 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.
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 15-1 14 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>
2014-02	10/14	<p>Section A - Revised for change from pagers to notify the ERO to using cell phones. Shift Manager delegates actual activation of notification device to Security if available or qualified operator if security is unable.</p> <p>Section B - Revised responsibility for Radwaste function from Chemistry Group to Operations Group.</p> <p>Section D - Revised responsibility for Radwaste function from Chemistry Group to Operations Group, including reference to chemistry procedures to operation procedures.</p> <p>Section F - Revised for change from pagers to notify the ERO to using cell phones. Shift Manager delegates actual activation of notification device to Security if available or qualified operator if security is unable.</p> <p>Section G - Procedure number changes</p> <p>Section H - Removed specific locations of kits as these were insufficiently detailed and did not contain all kit locations.</p>

Record OF CHANGES (Continued)

Section I - Procedure number changes.

Section J - Procedure number changes.

Section M - Procedure number changes, title changes.

Section N - Changes to show new rules including 8 year cycle, consistency with fleet documents practices, and format.

Section P - Revised responsibility for independent audit from NSRB to NOS Manager, deleted duplicated paragraph and updated the listing of the implementing procedures.

Appendix 6 - Updated distribution list to reflect new format of E Plan and associated implementing procedures.

2014-003	12/14	Changes made associated with the modification from Raddose V to URI, and updates to WEBEOC.
2015-001	1/15	Changes made to Section F, EOF Communications and Figure F-1.
2015-002	3/15	Changes made as a result of superseding SH/0/B/2005/002, EP Fam 3.19 and Appendix 5.
2015-003	4/15	Changes made to Section D consisting of Protected Service Water replacing the Station Auxiliary Service Pump as a result of system modification.

<p style="text-align: center;">Duke Energy Oconee Nuclear Station</p> <p style="text-align: center;">EMERGENCY PLAN A - SECTION D EMERGENCY CLASSIFICATION SYSTEM</p>	Procedure No. EPA SECTION D
	Revision No. <p style="text-align: center;">009</p>
	Electronic Reference No. <p style="text-align: center;">OAP000HT</p>

PDF Format

Prepared By* _____ Date _____	
Requires Applicability Determination? <input type="checkbox"/> Yes <input type="checkbox"/> No	
Reviewed By* _____ (QR)	Date _____
Cross-Disciplinary Review By* _____ (QR) NA _____	Date _____
Reactivity Mgmt. Review By* _____ (QR) NA _____	Date _____
Additional Reviews	
Reviewed By* _____	Date _____
Reviewed By* _____	Date _____
Approved By* _____ Date _____	
<i>* Printed Name and Signature</i>	

D. EMERGENCY CLASSIFICATION SYSTEM

RegGuide 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 OR 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 OR 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 OR 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 OR 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 OR 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 OR 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 ≥ 1200 °F or ≥ 700 °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) 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, ERO notification 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 1.672E-06 sec/m³) has been used. Radiation Protection will use HP/0/B/1009/015 to quantify a gaseous release. Operations will use OP/0/A/1104/068 and/or OP/0/A/1104/072 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 6.62E-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 6.62E-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 Operations 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 (in containment monitors) setpoints are based on the following: LOCA conditions 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 typically uses a 4-hour default for time of release. The Dose Assessment program will provide dose projection default times for specific release pathways. 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 Assessment program will provide dose projection default time for specific release pathways. 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/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 4.4

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. Inability to feed SGs prior to RCS pressure reaching 2300 psig
and
HPI Forced Cooling degraded by any of the following:
 - Unacceptable HPI flow/pressure in either header per EOP Rule 4
 - Only 1 HPI Pump available
 - Either PORV (*RC-66) and/or PORV Block (*RC-4) closed

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.

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

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 of the reactor coolant system is greater than or equal to 2300 psig. The power-operated relieve valve must be opened to initiate the cooling through the high pressure injection system. In effect, a self-imposed loss of coolant is established. Declaration of a Site Area Emergency is warranted with the total loss of main and emergency feedwater with SSF and PSW unavailable coincident with degraded High Pressure Injection.

Escalation to General Emergency would be via Abnormal Rad Levels/Radiological Effluent, Emergency Coordinator Judgment, or Fission Product Barrier Degradation ICs.

The installation of the PSW Pump enables the Station to NOT require a blow-down of the SG's in order to commence feeding to achieve shutdown cooling, as the PSW pump is a high discharge head pump. The installation and the use of the PSW pump provides a better margin of safety for the plant.

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 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 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

§50.54(q) Effectiveness Evaluation Form

Activity Description and References: ONS E-Plan Emergency Classification Sect D (PIP O-14-13933 CA #4)	BLOCK 1
Activity Type: <input checked="" type="checkbox"/> The activity <u>is</u> a <i>change</i> to the <i>emergency plan</i> <input type="checkbox"/> The activity affects implementation of the <i>emergency plan</i> , but <u>is not</u> a <i>change</i> to the <i>emergency plan</i>	BLOCK 2
Impact and Licensing Basis Determination: <u>Licensing Basis:</u> 10 CFR 50.47(b)(4) states: 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. NUREG0654 II.D, Emergency Classification System, 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. ONS E Plan Section D states: Reg. Guide 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. RG 1.219 lists the emergency planning function associated with 10 CFR 50.47(b)(4): A standard scheme of emergency classification and action levels is in use.	BLOCK 3
Compliance Evaluation and Conclusion: 1. <u>Evaluation:</u> Does impact ONS E-Plan Section D : The change from ASW to PSW Pump is a result of a system modification. Appropriate changes were made to ensure the EAL Technical Basis (Section D) remains correct and current with plant modifications. Therefore continued compliance with 10CFR50.47(b)4, 10CFR50 App. E.IV, and 10CFR50 Appendix E.IV.B.1 is assured. <u>Conclusion:</u> The proposed activity <input checked="" type="checkbox"/> <u>does</u> / <input type="checkbox"/> <u>does not</u> continue to comply with the requirements.	BLOCK 4
Reduction in Effectiveness (RIE) Evaluation and Conclusion: 1. <u>Evaluation:</u> Change # 1 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 feed-water (both main and emergency) are not available for use and the pressure of 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. Declaration of a Site Area Emergency is warranted with the total loss of main and emergency feed-water with SSF and PSW unavailable coincident with degraded High Pressure Injection. <u>Conclusion:</u> The proposed activity <input type="checkbox"/> <u>does</u> / <input checked="" type="checkbox"/> <u>does not</u> constitute a RIE.	BLOCK 5

Effectiveness Evaluation Results**BLOCK 6**

- ☒ 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:
Mike Stephens

Preparer Signature

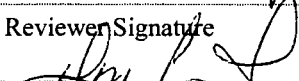


Date:

4-15-15

Reviewer Name:
Don Crowl

Reviewer Signature

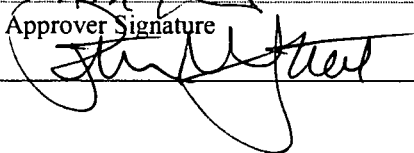


Date:

4-15-15

Approver Name:
Pat Street

Approver Signature



Date:

4/20/15

EAL Change Review Form

Change Description and References:					BLOCK 1
Revision 003 of E-Plan Section D consists of the following change. Protected Service Water replaces the Station Auxiliary Service Pump as a result of a system modification. Change made to clarify sub-step of EAL 4.4.S.2.C (Complete Loss of Shutdown Function Needed to Achieve or Maintain Mode 4 (Hot Shutdown)).					
Change Type:					BLOCK 2
<input checked="" type="checkbox"/> The change is considered a <i>difference</i> from the approved wording. <input type="checkbox"/> The change is considered a <i>deviation</i> from the approved wording.					
Change Verification:					BLOCK 3
Item	Yes	No	N/A	Resolution/Comments	
Initiating Condition					
IC identification number is correct	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Click here to enter text.	
Wording is consistent with the NRC approved IC	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Click here to enter text.	
EAL / FPB					
EAL/FPB identification number is correct	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Click here to enter text.	
Wording is consistent with the NRC approved EAL / FPB	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	PSW mode installed and associated procedure changes made.	
Threshold values or conditions remain specific to ensure generic criteria are not substituted reducing clarity and accuracy of the EAL.	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Click here to enter text.	
Sequencing/nesting logic format is correct	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Click here to enter text.	
Source document inputs used for calculations and in thresholds are correct	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Click here to enter text.	
<u>Site specific content wording/tables/values are correct and specific:</u> <ul style="list-style-type: none"> Operations procedures are consistent with the change Instrument/display number and noun name are provided Alarm setpoints are equal to or below EAL/FPB values Radiation monitor values account for background Procedure references are correct 	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Click here to enter text.	
The EAL/FPB Matrix is legible and intuitively organized	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Click here to enter text.	
Mode Applicability					
Operational mode alignment is consistent with the EAL licensing basis	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Click here to enter text.	
Technical Bases					
Site specific bases is consistent with the EAL threshold	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Click here to enter text.	
Bases for calculations and threshold values are consistent with the technical bases approved by the NRC	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Click here to enter text.	
Source document inputs used for calculations and in thresholds are correct	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Click here to enter text.	
Site specific bases remains accurate and consistent with the EAL technical bases approved by the NRC	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Click here to enter text.	
Site specific bases has appropriate level of detail and is unambiguous	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Click here to enter text.	

The change does not cause a change to the logic of the EAL scheme (i.e. gaps in classification thresholds)	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Click here to enter text.
Conflicts with the EAL/FPB wording have not been introduced	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Click here to enter text.

Revision 12

3.10 10CFR 50.54(q) Evaluations

Emergency Planning Functional Area Manual


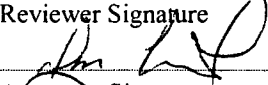
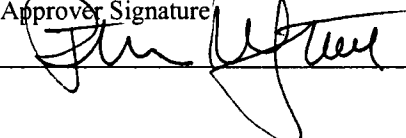
Attachment 3.10.7.2

References				
Source document references are correct	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Click here to enter text.
Source document references are current	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Click here to enter text.
Definitions				
Wording is consistent with the license basis definitions approved by the NRC for the EALs and EAL technical bases	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Click here to enter text.
Other Manual Content				
Wording is consistent with the license basis definitions approved by the NRC for the EALs and EAL technical bases	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Click here to enter text.

Change Validation:				BLOCK 4	
Method					
<input type="checkbox"/> In-Plant Walk down		<input type="checkbox"/> Simulator		<input checked="" type="checkbox"/> Other (Specify) EOP Changes	
<input type="checkbox"/> Training		<input type="checkbox"/> Tabletop		<input type="checkbox"/> N/A	
Item	Yes	No	N/A	Resolution/Comments	
EAL / FPB					
Information and/or values are available in all facilities where classifications are required to be made	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Click here to enter text.	
<u>Instrumentation and computer points are compatible:</u> <ul style="list-style-type: none"> Instrument/display designation matches Instrument/display units are correct Proper significant digits are indicated and within the accuracy capabilities of the instrument/display The instrument/display range is on scale for the threshold value Instrument/display provides separation for escalating values 	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	Click here to enter text.	
Conditions are easily recognizable and able to support declaration within 15 minutes.	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Click here to enter text.	
Information and/or values are easily obtained and able to support declaration within 15 minutes	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Click here to enter text.	
The change does not introduce a time delay to classification	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Click here to enter text.	
Change Justification: 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 of 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. Declaration of a Site Area Emergency is warranted with the total loss of main and emergency feed water with SSF and PSW unavailable coincident with degraded High Pressure Injection.				BLOCK 5	

EAL Change Review Results:**BLOCK 6**

- ☒ The EAL change can be implemented without prior NRC approval.
☐ The EAL change cannot be implemented without prior NRC approval.

Preparer Name: Mike Stephens	Preparer Signature 	Date: 4-15-15
Reviewer Name: Don Crowl	Reviewer Signature 	Date: 4-15-15
Approver Name: Pat Street	Approver Signature 	Date: 4/20/15

Revision 12