

# Duquesne Light Company

Beaver Valley Power Station  
P.O. Box 4  
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June 14 1994

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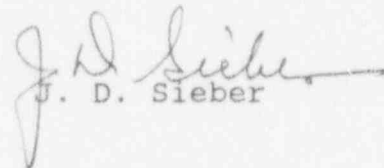
U. S. Nuclear Regulatory Commission  
Attn: Document Control Desk  
Washington, DC 20555

**Subject: Beaver Valley Power Station, Unit No. 1 and No. 2**  
**BV-1 Docket No. 50-334, License No. DPR-66**  
**BV-2 Docket No. 50-412, License No. NPF-73**  
**Proposed Emergency Action Levels**

This submittal provides revisions to the Beaver Valley Power Station (BVPS) proposed Emergency Action Levels (EALs) which resulted from comments provided by the Nuclear Regulatory Commission (NRC) following their review of the EALs submitted for review on April 22, 1994. The changes were discussed during two conference calls between Duquesne Light Company Emergency Preparedness Department personnel and NRC personnel. All but one of the revisions are editorial or for clarification. EAL 4.1.G was changed to add a third criterion for entering into a General Emergency. An uncontrolled reactor coolant system heatup for more than 15 minutes is now also necessary before a General Emergency is declared through EAL 4.1.G.

If you have any questions on this submittal, please contact Mr. R. K. Brosi, (412) 393-5767

Sincerely,

  
J. D. Sieber

Enclosures

cc: Mr. L. W. Rossbach, Sr. Resident Inspector  
Mr. T. T. Martin, NRC Region I Administrator  
Mr. G. E. Edison, Project Manager  
Mr. S. A. Boynton, NRR/PEPB

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*Handwritten:* Add: NRR/ROSS/PEPB  
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Beaver Valley Power Station Emergency Action Levels  
Page 2

bcc: R. K. Brosi (w/o enclosures)

ENCLOSURE

Listing of Revised Proposed EAL Pages:

EAL 4.1      Unit 1

EAL 4.1      Unit 2

4.0-8

4.0-10

4.2-19

4.2-20

4.4-2

4.4-3

4.4-4

4.5-11

4.6-11

4.6-15

4.6-16

4.6-17

4.6-18

**GENERAL**  
**SITE AREA**  
**ALERT**  
**UNUSUAL EVENT**

4.1 Fire							
Mode	Criterion / Indicator						
1 2 3 4	<p>FIRE in the control room, cable tray mezzanine, <u>or</u> process control room resulting in an evacuation of the control room per 1.56C.4 "Alternate Safe Shutdown" and loss of any required equipment results in an uncontrolled RCS Heatup</p> <p>[1 and 2 and 3]</p> <ol style="list-style-type: none"> <li>1. 1.56C.4 "Alternate Safe Shutdown" entered</li> <li>2. Ops personnel report inability to operate at least one of each of the following components of the available train:                             <table border="0" style="margin-left: 20px;"> <tr> <td>Charging pump</td> <td>AFW pump</td> <td>Diesel generator</td> </tr> <tr> <td>RPRW pump</td> <td>BIP</td> <td>Steam relief path</td> </tr> </table> </li> <li>3. Uncontrolled RCS heatup lasting longer than 15 minutes</li> </ol>	Charging pump	AFW pump	Diesel generator	RPRW pump	BIP	Steam relief path
Charging pump	AFW pump	Diesel generator					
RPRW pump	BIP	Steam relief path					
1 2 3 4	<p>FIRE in the control room, cable tray mezzanine, <u>or</u> process control room resulting in an evacuation of the control room per 1.56C.4 "Alternate Safe Shutdown"</p> <ol style="list-style-type: none"> <li>1. 1.56C.4 "Alternate Safe Shutdown" entered</li> </ol>						
All	<p>FIRE in any of the areas listed in Table 4-1 that is affecting safety related equipment</p> <p>[1 and 2]</p> <ol style="list-style-type: none"> <li>1. FIRE in any of the listed areas in Table 4-1</li> <li>2. [a or b]                             <ol style="list-style-type: none"> <li>a. Ops personnel report <b>VISIBLE DAMAGE</b> to permanent structure <u>or</u> equipment in listed area due to <b>FIRE</b></li> <li>b. Control room indication of degraded system <u>or</u> component (within listed areas) response due to <b>FIRE</b></li> </ol> </li> </ol>						
All	<p>FIRE in <u>or</u> adjacent to those areas listed in Table 4-1 not extinguished within 15 minutes from the time of control room notification <u>or</u> verification of control room alarm</p>						

4.2 Explosions	
Mode	Criterion / Indicator
	<p>Refer to Tab 4.1 "Fire" or Tab 1 "Fission Product Barrier Matrix"</p>
	<p>Refer to Tab 4.1 "Fire" or Tab 1 "Fission Product Barrier Matrix"</p>
All	<p>EXPLOSION in any of the areas listed in Table 4-1 that is affecting safety related equipment</p> <p>[1 and 2]</p> <ol style="list-style-type: none"> <li>1. EXPLOSION in any of the listed areas in Table 4-1</li> <li>2. [a or b]                             <ol style="list-style-type: none"> <li>a. Ops personnel report <b>VISIBLE DAMAGE</b> to permanent structure <u>or</u> equipment in listed area</li> <li>b. Control room indication of degraded system <u>or</u> component (within listed areas) response due to <b>EXPLOSION</b></li> </ol> </li> </ol>
All	<p>UNPLANNED EXPLOSION in <u>or</u> adjacent to those areas listed in Table 4-1</p> <ol style="list-style-type: none"> <li>1. UNPLANNED EXPLOSION in <u>or</u> adjacent to any of the listed areas in Table 4-1</li> </ol>

**UNUSUAL EVENT**    **ALERT**    **SITE AREA**    **GENERAL**

4.1 Fire										
Mode	Criterion / Indicator									
1 2 3 4	<p>FIRE in the control room, cable tray mezzanine, or process control room resulting in an evacuation of the control room per 2.56C.4 "Alternate Safe Shutdown" and loss of any required equipment results in an uncontrolled RCS heatup [1 and 2 and 3]</p> <ol style="list-style-type: none"> <li>2.56C.4 "Alternate Safe Shutdown" entered</li> <li>Ops personnel report inability to operate any of the following equipment required by 2.56C.4 "Alternate Safe Shutdown"</li> </ol> <table border="0"> <tr> <td>CHS-P21A</td> <td>SWS-P21A</td> <td>FWE-P23A &amp; FWE-P22</td> </tr> <tr> <td>EGS-EG2-1</td> <td>Black DG</td> <td>Alternate S/D Panel</td> </tr> <tr> <td>SAS-C21A</td> <td>CCP-P21A</td> <td>RHS-P21A</td> </tr> </table> <ol style="list-style-type: none"> <li>Uncontrolled RCS heatup lasting longer than 15 minutes</li> </ol>	CHS-P21A	SWS-P21A	FWE-P23A & FWE-P22	EGS-EG2-1	Black DG	Alternate S/D Panel	SAS-C21A	CCP-P21A	RHS-P21A
CHS-P21A	SWS-P21A	FWE-P23A & FWE-P22								
EGS-EG2-1	Black DG	Alternate S/D Panel								
SAS-C21A	CCP-P21A	RHS-P21A								
1 2 3 4	<p>FIRE in the control room, cable tray mezzanine, or process control room resulting in an evacuation of the control room per 2.56C.4 "Alternate Safe Shutdown"</p> <ol style="list-style-type: none"> <li>2.56C.4 "Alternate Safe Shutdown" entered</li> </ol>									
All	<p>FIRE in any of the areas listed in Table 4-1 that is affecting safety related equipment [1 and 2]</p> <ol style="list-style-type: none"> <li>FIRE in any of the listed areas in Table 4-1</li> <li>[a or b]             <ol style="list-style-type: none"> <li>Ops personnel report <b>VISIBLE DAMAGE</b> to permanent structure or equipment in listed area due to <b>FIRE</b></li> <li>Control room indication of degraded system or component (within listed areas) response due to <b>FIRE</b></li> </ol> </li> </ol>									
All	<p>FIRE in or adjacent to those areas listed in Table 4-1 not extinguished within 15 minutes from the time of control room notification or verification of control room alarm</p>									

4.2 Explosions	
Mode	Criterion / Indicator
	<p>Refer to Tab 4.1 "Fire" or Tab 1 "Fission Product Barrier Matrix"</p>
	<p>Refer to Tab 4.1 "Fire" or Tab 1 "Fission Product Barrier Matrix"</p>
All	<p>EXPLOSION in any of the areas listed in Table 4-1 that is affecting safety related equipment [1 and 2]</p> <ol style="list-style-type: none"> <li>EXPLOSION in any of the listed areas in Table 4-1</li> <li>[a or b]             <ol style="list-style-type: none"> <li>Ops personnel report <b>VISIBLE DAMAGE</b> to permanent structure or equipment in listed area</li> <li>Control room indication of degraded system or component (within listed areas) response due to <b>EXPLOSION</b></li> </ol> </li> </ol>
All	<p>UNPLANNED EXPLOSION in or adjacent to those areas listed in Table 4-1</p> <ol style="list-style-type: none"> <li>UNPLANNED EXPLOSION in or adjacent to any of the listed areas in Table 4-1</li> </ol>

4.3 EAL Matrix

4.3.1 NUMARC/NESP-007 Abnormal Rad Levels/Radiological Effluent

NUMARC/NESP-007 Reference		BVPS Reference	
AU1	Gaseous or Liquid Effluent	7.1.U	Gaseous effluents
		7.2.U	liquid effluents
AU2	Plant Radiation Levels	7.3.U	Addresses exmaple EAL#4
		7.4.U	Addresses example EAL #1,3
		6.5.U	Addresses example EAL #1,3
AA1	Gaseous or Liquid Effluent	7.1.A	Gaseous effluents
		7.2.A	Liquid effluents
AA2	Fuel Damage/Loss of Water Level	7.4.A	
		6.5.A	Addresses example EAL #1,2
AA3	Plant Radiation Levels	7.3.A	
AS1	Gaseous Effluent	7.1.S	Deviation
AG1	Gaseous Effluent	7.1.G	Deviation

3 NUMARC/NESP-007 Hazards and Other Conditions Affecting Plant Safety

NUMARC/NESP-007 Reference		BVPS Reference
HU1	Destructive Phenomena in Protected Area	5.1.U (Addresses example EAL #1)
		5.2.U (Addresses example EAL #2)
		5.3.U (Addresses example EAL #4)
		4.2.U (Addresses example EAL #5)
		2.9.U (Addresses example EAL #6)
		5.6.U (Addresses example EAL #4)
		5.4.U (Addresses example EAL #7)
HU2	Fire	4.1.U
HU3	Flammable or Toxic Gases	4.3.U (Flammable)
		4.4.U (Toxic gas)
HU4	Security	4.6.U
HU5	Emergency Director Judgment	4.7.U
		2.10 (Uncontrolled cooldown) .U
HA1	Destructive Phenomena in Vital Area	5.1.A (Addresses example EAL #1)
		5.2.A (Addresses example EAL #2)
		5.3.A (Addresses example EAL #5)
		2.9.A (Addresses example EAL #6)
		5.4.A (Addresses example EAL #7)
		5.5.A (Addresses example EAL #7)
HA2	Fire/Explosion Affecting Safety Systems	4.1.A (Fire)
		4.2.A (Explosion)
HA3	Toxic/Flammable Jeopardizes	4.3.A (Flammable Gas)
		4.4.A (Toxic Gas)
HA4	Security Event in Protected Area	4.6.A
HA5	Control Room Evacuation	4.5.A
HA6	ED Judgment	4.7.A
HS1	Security Event in Plant Vital Area	4.6.S
HS2	Control Room Evacuation	4.5.S Also 4.1.S (App. R Procedure)
HS3	ED Judgment	4.7.S
HG1	Security Event / Loss of Ability to S/D	4.6.G
HG2	ED Judgment	4.7.G Also 4.1.G (App. R Procedure w/ failures)



<i>Section 2.0</i>	SYSTEM DEGRADATION																	
<i>TAB 2.9</i>	TURBINE FAILURE																	
<i>EAL 2.9.A</i>	ALERT																	
<i>Mode</i>	1,2,3																	
<i>Description</i>	<p>Turbine failure generated missiles cause penetration of a missile shield wall of any area containing safety related equipment</p> <p>1. Plant personnel report missiles generated by turbine failure with casing penetration also results in a through-wall penetration of a missile shield wall listed in Table 5-2</p>																	
<i>Basis</i>	<p>This EAL is intended to address the threat to safety related equipment imposed by missiles generated by main turbine rotating component failures. Shield walls are incorporated into the design of the areas of concern. To permit a rapid assessment of the potential for damage to safety related equipment, an assessment of these shield walls is appropriate. If no through wall penetration is observed, equipment should not be jeopardized. The list of areas provided includes all areas containing safety-related equipment, their controls, and their power supplies. This EAL is, therefore, consistent with the definition of an ALERT.</p> <p>Unit 1</p> <p>Table 5-2 Plant Areas Associated With Shield Wall Penetration EAL</p> <table border="0"> <tr> <td>Control Room</td> <td>Electrical Switchgear</td> <td>Safeguards</td> </tr> <tr> <td>WT-TK-10</td> <td>Diesel Generator Bldg</td> <td>Cable Tray Mezz</td> </tr> <tr> <td>Containment</td> <td>Primary Aux. Building</td> <td></td> </tr> </table> <p>Unit 2</p> <p>Plant Areas Associated With Shield Wall Penetration EAL</p> <table border="0"> <tr> <td>Main Steam Valve Room</td> <td>2FWE-TK210</td> </tr> <tr> <td>Diesel Generator Bldg</td> <td>Containment</td> </tr> <tr> <td>Service Bldg. 745' and 760'</td> <td>Primary Aux. Building</td> </tr> <tr> <td>Emergency Switchgear 730'</td> <td></td> </tr> </table>	Control Room	Electrical Switchgear	Safeguards	WT-TK-10	Diesel Generator Bldg	Cable Tray Mezz	Containment	Primary Aux. Building		Main Steam Valve Room	2FWE-TK210	Diesel Generator Bldg	Containment	Service Bldg. 745' and 760'	Primary Aux. Building	Emergency Switchgear 730'	
Control Room	Electrical Switchgear	Safeguards																
WT-TK-10	Diesel Generator Bldg	Cable Tray Mezz																
Containment	Primary Aux. Building																	
Main Steam Valve Room	2FWE-TK210																	
Diesel Generator Bldg	Containment																	
Service Bldg. 745' and 760'	Primary Aux. Building																	
Emergency Switchgear 730'																		
<i>Escalation</i>	Escalation of this event will be based on "Fission Product Barrier Matrix".																	
<i>References</i>	NUMARC/NESP-007, (HA1 example #6), Rev. 2, 1/92																	



<i>Section 2.0</i>	SYSTEM DEGRADATION
<i>TAB 2.9</i>	TURBINE FAILURE
<i>EAL 2.9.U</i>	UNUSUAL EVENT
<i>Mode</i>	1,2,3
<i>Description</i>	<p>Turbine failure results in casing penetration</p> <p>1. Plant personnel report a turbine failure which results in penetration of the turbine casing or damage to main generator seals (with evidence of significant hydrogen or seal oil leakage)</p>
<i>Basis</i>	<p>This EAL is intended to address main turbine rotating component failures of sufficient magnitude to cause observable damage to the turbine casing or to the seals of the main turbine generator. Of major concern is the potential for damage to non-safety related equipment or the leakage of combustible fluids, lubricating oils and gases (hydrogen) to the plant environs. Actual fires and flammable gas build up are appropriately classified via other events. 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.</p>
<i>Escalation</i>	<p>Escalation of this event would be based on potential damage done by turbine PROJECTILES to safety related equipment.</p>
<i>References</i>	<p>NUMARC/NESP-007, (HU1 example # 6), Rev. 2, 1/92</p>

<i>Section 4.0</i>	HAZARDS AND ED JUDGMENT																
<i>TAB 4.1</i>	FIRE																
<i>EAL 4.1.G</i>	GENERAL EMERGENCY																
<i>Mode</i>	1,2,3,4																
<i>Description</i>	<p>FIRE in the control room, cable tray mezzanine, or process control room resulting in an evacuation of the control room per 1.56C.4 (2.56C.A) "Alternate Safe Shutdown" and loss of any required equipment resulting in an uncontrolled RCS heatup. (1 and 2 and 3)</p> <ol style="list-style-type: none"> <li>1. 1.56C.4 (2.56C.4) "Alternate Safe Shutdown" entered</li> <li>2. Ops personnel report inability to operate at least one of each (any) of the following components of the available train (equipment required by 2.56C.4): <ul style="list-style-type: none"> <li>Unit 1 <table border="0" style="margin-left: 20px;"> <tr> <td>Charging Pump</td> <td>AFW pump</td> <td>Diesel generator</td> </tr> <tr> <td>RPRW pump</td> <td>BIP</td> <td>Steam relief path</td> </tr> </table> </li> <li>Unit 2 <table border="0" style="margin-left: 20px;"> <tr> <td>CHS-P21A</td> <td>CCP-P21A</td> </tr> <tr> <td>EGS-EG2-1</td> <td>FWE-P23A &amp; FWE-P22</td> </tr> <tr> <td>SAS-C21A</td> <td>Alternate S/D Panel</td> </tr> <tr> <td>SWS-P21A</td> <td>RHS-P21A</td> </tr> <tr> <td>Black D/G</td> <td></td> </tr> </table> </li> </ul> </li> <li>3. Uncontrolled RCS heatup lasting longer than 15 minutes.</li> </ol>	Charging Pump	AFW pump	Diesel generator	RPRW pump	BIP	Steam relief path	CHS-P21A	CCP-P21A	EGS-EG2-1	FWE-P23A & FWE-P22	SAS-C21A	Alternate S/D Panel	SWS-P21A	RHS-P21A	Black D/G	
Charging Pump	AFW pump	Diesel generator															
RPRW pump	BIP	Steam relief path															
CHS-P21A	CCP-P21A																
EGS-EG2-1	FWE-P23A & FWE-P22																
SAS-C21A	Alternate S/D Panel																
SWS-P21A	RHS-P21A																
Black D/G																	

<i>Section 4.0</i>	HAZARDS AND ED JUDGMENT
<i>TAB 4.1</i>	FIRE
<i>EAL 4.1.G</i>	GENERAL EMERGENCY (Con't)
<i>Mode</i>	1,2,3,4
<i>Basis</i>	<p>See generic bases at the beginning of this section.</p> <p>The EAL considers the degradation associated with the implementation of OM 1(2).56C.4 "Alternate Safe Shutdown". The procedure is designed to permit a small operating crew to shutdown and cooldown the unit without the use of the control room or alternate shutdown panel. The procedure is entered when there is a fire in the control room, cable tray mezzanine, or process control room. These areas carry cabling and equipment controls that can affect safety systems significantly. The cable separation is such that a fire in any one of these areas will not eliminate both trains of equipment capability. To achieve unit shutdown and cooldown without fire induced spurious activations and failures, only select components of a single available train are utilized. This intentionally reduces the normal redundancy of safety related equipment and thus necessitates that all equipment identified operate as required. INDICATOR #2 recognizes that if one of the components performing each of the identified functions is not operating properly, plant control cannot be ensured. For the Unit 1 charging and reactor plant river water systems this can be accomplished with the available train pump or the swing "C" pump. For the AFW (FWE) system this can be accomplished by the use of the available motor driven pump or the turbine driven pump. Any available steam path is acceptable, (atmospheric dump valves or residual heat release valve). The loss of this equipment under these conditions will lead to a core melt sequence. INDICATOR #3 is included to recognize the RCS heatup toward a core melt sequence and prevent an overly conservative declaration due to momentary losses of equipment functions. When the loss of functions leads to an uncontrolled heatup the situation constitutes a General Emergency.</p>
<i>Escalation</i>	Not Applicable
<i>References</i>	NUMARC/NESP-007 (addition consistent w/ HG2) Rev. 2, 1/92 OM 1.56C.4

<i>Section 4.0</i>	HAZARDS AND ED JUDGMENT
<i>TAB 4.1</i>	FIRE
<i>EAL 4.1.S</i>	SITE AREA EMERGENCY
<i>Mode</i>	1,2,3,4
<i>Description</i>	<p>FIRE in the control room, cable tray mezzanine, or process control room resulting in an evacuation of the control room per 1.56C.4 (2.56C.4) "Alternate Safe Shutdown"</p> <p>1. 1.56C.4 (2.56C.4) "Alternate Safe Shutdown" entered</p>
<i>Basis</i>	<p>See generic bases at the beginning of this section.</p> <p>The EAL considers the degradation associated with the implementation of OM 1.56C.4 "Alternate Safe Shutdown". The procedure is designed to permit a small operating crew to shutdown and cooldown the unit without the use of the control room or alternate shutdown panel. The procedure is entered when there is a fire in the control room, cable tray mezzanine, or process control room. These areas carry cabling and equipment controls that can affect safety systems significantly. The cable separation is such that a fire in any one of these areas will not eliminate both trains of equipment capability. To achieve this unit shutdown and cooldown without fire induced spurious activations and failures, only select components of a single available train are utilized. This intentionally reduces the normal redundancy of safety related equipment. This reduction in available equipment coupled with the fire in progress and the limitations associated with instrumentation constitutes a Site Area Emergency.</p>
<i>Escalation</i>	Escalation would be based on 4.1.G due to loss of necessary equipment to perform OM 1.56C.4
<i>References</i>	NUMARC/NESP-007 (addition consistent w/ HS2) Rev. 2, 1/92 OM 1.56C.4

<i>Section 5.0</i>	DESTRUCTIVE PHENOMENA
<i>TAB 5.5</i>	RIVER LEVEL LOW
<i>EAL 5.5.A</i>	ALERT
Mode	All
<i>Description</i>	<p>River water level: &lt; 648.6 Ft Mean Sea Level [1 or 2]</p> <ol style="list-style-type: none"> <li>1. LR-CW-101, if accessible, indicates &lt; 648.6 Ft mean sea level</li> <li>2. National Weather Bureau (644-2882) or Montgomery Lock (643-8400) reports Montgomery Lower Pool stage height &lt; -3.92 Ft.</li> </ol> <p><i>Note: Mean Sea Level = stage height + 652.52 Ft</i></p>
<i>Basis</i>	<p>A level of &lt; 648.6 Ft mean sea level was selected for this EAL. This river level will result in reduction/loss of suction to the intake structure pumps. Two methods of obtaining the information is included in the EAL. This precludes reliance on a single instrument.</p>
<i>Escalation</i>	Escalation to this event will be based on "Fission Product Barrier Matrix."
<i>References</i>	NUMARC/NESP-007, (HA1 example #7), Rev. 2, 1/92

<i>Section 6.0</i>	SHUTDOWN SYSTEMS DEGRADATION
<i>TAB 6.2</i>	RCS INVENTORY - SHUTDOWN
<i>EAL 6.2.U</i>	Unusual Event
<i>Mode</i>	5,6
<i>Description</i>	<p>Loss of Reactor Coolant System Inventory with inadequate make-up (1 and 2)</p> <ol style="list-style-type: none"> <li>1. Ops personnel report temporary RCS level instrumentation in the Control Room indicates a level drop to 14.5 inches</li> <li>2. Ops personnel report inability to make-up RCS inventory</li> </ol>
<i>Basis</i>	<p>See generic bases for this TAB</p> <p>This EAL is intended to serve as a precursor to loss of RHR (RHS). The loss of RCS inventory could be the result of failure of temporary piping or temporary barriers (e.g., steam generator dams, freeze seals). The potential for such events increases during shutdown due to the accelerated maintenance activity that occurs during these periods. In addition to creating the potential for loss of inventory, this maintenance activity, removes equipment from service that could restore inventory to mitigate the consequences of the loss. A sudden loss of inventory could result in a loss of decay heat removal due to RHR (RHS) pump suction vortexing or preemptory operator pump manual shutdowns, as could a smaller leak that cannot be isolated.</p> <p>TABs 2.5 and 2.6 address RCS leakage. Although the mode applicability includes mode 5, it is limited to mode 5 with the RCS pressurized. There are no EALs that address RCS leakage in mode 5 with the RCS depressurized, or in mode 6. Further, those EALs identify a specific numeric leak rate, which is not appropriate to shutdown conditions.</p> <p>This EAL does not specify a numeric leak rate in that the conditions surrounding the leak and the systems available to make-up losses can depend on ongoing maintenance activities. There are no make-up systems required by T/S in shutdown modes.</p>
<i>Escalation</i>	Escalation to higher classifications would occur if (1) the core becomes uncovered, or (2) if the RHR (RHS) loss results in core exit temperature increase in excess of 10°F and exceeds 200 F
<i>References</i>	Pending (NUMARC Shutdown EALs consistent w/ NUMARC/NESP-007 HU5)

<i>Section 6.0</i>	SHUTDOWN SYSTEM DEGRADATION
<i>TAB 6.5</i>	FUEL HANDLING
<i>EAL 6.5.A</i>	Alert
<i>Mode</i>	All
<i>Description</i>	<p>Major damage to irradiated fuel; or loss of water level that has or will uncover irradiated fuel outside the reactor vessel (1 and 2)</p> <ol style="list-style-type: none"> <li>1. VALID Hi-Hi Alarm on RM-RM-203 or RM-RM-207 or RM-VS-103 A/B or RM-VS-104A/B (High on RMF-RQ202[1031], 301A/B [1032/2032], HVR-RQ104A/B [1024/1028], or RMR-RQ203[1025])</li> <li>2. (a or b) <ol style="list-style-type: none"> <li>a. Plant personnel report damage of irradiated fuel sufficient to rupture fuel rods</li> <li>b. Plant personnel report water Level drop has or will exceed makeup capacity such that irradiated fuel will be uncovered</li> </ol> </li> </ol>
<i>Basis</i>	<p>The major concern of the EAL is a fuel handling accident or loss of water covering spent fuel. Events away from the reactor vessel (e.g., in the cavity, transfer tube, or spent fuel pool) are addressed. Events within the vessel are classified in accordance with TABs 6.1 and 6.2.</p> <p>Events of this type could cause an increase in radioactivity readings and potentially a release to the environment. The magnitude of these releases is dependent on the amount of damage, depth of water above damage, and available filtration systems. Design basis fuel handling accident doses could exceed the EPA PAG, warranting a General Emergency classification. However, as with all UFSAR analyses, there is extensive conservatism in the analysis. Thus, an Alert Emergency is deemed justified. This declaration would result in augmentation of onsite personnel to support assessment of the release and restorative actions to stabilize the condition.</p> <p>With regard to the loss of water level, design features and administrative controls limit the possible fuel uncover to a single element. Analyses performed in response to IE Bulletin 84-03, showed that the clad on a fuel assembly suspended in air would begin to melt at about 60 minutes, assuming an ambient air temperature of 105 °F, which is conservative. This time period provides for event-specific assessments. Escalation of the classification would be based on the results of these assessments.</p>
<i>Escalation</i>	Escalation would on the basis of TAB 7.1, Gaseous Effluents
<i>References</i>	<p>NUMARC/NESP-007 (AA2 example # 1,3), Rev 2, 1/92          ltr dtd 10/24/84, JJCarey to TEMurley USNRC RI          ltr ND1SCA:0095 dtd 9/17/84, MYLee to KDGrada</p>



<i>Section 6.0</i>	SHUTDOWN SYSTEM DEGRADATION
<i>TAB 6.5</i>	FUEL HANDLING
<i>EAL 6.5.A</i>	Alert (Con't)
<i>Mode</i>	All
<i>Description</i>	(Con't)
<i>Basis (Con't)</i>	INDICATOR #1 verifies the reports discussed in INDICATOR #2 by noting the increase in radiation levels, and/or airborne activity in the affected areas. An increase on the ventilation monitors signifies the release of radioactivity in the fuel gap, whereas, an increase on area radiation monitors is indicative of reduced shielding due to the decrease in water level.
<i>Escalation</i>	Escalation would on the basis of TAB 7.1, Gaseous Effluents
<i>References</i>	NUMARC/NESP-007 (AA2 example # 1,3), Rev 2, 1/92 ltr dtd 10/24/84, JJCarey to TEMurley USNRC RI ltr ND1SCA:0095 dtd 9/17/84, MYLee to KDGrada

<i>Section 6.0</i>	SHUTDOWN SYSTEM DEGRADATION
<i>TAB 6.5</i>	FUEL HANDLING
<i>EAL 6.5.U</i>	Unusual Event
<i>Mode</i>	All
<i>Description</i>	<p>UNPLANNED loss of water level in spent fuel pool or reactor cavity or transfer canal with fuel remaining covered (1 and 2 and 3)</p> <ol style="list-style-type: none"> <li>1. Plant personnel report water level drop in spent fuel pool or reactor cavity or transfer canal</li> <li>2. VALID Hi-Hi Alarm on RM-RM-203 or RM-RM-207 (RMR-RQ203 [1025] or RMF-RQ202 [1031])</li> <li>3. Fuel remains covered with water.</li> </ol>
<i>Basis</i>	<p>The major concern of the EAL is a loss of water covering spent fuel. Events away from the reactor vessel (e.g., in the cavity, transfer tube, or spent fuel pool) are addressed. Events within the vessel are classified in accordance with TABs 6.1 and 6.2.</p> <p>Events of this type could cause an increase in radioactivity readings and potentially a release to the environment. The magnitude of these releases is dependent on the amount of damage, depth of water above damage, and available filtration systems. However, even without a release, elevated dose rates in adjacent areas could create access limitations. (See TAB 7.3)</p> <p>The design of fuel handling equipment and administrative controls on activities involving spent fuel maintains water above the fuel during normal handling. Should there be a loss of water level, such as that associated with a failure of the reactor cavity seal, fuel elements could be exposed to air in three locations: (1) in the manipulator mast, in the RCCA change fixture, and suspended from the fuel pool bridge crane. Analyses performed in response to IE Bulletin 84-03, showed that the clad on a fuel assembly suspended in air would begin to melt at about 60 minutes, assuming an ambient air temperature of 105 °F, which is conservative. The additional heat transfer afforded by the water assumed in this EAL would extend this time to several hours. This time period provides for event-specific assessments. Escalation of the classification would be based on the results of these assessments.</p> <p>INDICATOR #2 verifies the reports discussed in INDICATOR #1 by noting the increase in radiation levels in the affected areas. An increase on area radiation monitors is indicative of reduced shielding due to the decrease in water level. INDICATOR #3 is the discriminator between the Unusual Event and the Alert.</p>
<i>Escalation</i>	Escalation would be on the basis of TAB 7.1, Gaseous Effluents, or TAB 7.3, Radiation Levels
<i>References</i>	<p>NUMARC/NESP-007 (AU2 example # 1,2), Rev 2, 1/92          ltr dtd 10/24/84, JJCarey to TEMurley USNRC RI          ltr ND1SCA:0095 dtd 9/17/84, MYLee to KDGrada</p>

<i>Section 6.0</i>	SHUTDOWN SYSTEM DEGRADATION
<i>TAB 6.6</i>	INADVERTENT CRITICALITY
<i>EAL 6.6.A</i>	Alert Emergency
<i>Mode</i>	3, 4, 5, 6
<i>Description</i>	Inadvertent reactor criticality  1. Nuclear instrumentation indicates unanticipated sustained positive startup rate
<i>Basis</i>	This EAL addresses situations in which inadvertent criticalities occur. Improper rod withdrawals are included but limited in application to Modes 3,4,5, and 6. It is not intended that this Alert apply to a premature criticality during a planned reactor startup. In this situation the plant has been prepared for the reactor to be brought critical and procedural control dictate appropriate action. This situation is therefore not consistent with the declaration of an emergency. This EAL also addresses events (e.g.,inadvertant dilution, failure of loop dams) that result in dilution of RCS boron concentration. It has been postulated that localized criticality could occur in the reactor vessel due to such a failure with RCS temperature cold. Such a criticality would cease once in-vessel mixing re-established negative reactivity in the affected region of the core. Since this sequence would likely be less than the recognition and assessment time, the INDICATOR calls for a sustained positive startup rate.
<i>Escalation</i>	Escalation would on the basis of the failure of RHR to remove the heat of fission, resulting in a heat-up.
<i>References</i>	Pending (NUMARC Shutdown EALs consistent w/ NUMARC/NESP-007 HA6)