

PNL/NRC REVIEW OF EMERGENCY ACTION LEVELS (EALs) FOR THE  
WATERFORD-3 NUCLEAR POWER STATION

COMMENT RESOLUTION

GENERAL COMMENT

1. EAL number 3 in Category A - Uncontrolled Release of Radioactivity under Unusual Event has been deleted.
2. EAL number 7 in Category C - DNB/Degraded Core Sequence under Unusual Event will remain in effect.

UNUSUAL EVENT

INITIATING CONDITION 4

Corresponding EALs 3, 4 and 5 in Category C - DNB/Degraded Core Sequence under Unusual Event have been restructured under one initiating condition as follows:

3. Abnormal coolant temperature and/or pressure or abnormal fuel temperature as determined by:
  - a) DNBR less than 1.20 as indicated by Core Protection Calculators; or
  - b) Peak linear heat rate greater than 21.0 KW/ft as indicated by Core Protection Calculators; or
  - c) RCS less than 20 degrees subcooled and RCS T avg greater than 350 degrees F.

INITIATING CONDITION 10

EAL number 1 in Category E - Hazards to Station Operation under Unusual Event has been reworded as follows:

1. Observation of fire within the plant which lasts longer than 10 minutes or any fire within the owner controlled area which requires off-site fire fighting assistance.

INITIATING CONDITION 12

EAL number 1 in Category G - Security Compromise under Unusual Event has been expanded as follows:

1. Any security threat, attempted entry or attempted sabotage such that Security notifies the NOS-SS of initiation of the Security Contingency Plan.

INITIATING CONDITION 13

The licensee assumes that the intent of Initiating Condition 13b (low water level) is to address a potential loss of ULTIMATE HEATSINK due to low water level. The ULTIMATE HEATSINK for Waterford 3 is the Wet and Dry Cooling Tower arrangement which does not require any water from a river, lake or ocean. The licensee therefore contends that Initiating Condition 13b (low water level) is not applicable to the Waterford 3 site.

INITIATING CONDITION 15

EAL number 2 in Category H - Miscellaneous under Unusual Event has been expanded as follows:

2. Other plant conditions exist that, in the opinion of the NOS-SS, warrant increased awareness on the part of the plant operating staff or state or local authorities, or require plant shutdown under technical specification requirements, or involve other than normal controlled shutdown.

INITIATING CONDITION 17

EAL number 2 in Category C - DNB/Degraded Core Sequence under Unusual Event has been expanded as follows:

2. Rapid secondary depressurization due to steamline break or secondary safety/relief valve failure or cold water injection as determined by:

Uncontrolled decrease in steam generator pressure(s) to  $< 814$  PSIA as indicated on MS-IPT-0301AS, (0301BS), (0303AS), (0303BS).

[BASES: The 814 PSIA setpoint corresponds to the Main Steam Isolation System actuation setpoint]

ALERT

INITIATING CONDITION 2

EAL number 2 in Category B - Loss of RCS Inventory under Alert has been expanded as follows:

2. RCS to secondary leakage greater than 10 gpm concurrent with loss of off-site power as determined by:

Equilibrium charging flow minus total letdown flow  $> 10$  gpm

AND

PRM-IRE-5500A, (B) Main Steam Line Monitor exceeds HI alarm setpoint of (later) mR/hr

AND

Undervoltage alarms (P1 on CP-1 and P3 on CP-1) on both ESF 4KV Buses.

INITIATING CONDITION 4

EAL number 6 in Category A - Uncontrolled Release of Radioactivity under Alert has been expanded as follows:

6. Steamline fault concurrent with significant RCS to secondary leakage as determined by:

Uncontrolled decrease in steam generator pressure(s) to < 814 PSIA as indicated on MS-IPT-0301AS, (0301BS), (0303AS), (0303BS).

AND

PRM-IRE-5500A, (B) Main Steam Line Monitor exceeds HI alarm setpoint of (later) mR/hr.

[NOTE: The licensee has changed the radiation monitor selected for this EAL from Condenser Vacuum Pump Monitor to Main Steam Line Monitor.

BASES: The Condenser Vacuum Pump Monitors are downstream of the Main Steam Isolation Valves and would be isolated early into this transient, upon actuation of the Main Steam Isolation System. The Main Steam Line Monitors are Class 1E and are located upstream of the MSIVs, and are therefore more appropriate for this EAL.]

INITIATING CONDITION 12

EAL number 5 in Category A - Uncontrolled Release of Radioactivity under Alert has been revised as follows:

5. NOS-SS opinion that a fuel damage accident with release of radioactivity to containment or fuel handling building has occurred based on reported fuel handling incident verified by alarms on any of the following radiation monitors:

|                 |   |
|-----------------|---|
| ARM-IRE-5107A   | FHB Exhaust A Monitor; <u>or</u>              |
| ARM-IRE-5107B   | FHB Exhaust B Monitor; <u>or</u>              |
| ARM-IRE-0300.2S | FHB Area Radiation Monitor; <u>or</u>         |
| ARM-IRE-0300.4S | FHB Area Radiation Monitor; <u>or</u>         |
| ARM-IRE-0300.1S | FHB Area Radiation Monitor; <u>or</u>         |
| ARM-IRE-0300.3S | FHB Area Radiation Monitor; <u>or</u>         |
| ARM-IRE-0100S   | Containment Airborne Monitor; <u>or</u>       |
| ARM-IRE-5013    | Containment Area Radiation Monitor; <u>or</u> |
| ARM-IRE-5014    | Containment Area Radiation Monitor; <u>or</u> |
| ARM-IRE-5015    | Containment Area Radiation Monitor.           |

INITIATING CONDITION 16

EAL number 1 in Category G - Security Compromise under Alert has been expanded as follows:

1. NOS-SS notified by Security of an ongoing security compromise in the plant, but not to vital areas as defined in the Security Contingency Plan.

INITIATING CONDITION 17B

(See response for UNUSUAL EVENT INITIATING CONDITION 13)

INITIATING CONDITION 19

The licensee prefers to follow through with the recommendation made for UNUSUAL EVENT INITIATING CONDITION 15 and incorporate a "shift supervisor's opinion" into the EAL. This will in fact ensure that the shift supervisor has been informed.

EAL number 1 in Category H - Miscellaneous under Alert has been expanded as follows:

1. Other plant conditions exist that, in the opinion of the NOS-SS, warrant precautionary activation of Technical Support Center and placing Emergency Operations Facility and other key emergency personnel on standby.

INITIATING CONDITION 20

EAL number 6 in Category D - Loss of Safety Functions under Alert has been revised as follows:

6. Evacuation of Control Room anticipated or required with control of shutdown systems established from local stations.

SITE AREA EMERGENCY

NOTE: The following discussion will resolve comments for INITIATING CONDITIONS 1, 3 and 5. To avoid potential changes in meaning, INITIATING CONDITIONS 1, 3 and 5 are reproduced here exactly as they exist in NUREG 0654, Appendix 1.

1. "Known loss of coolant accident greater than makeup pump capacity."
3. "Rapid failure of steam generator tubes (several hundred gpm leakage) with loss of off-site power."
5. "PWR steam line break with greater than 50 gpm primary to secondary leakage and indication of fuel damage."

DISCUSSION:

As regards INITIATING CONDITION 1

For a Combustion Engineering PWR the maximum "makeup pump capacity", with all three Charging Pumps operable, is equal to 132 gpm.

A Steam Generator Tube Rupture (SGTR) will exceed available charging pump capacity and is therefore considered to be a Loss of Coolant Accident (LOCA). Therefore, two permutations must be considered for INITIATING CONDITION 1:

1. RCS to Containment leakage greater than available charging pump capacity.
2. RCS to Secondary leakage greater than available charging pump capacity.

[The above are considered without a concurrent loss of off-site power (LOP) or steam line break (SLB).]

As regards INITIATING CONDITION 3

The radiological consequence of RCS to Secondary leakage is more severe when concurrent with a loss of off-site power due to the fact that this necessitates a RCS cooldown using steam dumps to atmosphere.

The licensee has established a more conservative EAL of 50 gpm when concurrent with loss of off-site power.

As regards INITIATING CONDITION 5

With presently installed instrumentation, it is not possible to quantify a RCS to Secondary leakage rate when concurrent with a steam line break, due to the rapid cooldown and shrinkage of RCS inventory.

RESOLUTION:

INITIATING CONDITION 1

The previous "general" EAL has been deleted and replaced with the following two specific EALs in Category B - Loss of RCS Inventory under Site Emergency:

1. RCS to Containment leakage greater than available charging pump capacity (LOCA) as determined by:

Uncontrolled decrease in Pressurizer pressure and subcooling margin



AND

Increasing Containment pressure/radiation/temperature/sump levels

AND

No abnormal difference between Steam Generator pressures.

2. RCS to Secondary leakage greater than available charging pump capacity (SGTR) as determined by:

Uncontrolled decrease in Pressurizer pressure and subcooling margin

AND

Uncontrolled decrease in Pressurizer level

AND

PRM-IRE-5500A, (B) Main Steam Line Monitor exceeds HI-HI alarm setpoint of (later) mR/hr.

AND

Steam flow > feedwater flow mismatch or increasing level on affected Steam Generator

INITIATING CONDITION 3

Previous EAL number 2 (now number 3) i.e. Category B - Loss of RCS Inventory under Site Emergency has been expanded as follows:

3. RCS to Secondary leakage greater than 50 gpm concurrent with loss of off-site power as determined by:

Equilibrium charging flow minus total letdown flow > 50 gpm.

AND

PRM-IRE-5500A, (B) Main Steam Line Monitor exceeds HI alarm setpoint of (later) mR/hr.

AND

Undervoltage alarms (P1 on CP-1 and P3 on CP-1) on both ESF 4KV Buses.

INITIATING CONDITION 5 \* Also See Attachment II

EAL number 8 in Category A - Uncontrolled Release of Radioactivity under Site Emergency has been expanded as follows:

8. Steamline fault concurrent with gross RCS to Secondary leakage concurrent with indication of failed fuel as determined by:

Uncontrolled decrease in Steam Generator pressure(s) to  $\leq$  814 PSIA as indicated on MS-IPT-0301AS, (0301BS), (0303AS), (0303BS).

AND

PRM-IRE-5500A, (B) Main Steam Line Monitor exceeds HI alarm setpoint of (later) mR/hr.

AND

RCS dose equivalent I-131 greater than 1.0 uCi/gm as determined by the most recent isotopic analysis results.

[NOTE: (1) The licensee has changed the radiation monitor selected for this EAL from Condenser Vacuum Pump Monitor to Main Steam Line Monitor.

BASES: As previously discussed under resolution for Alert INITIATING CONDITION 4.

NOTE: (2) Combustion Engineering PRWs such as Waterford 3 are equipped with a Letdown Process Radiation Monitor. During normal operation reactor coolant is continuously routed through this monitor from a sidestream piped off the letdown flow path. However, the letdown flow path is isolated by both Safety Injection actuation and Containment Isolation actuation. On a Steam Line break a Safety Injection actuation is generated early into the transient due to Pressurizer Pressure-Low. Therefore, the Letdown Process Radiation Monitor is not available during a Main Steam Line break. The only other method then available for determination of failed fuel is isotopic analysis. According to Waterford 3 FSAR, 15.1.3.1.3.3.b), as a result of the postulated worst case double-ended Steam Line Break at full power with concurrent loss of off-site power and failure of one HPSI pump to start, "the minimum DNBR does not violate the design limit of 1.19". Therefore, the more feasible progression into INITIATING CONDITION 5 would be that the failed fuel condition existed prior to the Steam Line break in which case the isotopic analysis would have previously been performed and the results would be immediately available.]

INITIATING CONDITION 9

EAL number 4 in Category D - Loss of Safety Functions under Site Emergency has been revised as follows:

4. Transient requiring operation of shutdown systems with failure to scram with no core damage immediately evident as determined by:

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NOTE

If evidence of core damage exists, a GENERAL EMERGENCY must be declared immediately.

\*\*\*\*\*

Two or more alike RPS trip channels have reached or exceeded the trip setpoint.

AND

Reed Switch Position Transmitters indicate 10 or more FLCEAs not fully inserted.

AND

No indication of core damage.

AND

NOS-SS opinion that a transient is in progress.

INITIATING CONDITION 10

EAL number 6 in Category A - Uncontrolled Release of Radioactivity under Site Emergency has been revised as follows:

6. NOS-SS opinion that a major fuel damage accident with release of radioactivity to containment or fuel handling building has occurred based on reported fuel handling incident verified by greater than 10 times alarm setpoint indication on any of the following radiation monitors:

|                 |   |
|-----------------|---|
| ARM-IRE-5107A   | FHB Exhaust A Monitor; <u>or</u>              |
| ARM-IRE-5107B   | FHB Exhaust B Monitor; <u>or</u>              |
| ARM-IRE-0300.2S | FHB Area Radiation Monitor; <u>or</u>         |
| ARM-IRE-0300.4S | FHB Area Radiation Monitor; <u>or</u>         |
| ARM-IRE-0300.1S | FHB Area Radiation Monitor; <u>or</u>         |
| ARM-IRE-0300.3S | FHB Area Radiation Monitor; <u>or</u>         |
| ARM-IRE-0100S   | Containment Airborne Monitor; <u>or</u>       |
| ARM-IRE-5013    | Containment Area Radiation Monitor; <u>or</u> |
| ARM-IRE-5014    | Containment Area Radiation Monitor; <u>or</u> |
| ARM-IRE-5015    | Containment Area Radiation Monitor.           |



INITIATING CONDITION 15b

(See response for UNUSUAL EVENT INITIATING CONDITION 13)

INITIATING CONDITION 17

The licensee prefers to follow through with the recommendation made for UNUSUAL EVENT INITIATING CONDITION 15 and incorporate a "shift supervisor's opinion" into the EAL. This will in fact ensure that the shift supervisor has been informed.

EAL number 1 in Category H - Miscellaneous under Site Emergency has been expanded as follows:

1. Other plant conditions exist that, in the opinion of the NOS-SS, warrant activation of emergency centers and monitoring teams or a precautionary notification to the public near the site.

GENERAL EMERGENCY

INITIATING CONDITION 1

DISCUSSION:

Where the licensee makes reference to a release rate  $>$  (TBD) Ci/min, the "(TBD)" is an abbreviation for "To Be Developed". Perhaps "(later)" would be a better term.

The original intent of EAL number 1 in Category A - Uncontrolled Release of Radioactivity under General Emergency was to establish a more conservative EAL which assumes worst case meteorological conditions to allow a more expeditious classification based on a pre-determined radiation monitor reading. The " $\geq$  (TBD) Ci/min" would have corresponded to a dose rate  $\geq 1$  Rem/hr at the Site boundary. Subsequently, it has been indicated that adequate conservatism is incorporated into the Protective Action Guidelines and the intent of NUREG 0654 Appendix 1 INITIATING CONDITION 1 is to establish General Emergency EALs using actual meteorological conditions.

Since the Manual Off-Site Dose Assessment is performed using actual radiation monitor readings and actual meteorological conditions, and to preclude an overly conservative declaration of a General Emergency, the licensee has therefore deleted EAL number 1 in Category A - Uncontrolled Release of Radioactivity under General Emergency.

RESOLUTION:

Previous EALs number 2, 3, 4 and 5 (now 1, 2, 3 and 4) in Category A - Uncontrolled Release of Radioactivity under General Emergency which correspond to INITIATING CONDITION 1 have been revised as follows:

1. Off-Site Dose Assessment (CEPADAS/MANUAL) projects whole body dose rate at the site boundary  $\geq 1.0$  Rem/hr using actual meteorological conditions.
2. Off-Site Dose Assessment (CEPADAS/MANUAL) projects thyroid dose rate at the site boundary  $\geq 5.0$  Rem/hr using actual meteorological conditions.
3. Radiological monitoring team measures whole body dose rate at the site boundary  $\geq 1.0$  Rem/hr.
4. Radiological monitoring team measures thyroid dose rate (equivalent I-131 concentrations) at the site boundary  $\geq 5.0$  Rem/hr ( $1.5 \text{ E-5 uCi/cc}$ ).

#### INITIATING CONDITION 2

EAL number 1 in Category D - Loss of Safety Functions under General Emergency has been expanded as follows:

1. NOS-SS opinion that a gross loss of any two of the three fission product barriers has occurred and plant conditions are such that a potential for the loss of the third barrier exists based on consideration of the following:

##### FOR THE 1ST BARRIER-FUEL CLADDING

- A. Conditions indicating a POTENTIAL loss of fuel cladding can be determined by:
  1. Violation of DNBR due to loss of RCS flow or loss of RCS subcooling margin or abnormally high fuel temperatures.
  2. Inadequate Core Cooling due to loss of core heatsink or core flow blockage or LOCA concurrent with failure of ECCS.
- B. Conditions indicating a LOSS of fuel cladding can be determined by:
  1. Fission product activity in the reactor coolant.

##### FOR THE 2ND BARRIER-RCS PRESSURE BOUNDARY

- A. Conditions indicating a POTENTIAL loss of the RCS pressure boundary can be determined by:
  1. RCS Overpressure Transient due to loss of core heatsink or reactor power excursion or transient requiring operation of shutdown systems with failure to SCRAM.

- B. Conditions indicating a LOSS of the RCS pressure boundary can be determined by:
1. Decreasing RCS pressure AND increasing Containment pressure/radiation/temperature/sump levels AND no abnormal difference between Steam Generator pressures (LOCA).
  2. Decreasing RCS pressure AND increasing radiation on Main Steam Line monitors AND steam flow > feedwater mismatch or increasing level on affected Steam Generator (SGTR).

FOR THE 3RD BARRIER-CONTAINMENT

- A. Conditions indicating a POTENTIAL loss of containment can be determined by:
1. Steam Line Break inside containment concurrent with failure of containment heat removal systems.
  2. LOCA concurrent with failure of containment heat removal systems.
  3. Post LOCA hydrogen generation concurrent with failure of hydrogen removal systems.
- B. Conditions indicating a LOSS of containment can be determined by:
1. LOCA or Steam Line Break followed by rapidly increasing pressure in the Shield Building annulus (primary containment to Shield Building fault).
  2. Pressure in one Steam Generator continues to decrease following actuation of MSIS with containment pressure not increasing (SLB between Containment and MSIV).
  3. MSIV position indication shows MSIV not fully closed following actuation of MSIS.
  4. Multiple Containment Isolation Valve failures creating a release path from Containment to outside atmosphere.

EXAMPLE PWR SEQUENCES 5a, b, c, d and e

EAL number 1 in Category B - Loss of RCS Inventory under General Emergency has been revised as follows to correspond to INITIATING CONDITION 5a:

1. Any loss of coolant accident and subsequent failures of emergency core cooling systems such that, in the opinion of the NOS-SS, a Core Melt Sequence is in progress, or imminent and the ultimate failure of Containment is likely.

A new EAL (number 2) has been established in Category B - Loss of RCS Inventory under General Emergency to correspond to INITIATING CONDITION 5e:

2. Any loss of coolant accident and subsequent failures of containment heat removal systems such that, in the opinion of the NOS-SS, a Core Melt Sequence is in progress, or imminent, and the ultimate failure of containment is likely.

EAL number 1 in Category C - DNB/Degraded Core Sequence under General Emergency has been revised as follows to correspond to INITIATING CONDITIONS 5b and 5d:

1. Loss of core heatsink such that, in the opinion of the NOS-SS, a Core Melt Sequence is in progress, or imminent, and the ultimate failure of containment is likely based on determination of either of the following:

- a) Transient initiated by loss of all normal feedwater capability followed by failure of all emergency feedwater capability for extended period;

OR

- b) Loss of all off-site power and failure of both emergency diesel generators and failure of steam driven emergency feedwater pump for extended period.

EAL number 2 in Category D - Loss of Safety Functions under General Emergency which corresponds to INITIATING CONDITION 5c has been revised as follows:

2. Transient requiring operation of shutdown systems with failure to scram and NOS-SS opinion that a core melt sequence is in progress, or imminent, as determined by:

Two or more alike RPS trip channels have reached or exceeded the trip setpoint.

AND

Reed Switch Position Transmitters indicate 10 or more FLCEAs not fully inserted.

AND

NOS-SS opinion that a Core Melt Sequence is in progress, or imminent.

INITIATING CONDITION 7

EAL number 1 in Category E - Hazards to Station Operation under General Emergency has been revised as follows:

1. Any major hazard which causes massive common damage to plant systems such that, in the opinion of the NOS-SS, a Core Melt Sequence is in progress, or imminent, and the ultimate failure of containment is likely.

EAL number 1 in Category F - Natural Phenomena under General Emergency has been revised as follows:

1. Any major natural phenomena which causes massive common damage to plant systems such that, in the opinion of the NOS-SS, a Core Melt Sequence is in progress, or imminent, and the ultimate failure of containment is likely.

PROTECTIVE ACTION DECISION MAKING EALS

GENERAL EMERGENCY INITIATING CONDITION 4

EAL number 1 in Category H - Miscellaneous under General Emergency has been revised as follows:

1. Other plant conditions exist that, in the opinion of the NOS-SS, could result in a core melt sequence or a release of radioactivity to the environment such that resultant dose at the site boundary could reach or exceed the EPA Protective Action Guidelines of 1.0 REM whole body or 5 REM to the thyroid.

NOTE: See Attachment II

EALS NOT ADDRESSED

UNUSUAL EVENT INITIATING CONDITION 6

As regards INITIATING CONDITION 6 ("Failure of a safety or relief valve in a safety related system to close following reduction of applicable pressure."); NUREG 0818 established the precedent that this initiating condition applies to PRESSURIZER SAFETY/RELIEF VALVES and MAIN STEAM SAFETY/RELIEF VALVES.

As regards the PRESSURIZER SAFETY/RELIEF VALVES:

1. Waterford 3 does not have a power operated relief valve (PORV).



2. A failed OPEN pressurizer code safety valve would be a loss of coolant accident (LOCA) and therefore is not commensurate with the UNUSUAL EVENT classification.

However, pressurizer code safety valve leakage is addressed in Category B - Loss of RCS Inventory. The note preceeding UNUSUAL EVENT identifies the pressurizer safety valves as a source of leakage, and lists the applicable instrumentation for identifying this type of leakage. The condition is then classified dependent upon the magnitude of the leakage.

As regards the MAIN STEAM SAFETY/RELIEF VALVES:

A failed OPEN main steam safety valve or atmospheric dump valve is addressed by EAL number 2 in Category C - DNB/Degraded Core Sequence under Unusual Event as follows:

2. Rapid secondary depressurization due to steam line break or secondary safety/relief valve failure or cold water injection as determined by:

Uncontrolled decrease in steam generator pressure(s) [to  $\leq 814$  PSIA] as indicated on MS-IPT-0301AS, (0301BS), (0303AS), (0303BS).

Therefore, the intent of UNUSUAL EVENT INITIATING CONDITION 6 is met by the above, and the NUREG 0654, Appendix 1 "version" is not required as a separate entity.

#### UNUSUAL EVENT INITIATING CONDITION 14e

UNUSUAL EVENT CONDITION 14e addresses a "turbine rotating component failure causing rapid plant shutdown", whereas ALERT CONDITION 17e addresses a "turbine failure causing penetration". The licensee agrees that a catastrophic turbine failure which causes a rotating component to penetrate the turbine casing justifies implementation of the Emergency Plan, and has previously established EAL number 5 in Category E - Hazards to Station Operation under Alert to address this condition. Further turbine/generator related emergencies such as fire or explosion are addressed by separate EALs in the same category. The licensee does not consider a non-catastrophic mechanical failure which results in a turbine trip (i.e., rapid plant shutdown) to be criteria for implementation of the Emergency Plan. The licensee therefore contends that the intent of NUREG 0654, Appendix 1, is met with existing EALs and that UNUSUAL EVENT CONDITION 14e is not required as a separate entity.

#### ALERT INITIATING CONDITION 3

(See discussion preceeding resolution of comments for INITIATING CONDITIONS 1, 3 and 5 under SITE EMERGENCY.)

ALERT INITIATING CONDITION 3 addresses a "Rapid failure of steam generator tubes (e.g., several hundred gpm primary to secondary leak rate)".

As previously discussed, a "several hundred gpm primary to secondary leak rate" would be a loss of coolant accident (LOCA), for which the licensee has conservatively chosen to declare a Site Emergency.

EAL number 1 in Category B - Loss of RCS Inventory under Alert sets the RCS leakage rate (from any source) for declaration of an "Alert" at 50 GPM.

Therefore, the intent of ALERT INITIATING CONDITION 3 is met (more conservatively) and only the NUREG 0654, Appendix 1 "version" has been omitted from the ALERT classification.

#### ALERT INITIATING CONDITION 9

As regards INITIATING CONDITION 9 (Coolant pump seizure leading to fuel failure)

The consequence of a RCP shaft seizure is a departure from nucleate boiling (DNB) condition due to the rapid decrease in RCS flow.

The primary symptom of this event is a Core DNBR less than 1.20 as indicated by the Core Protection Calculators. This symptom is addressed by EAL number 3 in Category C - DNB/Degraded Core Sequence under Unusual Event.

If fuel cladding failure occurs due to DNB the primary symptom is fission product activity in the RCS. This symptom is addressed by EALs number 1 and 2 in Category C - DNB/Degraded Core Sequence under Alert.

The "event" itself is more difficult to identify as no direct indication is available in the control room.

The licensee initially chose a "symptom" rather than "event" orientated approach to this condition. However, to be consistent with NUREG 0654, Appendix 1, a new EAL has been established in Category C - DNB/Degraded Core Sequence under Alert as follows:

3. Reactor Coolant Pump shaft seizure leading to fuel failure as determined by:

Reactor Trip on Low Flow and DNBR Low

AND

DNBR less than 1.20 as indicated by Core Protection Calculators

AND

A3, (A5), (A7), (A9) on CP-2, REACTOR CLG PUMP TRIP/TROUBLE alarm

AND

Computer alarm, PT ID D-13202, (13402), (13602), (13802), RCP MTR OVERCURR/OVERLD TRIP

AND

Increasing selected isotope activity on PRM-IRE-0202, LETDOWN PROCESS RADIATION MONITOR.

Further discussion with respect to several items in Attachment I.

SITE EMERGENCY

Initiating Condition 5

EAL number 8, Category A

Attachment I; Page 7

In as much as further fuel damage is not anticipated due to DNBR not being violated. The position described in the response is maintained with research being done to verify the availability of RCS Dose equivalent I-131 analysis results within 30 minutes.

GENERAL EMERGENCY

Initiating Condition 4

EAL number 1, Category H

Attachment 1; Page 13

To ensure that Waterford-3 documentation supports the Concepts of Protection Action Decision making with respect to EPA PAG Guidelines and any Core Melt situation as described in NUREG-0654 Appendix 1, the following will occur:

Section Six of the Emergency Plan will be upgraded along with the appropriate implementing instructions and procedures.

The intention is to have EP-1-001 contain only EALs with EP-2-052 Addressing Protective Action decision making, following the declaration of the emergency.

EP-1-040 The implementing instruction Addressing the General Emergency will be upgraded to ensure that Protective Action decision making occurs promptly.

EP-2-052 The implementing procedure Addressing Protective Action decision making will be upgraded to ensure that both EPA PAG Guidelines and any condition that indicates a possible release of large amounts of activity in a short time period are considered. This will include incorporation of the notes following NUREG 0654 Appendix 1 General Emergency Initiating Condition #4 into this procedure.