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 EISENHUT, D. G. Division of Licensing

SUBJECT: Forwards addl info re emergency action levels in response to NRC 820624 ltr.

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DEPARTMENT OF THE ARMY
HEADQUARTERS, ARMY
WASHINGTON, D. C.

OFFICE OF THE CHIEF OF STAFF
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17-2

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August 24, 1982
L-82-368

Office of Nuclear Reactor Regulations
Attention: Mr. Darrell G. Eisenhut, Director
Division of Licensing
U. S. Nuclear Regulatory Commission
Washington, D. C. 20555

Dear Mr. Eisenhut:

Re: St. Lucie Unit No. 2
Docket No. 50-389
Request for Additional Information
on St. Lucie Emergency Action Levels

Attached are Florida Power & Light Co. (FPL) responses to the NRC staff requests for additional information/clarification on the St. Lucie Emergency Action Levels contained in your letter of June 24, 1982.

Very truly yours,

Robert E. Uhrig
Vice President
Advanced Systems and Technology

REU/RAK/jea

Attachment

cc: J. P. O'Reilly, Region II
Harold F. Reis, Esquire

Boo!

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PDR ADDCK 05000389
PDR



RESPONSES TO
EMERGENCY PREPAREDNESS LICENSING BRANCH
REQUEST FOR ADDITIONAL INFORMATION
ST. LUCIE NUCLEAR STATION
DOCKET NUMBER 50-389

810.1

UNUSUAL EVENT
QUESTION

- a. Initiating Condition No. 2 (radiological effluents). The requirement for confirming analyses should be dropped if they require over 15 minutes.

RESPONSE

E. Plan p. 3-11 Uncontrolled Effluent Release

The plant monitor setpoints involved are calculated conservatively assuming all the monitored activity is due to the limiting isotope. This means the alarm setpoints are well below the actual Technical Specification limits - in fact the alarms are set at about 10% of Tech. Spec. limits. Therefore declaring an Unusual Event without a confirmatory sample is not appropriate. Additionally, the liquid and gaseous waste release monitors automatically terminate the release if the alarm actuates. Other NRC procedures direct operators to determine and isolate the source of any such release whether or not it is an Unusual Event. Additionally, NUREG-0818 accepted EAL's for "valid alarm" (which can be verified only by sampling) existing for one hour. Also, these monitors do occasionally give false alarms and declaring an Unusual Event without verification is not appropriate. It should also be noted that the plant has continuous (24hr/day) coverage by radiological chemistry personnel who are readily available to do the sampling and analysis.

QUESTION

- b. Initiating Condition No. 3 (fuel damage indication). An EAL for rate of fuel failures should be added.

RESPONSE

E. Plan p. 3-10 Fuel Element Failure

The St. Lucie Units do not have a failed fuel monitor. Our NSSS vendor has stated there is no valid, meaningful setpoint which could be used on our existing monitors. NUREG-0818 accepts EAL's requiring chemistry analysis to verify monitor alarms for this case. As previously noted the alarms are set very conservatively and the on-shift Chemistry Technicians can sample in 30 to 40 minutes. Therefore we do not feel this EAL is practical or necessary.

UNUSUAL EVENT (cont.)QUESTION

- c. Initiating Condition No. 4 (abnormal coolant temperature and/or pressure or abnormal fuel temperatures). EAL's should be added for high and low coolant pressure. The high fuel temperature EAL needs to be quantified (values of thermocouple readings at which an Unusual Event would be declared should be specified).

RESPONSE

E. Plan p. 3-10, Abnormal Temperature/Pressure

We agree to add a specific temperature to the EAL on incore thermocouples.

We agree to add an EAL on high RCS pressure. The EAL will have a short time limit associated with it. Certain transients can reach the stated pressure but the pressure will immediately be reduced by action of the RPS, PORV's, and safeties. The duration chosen will be associated with the resolution of our pressure recording instrumentation.

As we discussed on 7/15/82 the specific low pressure value which indicates a problem depends on plant conditions. However, both subcooling margin (which is indicated directly by the Subcooling Margin Monitor) and hot leg temperature less than 20°F below saturation temperature are relationships between existing RCS temperatures and existing RCS pressures and cover all modes of plant operation. If a specific number were picked to cover startup and power operations (the most critical modes), it would have to ignore other modes where pressures are lower (hot shutdown, hot standby etc.) and actually would be less conservative than our existing EAL.

QUESTION

- d. Initiating Condition No. 6 (failure of a safety or relief valve to close). The licensee has developed adequate EAL's for large leaks from these valves. EAL's applicable to smaller leaks (partially open valves) should be developed.

RESPONSE

E. Plan P. 3-6, Miscellaneous

If necessary, we agree to add an EAL addressing leaking or partially open RCS relief valves. However, we strongly request evaluation of our position and philosophy concerning Abnormal RCS Leak Rate, which requires action based on the size of the leak, without regard to what causes the leak, i.e. an open valve, pipe break, etc. The valve is not the real threat to the core, the leak is the threat, from whatever source. If your response still requests this new EAL, we will add it in our next Plan revision.

UNUSUAL EVENT (cont.)QUESTION

- e. Initiating Condition No. 7 (Loss of AC Power). The licensee version of the initiating condition has a typographical error. It call for loss of off-site power and loss of all on-site power. The underlined "and" should be changed to "or".

RESPONSE

E. Plan p. 3-16 Loss of Power

We agree that the "and" in the Initiating Condition should be "or" and will correct this editorial error.

QUESTION

- f. Initiating Condition No. 10 (fire). The licensee's EAL is nonconservative in that it requires off-site support before declaring an Unusual Event. Any fire within the plant lasting more than 10 minutes is grounds for declaring an Unusual Event.

RESPONSE

E. Plan p. 3-12 Fire

We agree to change the EAL to add "which cannot be extinguished within 10 minutes" and delete "requiring off-site support."

QUESTION

- g. Initiating Condition No. 14b (train derailment). This initiating condition was not addressed; it should be if on-site train service exists.

RESPONSE

There is no on-site train service. Per Unit 2 FSAR, the nearest railroad (2 miles west) is far enough away "to warrant no consideration of potential accidents."

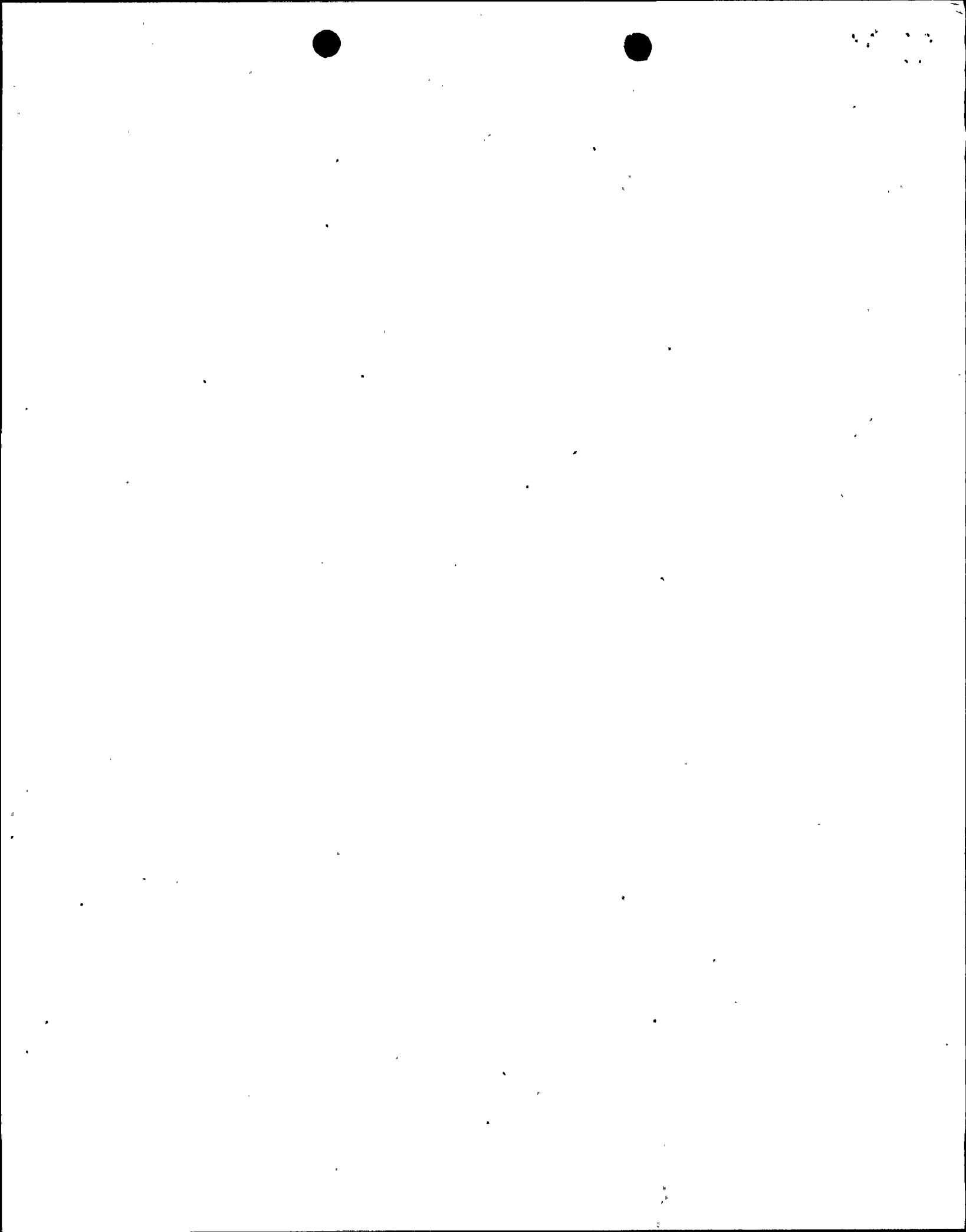
QUESTION

- h. Initiating Condition No. 15 (catch-all). The licensee partially met this initiating condition (see page 3-20). However an EAL should be added for any other existing plant conditions that warrant calling an Unusual Event.

RESPONSE

E. Plan p. 3-20 Other Conditions Requiring Increased Awareness

We agree to add the requested EAL.



810.2

ALERT
QUESTION

- a. Initiating Condition No. 1 (loss of fuel cladding). An EAL for rate of fuel failure should be added.

RESPONSE

E. Plan p. 3-10 Fuel Element Failure

As previously noted in item 810.lb, this is impractical for our plants.

QUESTION

- b. Initiating Condition No.2 (rapid gross failure of one steam generator tube with loss of off-site power). The requirement for concurrent increased steam generator blowdown and condensate air ejector radiation reading is nonconservative since the condensate air ejector monitor may not be a reliable source of information during an accident. Also additional EAL's (such as increasing steam generator level) should be added. The recommendations of NUREG-0818 should be considered in preparing a revised EAL set.

RESPONSE

E. Plan p. 3-8 Abnormal Primary to Secondary Leak Rate

As discussed, we agree to clarify the EAL on use of the condenser air ejector monitor since it can or will be isolated due to the closing of the steam isolation valves during such a transient.

Also as discussed, steam generator level would not be a symptom or appropriate EAL for the "smaller" tube failures (within charging pump capacity) and is included in the other set of EAL's for larger leaks therefore, no other changes are needed. When comparing leaks of less than 132 gpm to 14000 gpm (or greater) feedwater flow, with automatic steam generator level control, steam generator level is a totally inappropriate EAL.

QUESTION

- c. Initiating Condition No. 3 (rapid gross failure of steam generator tubes). The EAL's set will be acceptable if it is modified so that a high reading on either the steam generator blowdown or air ejector radiation process monitors will require declaration of an Alert.

ALERT (cont.)
RESPONSE

E. Plan p. 3-8 Abnormal Primary to Secondary Leak Rate

We would like to point out that it is true that the CAEM may be isolated (with isolation of steam flow) in this and other events which use it. However, for some of these events, especially tube failure it is unlikely that the event will "step through" the E. Plan with a small leak which increases and escalates the event. More typical of recent events has been a tube problem which first appears at the Alert (or even Site Area Emergency) leak rate and stays at that level. For at least the Alert class the CAEM provides valuable information, if it is operating.

QUESTION

- d. Initiating Condition No. 4 (steam leak line break with primary to secondary leakage). The EAL set is acceptable if the requirement for concurrent high readings on the steam generator blowdown and condensate air ejector radiation process monitors is changed so that a high reading on either monitor will require declaration of an Alert.

RESPONSE

E. Plan p. 3-9, Loss of Secondary Coolant

We agree to change the "and" to "or" as requested.

QUESTION

- e. Initiating Condition No. 5 (RCS leak greater than 50 gpm). The requirement for a containment or vent radiation process monitor reading above normal should be dropped. An EAL "pressurizer level dropping with all charging pumps operating" should be considered.

RESPONSE

E. Plan p. 3-7, Abnormal Primary Leak Rate.

Pressurizer level is controlled automatically. For the Alert size leak, the mismatch between charging flow (into RCS) and letdown flow (planned flow from RCS) will be the first indication which would be well before any pressurizer level abnormalities. Also, the suggested EAL for "pressurizer level decrease with all charging pumps operating" is, by definition, a LOCA and is a Site Area Emergency, not an Alert.

Depending on leak location, the monitors will detect RCS leakage in the 1 gpm range. Any RCS leak greater than 20 gpm will quickly show up on these monitors. In the 50 gpm range, we have had cases where the "leak" was actually a malfunctioning relief valve, outside containment,

ALERT (cont.)RESPONSE (to Question e cont.)

relieving to a closed tank/system. This was not a true leak problem and there was no release to the environment. As discussed on 7/15/82, we do not feel a change in these EAL's is appropriate. Since there are nearly 50 monitors (airborne or radiation) per unit, we do not feel it appropriate to list all these monitors in the Emergency Plan. We feel the present EAL's are adequate and plan no changes.

QUESTION

- f. Initiating Condition No. 6 (high radiation levels). The relevant monitors should be listed.

RESPONSE

E. Plan p. 3-11 High Radiation Levels in Plant

We first considered adding specific identification of selected monitors for this EAL. However, we then realized that, for valid increases of a factor of 1000 over normal by any monitor in the plant is an indication of a problem of some significance which most likely warrants Alert classification.

QUESTION

- g. Initiating Condition No. 9 (coolant pump seizure leading to fuel failure) and Initiating Condition No. 10 (loss of any functions needed for cold shutdown). The licensee did not give any EAL's for these initiating conditions. The suggestions of NUREG-0818 should be considered in developing acceptable EAL sets.

RESPONSE

We will add an EAL for RCP failure which directs the Nuclear Plant Supervisor (NPS) to refer to the Fuel Element Failure event. We feel this is appropriate as it alerts the NPS that any pump failure should be considered and specifically states that pump seizure can cause fuel damage. Also, it leaves one clear event regarding fuel failures which requires E. Plan action no matter what the cause. This is especially important for the RCP failure which, once the initiating event has occurred (pump seizure), is essentially irreversible.

QUESTION

- h. Initiating Condition No. 12 (fuel handling accident). The requirement for observation of damage to the fuel assembly should be dropped as it may not be possible to make such observations following fuel damage. Instead, a "shift supervisor's opinion" EAL could be added.

ALERT (cont.)
RESPONSE

E. Plan p. 3-10 Fuel Handling Accident

We agree that the EAL's should be changed for the reason stated.

QUESTION

- i. Initiating Condition No. 13 (fire potentially affecting safety systems). The licensee's EAL is nonconservative in that it requires off-site support before declaring an Alert.

RESPONSE

E. Plan p. 3-12 Fire

We agree to delete the reference requiring off-site support. However this makes the classification less clear-cut and more subjective.

QUESTION

- j. Initiating Condition No. 15 (radiological effluent). The relevant monitors and alarms should be listed.

RESPONSE

E. Plan p. 3-11 Uncontrolled Effluent Release

For the reason discussed in item 810.1, we do not feel the suggested EAL is appropriate. Also, NUREG-0818 allows times (valid alarms for greater than 15 minutes) which approach sample analysis times and validating alarms requires samples, anyway.

QUESTION

- k. Initiating Condition No. 17b (high and low water). The relevant water levels should be specified.

RESPONSE

E. Plan p. 3-18 Water Level

Low Level - We will add Unusual Event, Alert and Site Area Emergency EAL's to cover low water level.

High Level - Due to the site nature (the protected area is surrounded by areas several feet below plant ground elevation, rainfall cannot flood the plant but could temporarily overload the drainage system. Design basis hurricanes should not cause general area water levels to exceed plant ground floor elevations but could also temporarily overload drainage systems. We feel the Alert EAL is appropriate for our plant and site but, please note, we will add an EAL for high water levels at the Site Area Emergency class.

SITE AREA EMERGENCY
QUESTION

- a. Initiating Condition No. 1 (LOCA). An EAL calling for a Site Area Emergency upon the concurrent loss of subcooling margin with a decrease in reactor pressure should be added.

RESPONSE

E. Plan p. 3-7 Abnormal Primary Leak Rate

Although it is our opinion that the stated EAL regarding "Loss of Pressure" with constant T_{ave} implies reduction if not loss of subcooling margin, we agree to address the specific words requested in the EAL.

QUESTION

- b. Initiating Condition No. 2 (degraded core). A high core temperature EAL should be added.

RESPONSE

E. Plan p. 3-10 Fuel Element Failure

We agree to add the requested EAL on high core temperature.

QUESTION

- c. Initiating Condition No. 3 (rapid failure of steam generator tubes with loss of off-site power). The EAL set is acceptable if the concurrent requirement for high readings on the steam generator blowdown and the condensate air ejector monitors is changed so that a high reading on either monitor will require declaration of a Site Area Emergency.

RESPONSE

E. Plan p. 3-8 Abnormal Primary to Secondary

We agree that the EAL should read steam generator blowdown or (not and) condenser air ejector monitor.

QUESTION

- d. Initiating Condition No. 5 (steam line break with 50 gpm primary to secondary leakage). The EAL set will be acceptable if the requirement for concurrent high readings on the steam generator blowdown and condensate air ejector radiation process monitors is changed so that a high reading on either monitor will require declaration of a Site Area Emergency.

RESPONSE

E. Plan p. 3-9 Loss of Secondary Coolant

We agree that the EAL should read steam generator blowdown or (not and) condenser air ejector monitor.

SITE AREA EMERGENCY (cont.)QUESTION

- e. Initiating Condition No. 8 (loss of any function needed for plant hot shutdown) and 9 (transient with failure to scram) were not addressed. The suggestions for NUREG-0818 should be considered in preparing EAL sets.

RESPONSE

E. Plan p. 3-13 Loss of Engineered Safety Feature/Reactor Protection System To Place Plant in Cold Shutdown

As discussed on 7/15/82 this Initiating Condition is covered in the referenced EAL group on page 3-13. We agree to add "in the NPS's opinion" which is most likely to be more conservative than NUREG-0818.

Initiating Condition #9, Transient With Failure To Scram

We will add an EAL to cover this event.

QUESTION

- f. Initiating Condition No. 13 (radiological effluents). The relevant monitors and alarms should be listed.

RESPONSE

E Plan p. 3-11 Uncontrolled Effluent Releases

The Emergency Plan Implementing Procedure, which is referenced in the Emergency Plan, defines exactly which monitors, under which circumstances, are to be used and these calculations can be done in a matter of minutes. It is inappropriate to add several pages of detail here. The monitors are already listed in Table 2-3 and Table 3-3.

QUESTION

- g. Initiating Condition No. 14 (imminent loss of physical control). The licensee's EAL is acceptable if "takeover of the plant" means occupancy of the control room, auxiliary shutdown panels or other vital areas as defined in the plant's security plan.

RESPONSE

E. Plan p. 3-17 Security Threat

We agree to clarify the EAL.

810.3

SITE AREA EMERGENCY (cont.)

QUESTION

h. Initiating Condition 15a (earthquake) and 15b (flood or low water).
the accelerations and water levels should be specified.

RESPONSE

E. Plan p. 3-18 Earthquake

We agree to add the acceleration for Site Area Emergency.

Initiating Condition #15b, E. Plan p. 3-18 Water level.

As previously discussed in the Alert section, we agree to add an EAL for low intake water and an elevation for high (flood) water levels.

QUESTION

i. Initiating Condition No. 17 (catch-all). The licensee has failed to develop an EAL calling for a Site Area Emergency if any unspecified plant condition occurs which warrants such a declaration.

RESPONSE

E. Plan p. 3-20 Other Conditions

We agree to add the specified EAL.

810.4

GENERAL EMERGENCY

QUESTION

a. EAL's were not provided for Initiating Condition No. 2, 4, 5 and 7. The suggestions of NUREG-0818 should be considered in developing acceptable EAL sets.

RESPONSE

E. Plan p. 3-6 Miscellaneous

Initiating Condition #2

As discussed on 7/15/82 Initiating Condition #2 is covered as a General Emergency on p. 3-6; two of these three specified exist and third appears imminent in the NPS's opinion.

Initiating Condition #4

This is not an EAL, it rather is an introduction to Initiating Condition #5 and some actions (not classification indicators) to be considered depending on the seriousness and potential of the General Emergency.

GENERAL EMERGENCY
RESPONSE (to Question a. cont.)

We considered including the Initiating Condition #4 information in a Table/Appendix and directing the Emergency Coordinator to refer to and consider the recommended protective action. However, in our last Emergency Plan (full scale) exercise, during (simulated) high level releases from the plant, we were forced (by drill scenario equipment failures) to make somewhat conservative (default) estimates of dose rates resulting from the (simulated) release in progress. The NRC/FEMA team criticized us for these conservative "estimates" which led to protective actions, including evacuation. This area was probably the most significant/serious criticism of the entire exercise. Since Initiating Condition #4 notes only situations where significant releases from containment are not yet taking place but could possibly happen either later or sooner (depending on the subsection of Initiating Condition #4) it appears the notes in the Initiating Condition #4 are not in accordance with present NRC philosophy and therefore will not be included in the plan. (See Initiating Condition #5 for partial exception.)

Initiating Condition #5

As we read the introduction for Initiating Condition #4 and the Initiating Condition #5 examples, this is for (potential core melt) situations where an event has occurred and, at the moment is not in a serious condition but due to other problems or system failures, will be (in some period of time) a General Emergency, unless corrective action can be taken. The potential is so serious, the event is escalated to General Emergency immediately. Thus we will be ready for the worst and can de-escalate if corrective action is successful.

Using this philosophy we agree to add a new section with the Initiating Condition #5 EAL's, all at the General Emergency class.

Initiating Condition #7

We agree to add Initiating Condition 7 to the new event discussed above as is done in NUREG-0818.

QUESTION

- b. Initiating Condition No. 3 (loss of physical control of the facility). The licensee's EAL is nonconservative in that it requires taking over the control room. Occupation of the control room, auxiliary shutdown panels or any vital area as defined in the plant's security plan is grounds for declaring General Emergency.

RESPONSE

E. Plan p. 3-17 Security Threat

We agree to clarify this EAL.

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