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October 18, 1990

Mr. K. S. West
Planning, Program, and Management Support Branch
Office of Nuclear Reactor Regulation
U.S. Nuclear Regulatory Commission
Washington, DC 20555

Dear Steve:

FIN B2311 - CRYSTAL RIVER EMERGENCY PREPAREDNESS EXERCISE - SEPTEMBER 27, 1990
(Inspection Report #50-302/90-30)

Enclosed is the final report of the Pacific Northwest Laboratory (PNL) observation during the subject exercise. Only minor changes have been made to the draft provided to the NRC team leader at the site.

If you have any questions regarding this report, please contact me on (509) 375-3782.

Sincerely,

JDJ for

J. D. Jamison, Project Manager
Operational Health Physics Group
HEALTH PHYSICS DEPARTMENT

JDJ:jw

In triplicate

Enclosure

cc: RA Erickson, w/enclosure
WM Sartor, w/enclosure

Add: West, K.S.

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CRYSTAL RIVER EMERGENCY PREPARDNESS EXERCISE

(Inspection Report #50-302/90-30)

September 27, 1990

A. Name: John M. Will

B. Assignment: To observe the Control Room (CR) operators' ability to detect and classify an emergency, to make appropriate and timely notifications, and to take actions to mitigate and correct the casualties imposed by the exercise scenario.

C. Site Personnel Contacted: J Stevenson, Lead Controller; E. Gallion, CR Controller; S. Chapin, Radiological Protection Controller, T. Miller, Shift Supervisor (SS); G. Sutter, Assistant Shift Supervisor; J Bech, Chief Nuclear Operator (offsite Comm.); Gene Carr, Nuclear Operator; E. Lee, Nuclear Operator; L. Rutledge, Assistant Nuclear Operator; T. Smith, Auxiliary Operator; S. Betts, Assistant Auxiliary Operator; P. Grimes, Clerk (Auxiliary Operator); P. Haines, Shift Technical Advisors; Bill Marshall, Accident Assessment (Operations Superintendent), G. Hebb, Technical Support Center (TSC) Operations Communicator (Off-shift SS;); C. Bennett, TSC-Operational Support Center (OSC) Communicator (Operations Planner).

D. Positive Findings

- Personnel demonstrated good use of repeat-back communications procedures.
- Personnel at several stations were able to keep their stations effectively appraised of the status of the emergency through the intercept of walkie-talkie communications with field and emergency

response teams. However, the one channel used for the exercise was quickly overloaded.

- CR operators showed initiative in thinking ahead regarding potential events, such as evacuating personnel from possible plume effected areas; sources of water, should it be required, etc.
- CR operators conducted a thorough review of Technical Specifications that would be effected by the sustained loss of offsite power.
- CR personnel showed initiative in completing two EM-204(A) manual dose projection calculations prior to the activation of the Technical Support Center (TSC).
- The operators showed initiative which accelerated the backfeed procedure by using existing scaffolding in the area and by cutting rather than disconnecting the links.
- The operators conducted good discussions of alternatives, and the Operations Superintendent ensured that any proposed CR-generated actions were to be coordinated with the TSC.
- The CR maintained an excellent detailed log of events.

E. Negative Findings

- The CR participating shift started the exercise somewhat augmented with an auxiliary operator serving as clerk, an extra capability in a position that would not be filled during a back-shift emergency.
- EM 202 Status:

  When making the initial notification of an emergency condition to the NRC (Nuclear Regulatory Commission) and the State Warning Point, Tallahassee (SWPT), the highest emergency classification level that

would have applied at any time prior to the call should first be declared.

The notification chronology was:

0754 Unusual Event (UE) declared.

0804 Alert declared.

0808 States/counties notified of the UE.

0815 NRC notified of the Alert.

0825 States/counties notified of the Alert.

Problems resulting were that 1) state/counties were informed of the UE when the plant was in an Alert, 2) the NRC was informed of the Alert before the state and counties, and 3) NRC was never informed of the Notification of Unusual Event (NOUE).

- The communicator started delivering his notification message of the Alert to the state/counties 21 minutes after the declaration and completed the message delivery 24 minutes after the declaration.
- The State of Florida notification form does not require the signature of the Emergency Coordinator (EC) to release the message. In the case of the Alert notification message, the communicator made three additions to the message after it had been seen by the EC.
- Reading the references listed below, it is not clear if, during an emergency, the on-shift SS becomes the EC or the Acting EC. In that responsibilities are described only for the EC, the title Acting EC should be eliminated.

References:

(a) Radiological Emergency Response Plan (paragraph 6.3.2)

(b) Duties of the EC (EM-202)

(c) Operation and staffing of the CR 3 Control Room During Emergency Classifications (EM-103).

- The public address system was used to announce emergency classifications and evacuation instructions, but was not used to keep personnel informed of plant conditions such as the high-radiation plane crash, loss of power, etc.
- Extra participant badges should be provided to the CR for personnel who came in to become players (e.g., NRC Site Resident, Operations Superintendent, etc.
- Controller messages which inform a player of what he sees or observes should be shown to the player or read to him, but not left with him for later referral.
- Exercise instructions refer alternately to Implementers, Evaluators, Controllers and Observers. Definitions of these titles need clarification.

F. Chronology

Time	Observation
0742	Walkie-talkie report from the Spent Fuel Area that there was a fuel handling problem and bubbles were coming from the pit. Personnel are evacuating the area.
0745	Radiation monitor alarms start alarming.
0747	Public Address (PA) announcement - All personnel evacuate the Auxiliary Building Spent Fuel Floor area.
0752	Operations Manager arrives in CR. SS and Shift Technical Advisor examining the Emergency Action Levels (EALs).

Time	Observation
0754	SS states, "we have entered an Unusual Event. Starting 202 (EM) procedures."
0755	NRC Resident arrives in CR.
0757	Operations Manager advises the SS on EALs and evacuating Auxiliary Building.
0758	PA announcements - The plant is in an UE. All personnel evacuate the Auxiliary Building.
0801	Shift Supervisor directs staffing of the TSC.
0802	Shift Supervisor states, "Go ahead and declare an Alert at time 0804 due to high radiation levels."
0803	Operations Superintendent (Marshall) arrives in CR to assume responsibility for Accident Assessment.
0804	PA announcement. Plant is now in an Alert status.
0805	PA announcement. Activate the TSC and Operational Support Center (OSC) at this time.
0808	Operations planner in CR has set up headset communications with TSC and OSC. Initial notifications to state and counties of the UE is in progress.
0810	Operations Superintendent Admin. (Baudesman) in CR.
0811	Completed initial notification to state and counties.
0814	Initial notification started to NRC informing them of the Alert (no mention of NOUE).
0816	NRC call completed (licensee to call back when exercise completed).

Time	Observation
0821	Notification message of Alert to state and counties started.
0824	Verification call received.
	Ops Superintendent- Administration departs for TSC with copies of CR log and messages.
0825	Communicator starts to read message on which he had made three corrections since the message had been seen by the SS (EC).
0828	Communicator completes his notification.
0829	SS (EC) looking at Site Area Emergency (SAE) EAL states, "we are not far enough along."
0831	PA announcement instructs personnel in the warehouse area to evacuate to the Crystal River 3 Nuclear Administration Building.
	Offshift SS in CR establishes head-set communications with the Operations Engineer in the TSC.
0836	Shift Supervisor (EC) on the telephone states, "I stand relieved" (to on-coming EC), then states, "The only things inoperable are (reads initial conditions list."
0837	SS announces to CR, "I stand relieved; Vincent has EC duty at this time. He wants to decrease power at 3 percent per minute due to inability to get into the Auxiliary Building."
	Controller intercedes and states, "You have just received a call from the Load Dispatcher who reports he has an emergency need for power."
0838	EC orders stop to power reduction - power 96.7%.

Time	Observation
0851	CR operators discuss wind direction (235°) and speed. Operators discuss results of manual dose calculations.
0858	Auxiliary Building is in the emergency recirculation mode.
0909	Operators inform Chemistry and Health Physics that if they want to take a sample, they will have to let CR know to make proper line up.
0917	Operators note that the wind has veered to 278° and is blowing right down the access road. Comments about demonstrators led personnel to verify with Security that the demonstrators had been dispersed.
0921	TSC informs CR they are declaring a SAE (time noted in CR log is 0924, when TSC's time of declaration was 0920).
0924	CR hears via walkie-talkie that dose rate at railroad tracks is 4 mr/hr.
0925	PA announcement - evacuation alarm. Plant is in a SAE.
0928	CR sends word to Turbine building operator that plant is in a SAE.
0943	TSC reports all gas has escaped (end of release), but particulate activity is still high.
1007	Emergency Operations Facility is activated.
1010	CR receives word of plane crash in switchyard; CR lights flicker; reactor scram; turbine trip; TSC alarms; loss of offsite power.
1013	Assistant SS heading toward TSC as Fire Brigade Leader.
1014	Both diesels running, closed in on ES bus.

Time	Observation
1021	TSC diesel is running; trouble light cleared.
1025	Coal Plant Team Fire leader (responsible for switchyard) reports on damage.
1026	Operators discuss backfeed from 500 KV bus.
1028	Assistant SS back and (from picture shown him by controllers) is able to sketch what he saw in the switchyard. Operators discuss necessity to be in cold shutdown within 30 hours.
1036	Assistant SS advises start cooldown now. SS wants to wait an hour and draw up a plan.
1044	Report received that the fire is out and pilot is dead.
1050	Operators determine that they can get water, if needed, for Unit 5.
1055	Diesel fuel tanker in at 1330.
1108	Backfeed team being assembled with off-duty Assistant SS as team leader. Decision made to cut rather than disconnect the links to save time.
1123	Operators express desire to start cooldown. Controller intercedes, stating, "NRC wants to wait six hours to try to get back-feed in order to get spray back with which to properly cool the reactor head."
1130	County has decided to evacuate 360° out to 10 miles. (Licensee had issued no Protective Action Recommendation (PAR) based on minimal release, but did not take issue with county action.)

Time	Observation
	TSC considering "what-if's": diesel failed; loss of instrument air; etc.
	TSC looking at ways to minimize puff release when Auxiliary Building ventilation restored.
1300	Report of man injured falling from scaffolding.
1305	Sump alarm in B diesel room.
1335	Fuel leak on B diesel stopped.
1342	B Diesel reloaded.
1400	B Diesel fuel line repaired. Fire watch stationed on sump. CR annunciator panel problems.
1404	Annunciators repaired.
1430	TSC received recovery plan from EOF for review.
1435	Backfeed established for 500 KV line; start reactor coolant pumps; starting auxiliary building ventilation.
1530	Exercise terminated.