SAFETY EVALUATION

BY THE OFFICE OF NUCLEAR REACTOR REGULATION

FOR RECOVERY OPERATIONS PLAN CHANGE REQUESTS 29 AND 32

INTRODUCTION

By letters dated April 12, 1985 and June 18, 1985, the licensee requested the approval of modifications to the Proposed Technical Specifications (PTS) and the Recovery Operations Plan (ROP). The staff has concurrently issued a safety evaluation for the PTS changes as an attachment to an Amendment of Order dated October 18, 1985. Discussed herein are ROP changes.

DISCUSSION

Table 4.3-1

The licensee proposes to change Table 4.3-1, Neutron Monitoring Instrumentation, to accurately reflect the current configuration of the Intermediate Range, Neutron Flux and Rate Monitors. The total number of available channels would be changed from 1 to 2. There is no change in the frequency of surveillance or in the methodology. The staff concurs with this change.

The licensee identified an administrative discrepancy in the ROP. The neutron monitoring instruments are listed in both Tables 4.3-1 and 4.3-7. The licensee proposes to delete reference to these monitoring instruments in Table 4.3-7 and retain this requirement in Table 4.3-1. In order to ensure consistency with current requirements listed in Table 4.3-7, the

readout locations of the monitors would be added to Table 4.3-1. The staff concurs with this proposal since the current monitoring requirements would not change.

Table 4.3-7

Table 4.3-7 is titled "Essential Parameters Monitoring Instrumentation Surveillance Requirements." The licensee proposes to delete from this Table lines 5 and 6, NI Intermediate Range Level Log N and NI Source Range Level Monitoring Instruments. The staff concurs in this request because:

- The surveillance requirement for this instrumentation is also listed in Section 4.3.1 and Table 4.3-1 of the ROP, and
- The surveillance requirements listed in Table 4.3-1 are more complete than those listed in Table 4.3-7.

The operability requirements for this instrumentation are addressed in Technical Specification 3.3.1.

The licensee also proposes to revise the readout locations of the Spent Fuel Pool (SFP) "A" Water Level Monitor and the Fuel Transfer Canal (FTC) (deep end) Water Level Monitor. One channel of the relevant instrumentation will be available in the Fuel Handling Building for the SFP "A" Water Level Monitor and the Reactor Building for the FTC Water Level Monitor. A remote readout in the control room will be accomplished using a video

camera. Specifying the actual location of the instrument readout provides the licensee with additional flexibility should the remote video camera become inoperative. The staff concurs in this request.

The licensee also proposes to change the footnotes, eliminating those that no longer apply and renumbering those remaining. The staff concurs in this request.

Sections 4.3.3.8.1, 4.3.3.8.2, 4.7.10.1.1, 4.7.10.2, 4.7.10.4

The licensee requests that the phrase "accessible (per occupational exposure considerations)" be deleted from the above listed surveillance requirements. This phrase was originally incorporated into the surveillance requirements to allow the licensee the flexibility to not conduct the surveillance if it is determined that radiation exposure to workers would be excessive. Through the efforts of the licensee's dose reduction program, general area radiation levels in the areas where the surveillance is to occur have been reduced to the extent that workers would not be denied access. The phrase is no longer applicable. Therefore, the staff concurs in this request.

Section 4.6.1.3

The licensee proposes to reduce the pressure used to test containment air lock door seals from 10 psig to 6.5 psig. The containment building originally was designed and maintained for a maximum internal pressure of

60 psig and a temperature of 286°F. The licensee performed an analysis evaluating the peak containment pressure under accident conditions. On December 4, 1981, GPU sent the results of this analysis to the NRC staff (J. Barton, GPUNC, to B. Snyder, NRR). The licensee concluded that with the facility in its current configuration the maximum potential containment building overpressure is approximately 2 psig. This analysis was independently verified by the NRC staff. In the December 4, 1981 letter, the licensee committed to designing and making any modifications to piping or electrical penetrations so as to withstand a conservative 5 psig overpressurization. These penetrations would be tested to hold 1.2 to 1.5 times the 5 psig design value for not less than 10 minutes in accordance with ANSI B31.1.

In response to letters dated February 23, 1981, March 18, 1981, and October 6, 1981, the staff, in an April 7, 1982 Amendment of Order, modified the Proposed Technical Specifications. One of the changes granted by this Amendment of Order modified Section 5.2.2 of the PTS, changing the containment design pressure to 2 psig. The accompanying Safety Evaluation to the April 7, 1982 Amendment of Order provided the staff's technical evaluation in support of this change. The current request by the licensee is to reduce the test overpressure value for the containment air lock seals from 10 psig to 6.5 psig. The licensee arrived at this test pressure by applying the ANSI B31.1 standard for overpressure testing (1.2 to 1.5 times the design pressure) to the licensee's 5 psig design value. The

requested test pressure of 6.5 psig is 1.3 times the licensee's conservative design overpressurization value of 5 psig as committed to in their December 4, 1981 letter. The staff's technical evaluation supports a containment design pressure of 2 psig. Applying the ANSI standard to this value, the test overpressure value would be between 2.4 and 3 psig. In comparison, the licensee's proposed test value of 6.5 psig is conservative. Therefore, the staff concurs with the licensee's proposed change.

Section 4.6.4.1

The licensee proposes deleting the requirement for maintaining a gas partitioner in an operable condition. The purpose of the gas partitioner is to monitor the hydrogen concentration in the containment atmosphere. In the fall of 1982, the licensee measured the rate of hydrogen evolution in the primary system and determined that the rate was approximately 0.01 cu. ft./day. The principal source was the decomposition of hydrazine. The radiolytic decomposition of water was an insignificant gas generation source. The licensee also found that the rate of evolution of hydrogen was decreasing. Therefore, the 0.01 cu. ft./day rate was considered conservative. Given the 0.01 cu. ft./day rate of evolution and a containment base volume of 2.1×10^6 cu. ft., it would take approximately 2.3×10^4 years for the concentration to reach a level where ignition of the hydrogen/air mixture was possible. This assumes that there is no exchange between the containment volume and the outside atmosphere. Normally a volume equal to the containment volume is exchanged with the outside atmosphere approximately every two hours. Due to the diffusivity

of hydrogen and the operation of the defueling offgas system, localized concentration of hydrogen is precluded. A substantial increase in the hydrogen generation rate could only occur if there was recriticality concurrent with a temperature increase severe enough to cause zircaloy cladding decomposition. The only probable cause of recriticality would be boron dilution which would be a slow enough process that any approach to recriticality could be detected and avoided.

The staff agrees with the licensee's analysis and has determined that the current rate of hydrogen evolution is inconsequential and there is no likely scenario that would result in a significant increase in this rate. Therefore, the staff approves the licensee's proposed change to the ROP eliminating the need for the operable gas partitioner.

Section 4.7.6.1.3

The licensee proposes to increase the period of time between the identification of degradation of the flood protection dike surrounding the island and submission of a Special Report to the NRC from 10 to 30 days. The ROP requires that the report contain a description of the extent and nature of the degradation and the plans and schedule for restoring the dike and erosion protection to a status equivalent to the original design provisions.

The staff finds that from the time of discovery of a problem to the completion of the necessary engineering review and the preparation of the report, 10 days is an unacceptably short period of time. The staff

therefore concurs in the licensee's request. The staff, however, requests that GPUNC incorporate into their administrative procedures the requirement to promptly notify the TMI Program Office onsite staff of any degradation of the flood protection dike.

Enclosure 2

FACILITY OPERATING LICENSE NO. DPR-73

DOCKET NO. 50-320

The following list of pages of the Recovery Operations Plan have been modified as a result of this Safety Evaluation. Therefore, you should replace your present pages with those enclosed.

4.3-2
4.3-10
4.3-10a
4.3-12
4.6-1
4.6-3
4.7-4
4.7-7
4.7-9
4.7-10

TABLE 4.3-1

NEUTRON MONITORING INSTRUMENTATION

FUNCTIONAL UNIT	CHANNEL CHECK	CHANNEL CALIBRATION	CHANNEL FUNCTIONAL TEST	TOTAL NO. OF CHANNELS	CHANNELS TO TRIP	MINIMUM CHANNELS OPERABLE	READ OUT LOCATIONS
1. Intermediate Range, Neutron Flux and Rate	S	R(1)	M	2	0	1	Cab. 217 + Control Room
2. Source Range, Neutron Flux and Rate	S	R(1)	M	2	0	2	Cab 217(2) + Control Room

NOTES

(1) - Neutron detectors and all channel components located inside containment may be excluded from CHANNEL CALIBRATION.

(2) - Only one readout required at Cabinet 217.

TABLE 4.3-7

ESSENTIAL PARAMETERS MONITORING INSTRUMENTATION SURVEILLANCE REQUIREMENTS

INSTRUMENT	CHANNEL CHECK	CHANNEL[1] CALIBRATION	READOUT LOCATION(S)	MINIMUM OPERABLE CHANNELS
1. Reactor Building Pressure	S	R	Control Room	2
2. Reactor Vessel Water Level	S/W[2]	SA	Control Room [2]	2[2]
3. Incore Thermocouples	S	R	Control Room or Cable Room	2
4. Reactor Building Water Level	NA	SA	Control Bldg. Area West	1
5. Borated Water Storage Tank Level	S	R	Control Room	1
6. Steam Generator Level	NA	NA	NA	1/Generator
7. Spent Fuel Storage Pool "A" Water Level	S/W[2]	SA	Control Room [2] or Fuel Handling Bldg	2[2]
8. Fuel Transfer Canal (deep end) Water Level	S/W[2]	SA	Control Room [2] or Reactor Bldg	2[2]

(See following page for notes)

TABLE 4.3-7 (Cont'd)

ESSENTIAL PARAMETERS MONITORING INSTRUMENTATION SURVEILLANCE REQUIREMENTS

Notes:

1) Nuclear detectors and all channel components located inside containment may be excluded from CHANNEL CALIBRATION.

2) One channel may consist of a visual indication such as a level stand pipe. Seven day surveillance applies to visual indication only. Visual indication readout may be in the Reactor Building, or Fuel Handling Building, or by remote television.

FIRE DETECTION

4.3.3.8.1 Each of the required fire detection instruments shall be demonstrated OPERABLE at least once per 6 months by performance of a CHANNEL FUNCTIONAL TEST.

4.3.3.8.2 The NFPA Code 71 supervised circuits supervision associated with the detector alarms of each of the required fire detection instruments shall be demonstrated OPERABLE at least once per 6 months.

4.3.3.8.3 The nonsupervised circuits between the local panels in Surveillance Requirements 4.3.3.8.2 and the control room shall be demonstrated OPERABLE at least once per 31 days.

4.3.3.8.4 In lieu of Specification 4.3.3.8.2, fire detection instrument for the Southeast Storage Facility shall have circuitry per procedures approved pursuant to Specification 6.8.2.

4.6 CONTAINMENT SYSTEMS

4.6.1 PRIMARY CONTAINMENT

CONTAINMENT INTEGRITY

4.6.1.1 If required per procedures approved pursuant to Specification 6.8.2, primary CONTAINMENT INTEGRITY shall be demonstrated:

a. At least once per 31 days by verifying per NRC approved procedures that:

   1. All penetrations not required to be open per approved procedures are closed by valves, blind flanges, or deactivated automatic valves secured in their positions.

b. By verifying at least once per 31 days that the Containment Equipment Hatch is closed and sealed.

c. By verifying that each Containment Air Lock is OPERABLE per Specification 3.6.1.3.

CONTAINMENT AIR LOCKS

4.6.1.3 Each containment air lock shall be demonstrated OPERABLE:

a. After each opening, except when the air lock is being used for multiple entries, then at least once per 72 hours, by verifying less than or equal to 0.01 L_a seal leakage when the volume between the door seals is stabilized to a pressure of 6.5 psig.

b. At least once per three months by performing a mechanical operability check of each airlock, including a visual inspection of the components and lubrication if necessary.

c. Deleted

4.6.1.3.1 When both equipment hatch personnel airlock doors are opened simultaneously, verify the following conditions:

   a. The capability exists to expenditiously close at least one airlock door.

   b. The airlock doors and containment purge are configured to restrict the outflow of air in accordance with procedures approved pursuant to Tech Spec 6.8.2.

   c. The airlock doors are cycled to ensure mechanical operability within seven days prior to opening both doors.

c. After structural maintenance of the HEPA filter or charcoal adsorber housings, or following fire or chemical release in any ventilation zone communicating with the system by verifying that the ventilation system meets the following conditions:

   1. Filter Pressure Drop: Reverify the filter pressure drop surveillance prescribed in Section 4.6.3.a.1 for the affected filter train(s).

   2. DOP Test: Each affected filter train shall be retested in accordance with Section 4.6.3.b.3.

   3. Visual inspection in accordance with ANSI N510-1980 Section 5.

d. After each complete or partial replacement of a HEPA filter bank by verifying that the ventilation system meets the following condition:

   1. DOP Test: Each affected filter train shall be retested in accordance with Section 4.6.3.b.3.

4.6.4 COMBUSTIBLE GAS CONTROL

HYDROGEN ANALYZERS

4.6.4.1 Deleted.

HYDROGEN PURGE CLEANUP SYSTEM

4.6.4.3 Deleted

4.7.6.1.3 A Special Report shall be prepared and submitted to the Commission within 30 days if evidence of degradation is noted during an inspection. This report shall describe the extent and nature of the degradation and the plans and schedule for restoring the dike and errosion protection to a status equivalent to the original design provisions.

4.7.7 CONTROL ROOM EMERGENCY AIR CLEANUP SYSTEM

4.7.7.1 The Control Room Emergency Air Cleanup System shall be demonstrated OPERABLE:

a. At least once per 12 hours by verifying that the control room air temperature is less than or equal to 100°F.

b. At least once per 31 days by initiating, from the control room, flow through the HEPA filters and charcoal adsorbers and verifying that the system operates for at least 15 minutes; and the pressure drop across the combined HEPA filters and charcoal adsorbers banks is less than six (6) inches water gauge while operating.

c. At least once per 18 months or (1) after any structural maintenance on the HEPA filter or charcoal adsorber housings, or (2) following painting, fire or chemical release in any ventilation zone communicating with the system by:

   1. Verifying that the cleanup system satisfies the in-place testing acceptance criteria and uses the test procedures of Regulatory Positions C.5.a, C.5.c* and C.5.d* of Regulatory Guide 1.52, Revision 2, March 1978, and the system flow rate is 14,350 cfm ± 10%.

   2. Verifying within 31 days after removal that a laboratory analysis of a representative carbon sample obtained in accordance with Regulatory Guide 1.52, Revision 2, March 1978, when performing Methyl Iodide, 30°C, 95% RH testing per Table 5-1 of ANSI N509-1980 meets an acceptable criteria of 5% penetration maximum.

   3. Verifying a system flow rate of 14,350 cfm + 10% during system operation when tested in accordance with ANSI N510-1980, Section 8.3.1 Paragraphs 3 and 4.

d. After every 720 hours of charcoal adsorber operation by verifying within 31 days after removal that a laboratory analysis of a representative carbon sample obtained in accordance with Regulatory Position C.6.b of Regulatory Guide 1.52, Revision 2, March 1978, when performing Methyl Iodide, 30°C, 95% RH testing per Table 5-1 of ANSI N509-1980 meets an acceptance criteria of 5% penetration maximum.

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*The prerequisites of Section 10.3 and 12.3 of ANSI-N510-1980 do not apply.

4.7.10 FIRE SUPPRESSION SYSTEMS

FIRE SUPPRESSION WATER SYSTEM

4.7.10.1.1 The FIRE SUPPRESSION WATER SYSTEM shall be demonstrated OPERABLE:

a. At least once per 7 days by verifying that at least 90,000 gallons of water are in the Altitude Tank, equivalent level in Unit 1 circulating water flume and/or equivalent level in the river.

b. At least once per 31 days on a STAGGERED TEST BASIS by starting each pump and operating it for at least 20 minutes on recirculation flow.

c. At least once per 31 days by verifying that each valve (manual, power operated or automatic) in the flow path is in its correct position.

d. At least once per 12 months by:

   1. Running the full flow of one fire pump through all main header loops as a flush, and

   2. Cycling each testable valve in the flow path through at least one complete cycle of full travel.

e. At least once per 18 months by performing a system functional test which includes simulated automatic actuation of the system (i.e., pumps start at set pressure ± 10 psig), and:

   1. Verifying that each pump develops at least 2500 gpm at a total dynamic head no more than 10% below that indicated on manufactures curves.

   2. Cycling each valve in the flow path that is not testable during plant operation through at least one complete cycle of full travel, and

   3. Verifying that each high pressure pump starts (sequentially) to maintain the fire suppression water system pressure greater than or equal to 70 psig.

f. At least once per 3 years by performing a flow test of the system in accordance with Chapter 5, Section 11 of the Fire Protection Handbook, 14th Edition, published by the National Fire Protection Association.

DELUGE/SPRINKLER SYSTEMS

4.7.10.2 Each of the required deluge and/or sprinkler systems shall be demonstrated OPERABLE:

a. At least once per 12 months by cycling each testable valve in the flow path through at least one complete cycle of full travel.

b. At least once per 18 months:

1. By performing a system functional test which includes tripping detectors and verifying actuation of trip devices on associated deluge valves. Deluge/sprinkler valves shall be inspected internally to verify operability in all instances where header flooding during the test is not practical.

2. Cycling each valve in the flow path that is not testable during plant operation through at least one complete cycle of full travel.

3. By visual inspection of the deluge headers to verify their integrity.

4. By visual inspection of each nozzle to verify no blockage.

c. At least one per 3 years by performing an air or gas flow test through each deluge header and verifying each deluge nozzle is unobstructed.

HALON SYSTEM

4.7.10.3.1 The Cable Room and Transformer Room Halon system shall be demonstrated OPERABLE at least once per 6 months by verifying each Halon storage tank weight and pressure.

4.7.10.3.2 The Air Intake Tunnel Halon System shall be demonstrated OPERABLE:

a. At least once per 6 months by verifying pressure in each halon storage tank, and

b. At least once per 18 months by verifying storage tank weight.

FIRE HOSE STATIONS

4.7.10.4 Each fire hose station listed in Table 4.7-1 shall be verified OPERABLE:

a. At least once per 31 days by visual inspection of the station to assure all required equipment is at the station.

b. At least once per 18 months by:

   1. Removing the hose for inspection and re-racking, and

   2. Replacement of all degraded gaskets in couplings.

c. At least once per 3 years by:

   1. Partially opening each hose station valve to verify valve OPERABILITY and no flow blockage.

   2. Conducting a hose hydrostatic test at a pressure at least 50 psig greater than the maximum pressure available at that hose station.

PENETRATION FIRE BARRIERS

4.7.11 The required (accessible per occupational exposure considerations) penetration fire barriers shall be verified to be functional:

a. At least once per 18 months by a visual inspection.

b. Prior to returning a penetration fire barrier to functional status following repairs or maintenance by performance of a visual inspection of the affected penetration fire barrier(s).