UNITED STATES
NUCLEAR REGULATORY COMMISSION
WASHINGTON, D. C. 20555

November 21, 1978

Docket No. 50-213

MEMORANDUM FOR: D. G. Eisenhut, Acting Assistant Director for Systems & Projects, DOR

THRU: D. K. Davis, Chief, Systematic Evaluation Program Branch, DOR

FROM: H. M. Fontecilla, Systematic Evaluation Program Branch, DOR

SUBJECT: VISIT TO HADDAM NECK PLANT

A team of SEP reviewers visited the Haddam Neck plant on September 13 and 14, 1978, to familiarize themselves with the facility and to obtain additional information. Lists of participants at these meetings are attached.

As part of the hydrological review of the site, we examined the following areas:

1. Pump House
2. Service water and circulating water system pumps
3. Dewatering system sump and discharge canal
4. Cooling water discharge canal
5. Ditches east of plant
6. Drainage pond north of plant

In addition, we examined the region outside the site, upstream and downstream the Connecticut River, including the highway bridge several miles downstream from the plant.

During our meetings with the utility representatives we gathered the following information:

1. The roofs of safety-related buildings are designed for 30 #/ft^2 snow and ice loadings.

2. Based on pumping tests performed at a well field near the plant, the average permeability of the outwash deposits on the banks of the Connecticut River is about 3000-5000 gallons per day per square foot. It was felt that this would be a reasonable estimate of permeability of outwash deposits in the site area.

3. Safety-related equipment will withstand a flood having an elevation of 23.5 ft msl, with no other protection added. The floor level is 21.5' and safety-related pumps are located about two feet above this elevation.

4. A diesel fire pump is located in the pump house, which can be put into use if the other pumps fail. This pump is at the same elevation as the other pumps (23.5').

5. Some safety-related equipment is protected by 24" high steel dikes (walls) which surround the equipment. When water (due to flooding) gets 1-2 inches high on these dikes, there are alarms which are activated, according to technical specifications.

6. A dewatering system is used to lower ground water levels around the reactor building. At the present time, the design bases for the system or the design basis groundwater levels for the structures are not known. Groundwater drained by the system flows to a pump, from which the water is pumped to a discharge ditch, which ultimately carries the flow to the cooling water discharge canal.

In the area of control room habitability, we obtained the following information:

1. No toxic chemicals are stored onsite.

2. The control room walls and roof have a minimum of 18 inches of concrete. The floor has 14 inches.

3. The control room building is served by one HVAC system, not seismic Category I. The normal air intake rate is 1500 cfm and the recirculation rate is 8000 cfm.

4. There are no radition monitors in the fresh air intakes or in the control room.

5. Control room isolation is initiated by sensing ≥ 4 psi overpressure inside the containment building.

6. The closing time for the fresh air intake isolation damper is 6.3 seconds.

7. There is only one isolation damper. It is designed to fail in a closed position.

8. Leakage across the damper has been measured to be 500 cfm at a pressure differential of 1/8" water gauge.

9. There is no air recirculation mechanism following isolation.

10. Three airpaks of 120 ft^3 each and eight air cylinders of 300 ft^3 each are provided in the control room.

11. The control room volume is 76000 ft^3.

12. The closest distance between the containment building and the control room air intake is about 100 feet.

With regard to the review in the areas of tornado and turbine missile protection, we examined the location of most safety systems outside containment, and gathered the following information:

Auxiliary Building

The Auxiliary Building consists of two levels. The first level floor elevation varies from 13'6" to 21'6" and the floor of the second level varies from 35'6" to 36'6". The grade level around the Auxiliary Building is 21'6". The exterior walls extending up from the first level floor to the second level floor are steel reinforced concrete varying in thickness from 12" to 18". The exterior walls extending up from the second floor level to the roof consists of insulated Galbestos on structural steel framing and the roof consists of metal panels covered with insulation and builtup roofing over a steel superstructure.

Turbine Building

The Turbine Building consists of four levels. The ground level is at elevation 21'6", first floor level is at elevation 37'6", second floor level is at elevation 47'6" and the operating floor is at elevation 59'6". The exterior walls from ground level to roof consists of porcelain enamel siding supported on structural steel. The roof consists of metal panels covered with insulation and builtup roofing over a steel superstructure. The floors consist of steel reinforced concrete.

Spent Fuel Building

The Spent Fuel Building exterior walls consist of steel reinforced concrete from elevation 21'6" up to elevation 47', except around the spent fuel pool which has walls 6' thick. The exterior walls from elevation 47' to the roof consists of insulated Galbestos panels over a steel superstructure. The roof consists of steel reinforced concrete 8" thick with a hatch extending partially over the spent fuel area. The hatch is covered by 1/4" steel plate. The operating floor of the Spent Fuel Building consists of steel reinforced concrete 12" thick. On the east side of the building there is a 14' x 14' and a 10' x 23' galvanized steel rollup doors.

Screenwell House

The Screenwell House exterior walls consist of insulated Galbestos panels over a steel superstructure. The roof consists of steel reinforced concrete 8" thick with four large hatch openings of dimensions 17' x 10' covered with 1/4" steel plate. In addition, there are about 6 additional smaller hatches and two large vents afforded similar 1/4" plate covers. The traveling screens are outside of the Screenwell House facing the Connecticut River and are covered by enclosures constructed of 1/8" steel plate.

Diesel Generator Building

The Diesel Generator Building consists of 2' thick steel reinforced walls and roofs. Each of the diesel generators and associated switchgear are separated by a 1' thick steel reinforced concrete wall. The 5000 gallon fuel tanks are buried such that the high point of each tank is below more than 7' of dirt.

Containment

The containment walls from elevation 6" to elevation 121' consists of steel reinforced concrete 4'6" thick. The roof dome of the containment from elevation 121' to the top consists of steel reinforced concrete 2'6" thick. The operating floor located at elevation 48'6" consists of steel reinforced concrete 2' thick. External to the containment but adjacent to the containment wall facing the Turbine Building and surrounding the main steamline penetrations. The wall from elevation 21' to 39'6" consists of steel reinforced concrete 6' thick. The remaining two levels consist of a steel superstructure with a facade of siding. The floor at elevations 40'8", 49'8" and 57' consists of steel grating over I-beams. The main steamline isolation valves and relief valves are located at elevation 49'8". The roof of the structure is at elevation 65'6" and consists of I-beams with a facade of metal siding.

Service Building

The west wall of the Service Building is partially adjacent to the Auxiliary Building with the remainder of the wall shadowed by the containment. The south and east walls are adjacent to the Turbine Building and the north wall is adjacent to the new Diesel Generator Building up to about elevation 40'4". That portion of the Service Building containing the control room consists of steel reinforced concrete. The remainder of the building consists of walls consisting of a steel superstructure with a facade of insulated Galbestos siding and a roof consisting of metal panels covered with insulation and a builtup roof over a steel superstructure. The control room (which is on the top floor of the Service Building at elevation 59'6") consists of exterior walls composed of 20" thick steel reinforced concrete of 3000 psi, interior walls composed of 16" steel reinforced concrete of 3000 psi, roof composed of 22" steel reinforced concrete of 3000 psi and floor composed of 14" steel reinforced concrete of 3000 psi.

In addition, the licensee agreed to provide us with information regarding the concrete walls (thickness, strength and height) surrounding the safety-related tanks (e.g., refueling water storage, etc.) onsite.

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Systematic Evaluation Program Branch
Division of Operating Reactors

Enclosure:
As stated

ENCLOSURE

HADDAM NECK SITE VISIT

PARTICIPANTS

September 13, 1978

NRC

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September 14, 1978

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