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| TO: Mr. Karl R. Goller | ORIG 1-signed | CC | OTHER | SENT AEC PDR xxxx<br>SENT LOCAL PDR xxx | | |
| CLASS / UNCLASS xxxxx / PROP INFO | INPUT | NO CYS REC'D 1 | DOCKET NO: 50-289 | | | |

DESCRIPTION:

Ltr ref our 8-23-74 ltr concerning the probabilities and consequences of the accidental dropping of a spent fuel cask.... advising that they are still in the process of analyzing the situation ....

ENCLOSURES:

PLANT NAME: Three Mile Island #1

### FOR ACTION/INFORMATION

2-26-75 JGB

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February 21, 1975

RECEIVED FEB 2 1975

Mr. Karl R. Goller
Assistant Director
Division of Reactor Licensing
U. S. Nuclear Regulatory Commission
Washington, D. C. 20555

Dear Mr. Goller:

Three Mile Island Nuclear Station (TMI-1)
Operating License No. DPR-50
Docket No. 50-289

In response to your letter dated August 23, 1974, regarding the probabilities and consequences of the accidental dropping of a spent fuel cask, and as a follow-up to our Mr. Creitz's letter of September 16, 1974, please be informed that we are still in the process of analyzing this situation. At this time, we have determined what issues need to be resolved to ensure that drop cask accidents would in no way constitute unreviewed safety questions; a consultant has been contracted and been given a schedule of milestones to meet in resolving the subject issues; and we anticipate being able to complete our review of these issues by January 15, 1976. Further, following completion of the review we intend to submit by January 31, 1976, the findings of our review and any plans of action that we may then determine to be necessary.

Although the proposed January 31, 1976, submittal date is later than we had originally anticipated, this date is preferable in that

a. there is no reason for having to do the analyses on a hurried basis, in that there exists sufficient storage space to permit fuel storage for several refuelings without the necessity for spent fuel cask shipments,

b. based on our preliminary analyses, we anticipate no insurmountable problems that would keep us from satisfactorily resolving the issues that need to be resolved, and

c. the schedule that we have formulated permits us time to do the analyses in an orderly and thorough manner.

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With regard to the specific questions as contained in your letter of August 23, 1974, please be informed that

a. answers to a large portion of the questions you raised are contained in

   1. Section 9.7 of the TMI-1 Final Safety Analysis Report (note: a portion of Amendment 50 to the TMI-1 FSAR, Sect. 9.7, filed with the Nuclear Regulatory Commission under separate cover on February 21, 1975, is attached as an enclosure to this letter, and serves to answer some of your questions), and

   2. Supplement 2, Part VII to the TMI-1 Final Safety Analysis Report, and

b. for those questions not addressed in the above listed references, we intend to provide a complete response in our proposed January 31, 1976, submittal.

We trust that with this letter we have served to provide you adequate assurance that we are working to satisfactorily resolve the issues addressed in your letter of August 23, 1974; and should you have any questions regarding the contents of this letter, please contact me.

Sincerely,

R. C. Arnold
Vice President

RCA:DNG:sh
Enclosure--A portion of Amendment 50 to TMI-1 FSAR

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1485 217

Both the new and the spent fuel pools (A and B) are constructed of reinforced concrete and lined with stainless plate, and are located in the fuel handling building. The fuel management program is scheduled so that the required spaces are available to accomodate both new and spent fuel. The spent or new fuel assemblies are stored in racks in parallel rows having a center-to-center distance of 21-1/8 inches in both directions. This spacing is sufficient to maintain a subcritical condition when wet. Control rod assemblies requiring removal from the reactors are stored in the spent fuel assemblies.

### 9.7.1.3 Fuel Transfer Tubes

Two horizontal tubes are provided to convey fuel between the Reactor Building and the fuel handling building. These tubes contain tracks for the fuel transfer carriages, gate valves on the fuel handling building side, and a flanged closure on the Reactor Building side. The fuel transfer tubes penetrate from the fuel storage pool into the fuel transfer canal at the lower depth, where space is provided for the rotation of the fuel transfer carriage baskets each containing a fuel assembly.

### 9.7.1.4 Fuel Transfer Canal

The fuel transfer canal is a passageway in the Reactor Building extending from north of the reactor vessel to the south Reactor Building wall. It is formed by an upward extension of the primary shield walls. The enclosure is a reinforced concrete structure lined with stainless steel plate to form a canal above the reactor vessel which is filled with borated water for refueling.

Space is available in the deeper portion of the fuel transfer canal for underwater storage of the reactor vessel internals plenum assembly. The south (deep) portion of the fuel transfer canal can be used for the storage of the reactor vessel internals, core support assembly, and plenum assembly by removing the storage racks and moving the internals storage stand from the north end of the canal. The south (deep) end of the pool is normally occupied by racks for the storage of 64 fuel assemblies, both new and spent, if required. A water gate is provided between the north (shallow) and the south (deep) end of the fuel transfer canal in order to permit draining of the shallow end of the canal when the reactor internals are stored in the deep end.

### 9.7.1.5 Fuel Handling Equipment

This equipment consists of fuel handling bridges with integral fuel handling mechanisms, control rod handling mechanisms, fuel storage racks, fuel transfer mechanisms, and shipping casks. In addition to the equipment directly associated with the handling of fuel, equipment is provided for handling the reactor vessel closure head and the plenum assembly to expose the core for refueling.

### 9.7.1.6 Fuel Handling Crane

The fuel handling crane is equipped with a main hook and hoisting system designed to accomodate loads up to 110 tons and an auxiliary hook and hoisting system designed to accomodate loads up to 15 tons. The span of the fuel handling crane bridge, between wheel truck centerlines, is 47 ft-4 in. The fuel handling crane bridge is capable of traveling north and south throughout the full length of the Unit 1 fuel handling building (Figure 9-18) and into the Unit 2 fuel handling building to perform refueling functions there.

The trolley travel on the bridge is such that the main hook and auxiliary hook may approach the East wall of the Fuel Handling Building within 5 ft-10 in. and 9 ft-11 in., respectively, and the West wall of the Fuel Handling Building within 9 ft-4 in. and 5 ft-3 in., respectively.

The fuel handling crane is designed for periodic load testing to 125% of rated capacity and was designed to meet the regulations for cranes, booms, and hoists as stated by the Commonwealth of Pennsylvania Department of Labor and Industry and Electric Overhead Crane Institute Specification No 61, Class A Indoor Service. A safety factor of at least five, at rated load and based on ultimate strength of the material used, was required of all parts, including the hoist cable. The major structural material of the bridge and trolley meets ASTM Standard A7. The safety factor, based on yield strength of these parts, is two for the rated load. The safety factor of the concrete corbel which supports the fuel handling crane, based on yield strength of the rebar in it, is 2.25 at rated load. The supporting walls and foundation, of which corbel is an integral part, provide a safety factor considerable in excess of that of the corbel.

The structural design of the fuel handling crane is also required to ensure no loss of function during and after a Seismic Class I event while lifting rated load. Rail hold-down devices are provided to prevent derailment while lifting the load. The crane is also designed to operate continually under maximum operating environmental conditions of 120°F and 90% relative humidity and for storage conditions of 60°F and 120°F and 65% relative humidity. The crane is capable of inching to maximum load and controlling the maximum load to within 1/32 inch on either lifting or lowering operations.

The fuel handling crane main hoist utilizes a 40 hp 1200 rpm Westinghouse Life-line Motor Frams No. 365-TX motor with Class B insulation rated 60 minute 75°C rise. The main hoist system includes eddy current braking (Dynamatic AB-706), a mehcanical load brake (Whiting Model #25) and a solenoid brake (Whiting 13 in. type SESA brake). Either the mechanical load brake or solenois brake is designed to preclude acceleration of the load and to maintain the load in position when brought to rest.

Should the main hoist motor fail to turn the drive shaft to the gear train, the mechanical brake will immediately "seize" the load, stop it, and hold it in position during either lifting or lowering of the load. The electric brake is sized to have a torque rating greater than the full load torque of the motor and operates automatically upon termination of crane power.

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The main hoist has 12 parts of 1-1/8 in. diameter special flexible improved-plow steel wire crane rope, 6 strands, 37 wires, hemp core, and is equipped with a sister hook with a shackle hole. A Whiting automatic paddle-type limit switch is installed fo~ upper hoist limit to prevent two-blocking situations.

The crane is equipped with an overhead bridge cage and pendent controls. The bridge cage is the main control center with pendent control accomplished by an electrical switchover from the cab. Cab control handles are oreinted in the direction of hook function. Pendent controls are spring-loaded to assure automatic return to "Off" when hand pressure is released.

The crane controls contain a forward and reversing starting contactor, four accelerating contactors, and a pneumatic time delay relay. Moving the master control switch to its first position actuates the starting contactor. This connects the motor's stator windings directly to the line and its rotor current to a sesies of grid resistors. As the master switch is advanced to each further position, a contactor is actuated which speeds up the motor by shunting out one section of resistance external to the rotor. When the master switch is advan[illegible] to its final position, all the external resistance has been cut from the [illegible]r rotor circuit and the motor operates at full speed. The initial starting contactors, plus the accelerating contactors, provide five points of acceleration for all the crane motors, main and auxiliary hoists, bridges, and trolley travel. A time-delay relay is provided between all but the first and second points of the master control switches to preclude excessive acceleration.

Fifty percent electric braking is furniched on the bridge and trolley in order to deek load sway to a minimum in the event brakes are applied. A 7 in. Wagner Type H hydraulic foot-operated brake in the cab and a 7 in. Cutler Hammer Type S 50 ft-lb solenoid is also provided for bridge travel. A 5-½ in. Cutler Hammer Type S 25 ft-lb solenoid brake is also provided for trolley travel.

Testing, maintenance, and operation of the crane is conducted in accordance with American National Standard B30.2

Two monorail hoists, which provide East-West travel, are mounted underneath the North-South beams of the bridge of the fuel handling crane. A five ton capacity monorail hoist, which provides a maximum 53 ft lift, is mounted underneath the South beam of the bridge of the fuel handling crane. A three ton capacity monorail hoist, which provides a maximum 40 ft lift, is mounted underneath

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