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**Fred Dacimo**  
Site Vice President  
Administration

July 22, 2005

Re: Indian Point Unit No. 2  
Docket No. 50-247  
NL-05-093

U.S. Nuclear Regulatory Commission  
ATTN: Document Control Desk  
Mail Station O-P1-17  
Washington, DC 20555-0001

**Subject:** Reply to Supplemental RAI regarding Fuel Storage Building Single-Failure-Proof Gantry Crane

- References:**
1. NRC Letter dated June 6, 2005, Supplemental Request for Additional Information regarding Amendment Application for Fuel Storage Building Gantry Crane (TAC No. MC5036)
  2. Entergy letter dated April 12, 2005, Reply to RAI regarding Amendment Application for Fuel Storage Building Gantry Crane (ML051150099)
  3. NRC letter dated February 25, 2005, Request for Additional Information regarding Amendment Application for Fuel Storage Building Crane (ML050470515)
  4. Entergy letter dated November 1, 2004, License Amendment Request (LAR) – Fuel Storage Building Single-Failure-Proof Gantry Crane (ML043140282)

Dear Sir/Madam:

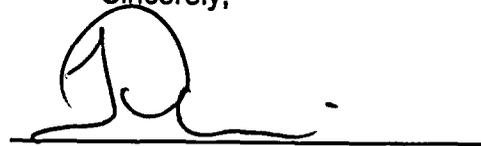
Entergy Nuclear Operations Inc. is providing a response to the NRC request for additional information (RAI) in reference 1 regarding the proposed license amendment request for new Fuel Storage Building Single-Failure-Proof Gantry Crane for Indian Point Unit 2. The responses for the questions are provided in Attachment 1.

There are no new commitments identified in this submittal. If you have any questions or require additional information, please contact Patric W. Conroy, Manager, Licensing, at 914-734-6668.

A001

I declare under penalty of perjury that the foregoing is true and correct. Executed on  
7/22/05.

Sincerely,

A handwritten signature in black ink, appearing to be 'Fred R. Dacimo', written over a horizontal line.

Fred R. Dacimo  
Site Vice President  
Indian Point Energy Center

Attachment:

cc: See page 3

cc: Mr. Samuel J. Collins  
Regional Administrator - Region I

Mr. John Boska, Senior Project Manager  
Project Directorate I-1

Senior Resident Inspector  
U.S. Nuclear Regulatory Commission  
Indian Point Unit 2

Mayor, Village of Buchanan

Mr. Paul Eddy  
State of NY Public Service Commission

Mr. Peter R. Smith, President  
NYSERDA

**ATTACHMENT 1 TO NL-05-093**

**REPLY TO NRC SUPPLEMENTAL REQUEST FOR ADDITIONAL  
INFORMATION REGARDING PROPOSED LICENSE AMENDMENT  
REQUEST FOR NEW FUEL STORAGE BUILDING GANTRY CRANE  
AT INDIAN POINT 2**

**ENTERGY NUCLEAR OPERATIONS, INC  
INDIAN POINT NUCLEAR GENERATING UNIT 2  
DOCKET 50-247**

ENTERGY NUCLEAR OPERATIONS, INC  
INDIAN POINT NUCLEAR GENERATING UNIT 2  
DOCKET 50-247

Request for supplemental additional information from NRC letter dated  
June 6, 2005 (TAC ML 5036)

**Question 1:**

In its April 12 letter, Entergy stated in its response to RAI Question 2 that some of the protection provided by the programmable logic controller (PLC) system is as follows:

- Movement of the trolley north towards the fuel pool is only permitted if the following conditions are satisfied:
  - Turnbuckles are attached to the crane tie down points.
  - Cantilever arms are extended and locked in place.
  - Main transfer hoist is at operating elevation that allows HI-TRAC to clear south wall of spent fuel pit.

Describe, in sufficient detail, the logic that will prevent the occurrence of the following scenarios, and whether these protection schemes can be overridden by the operators:

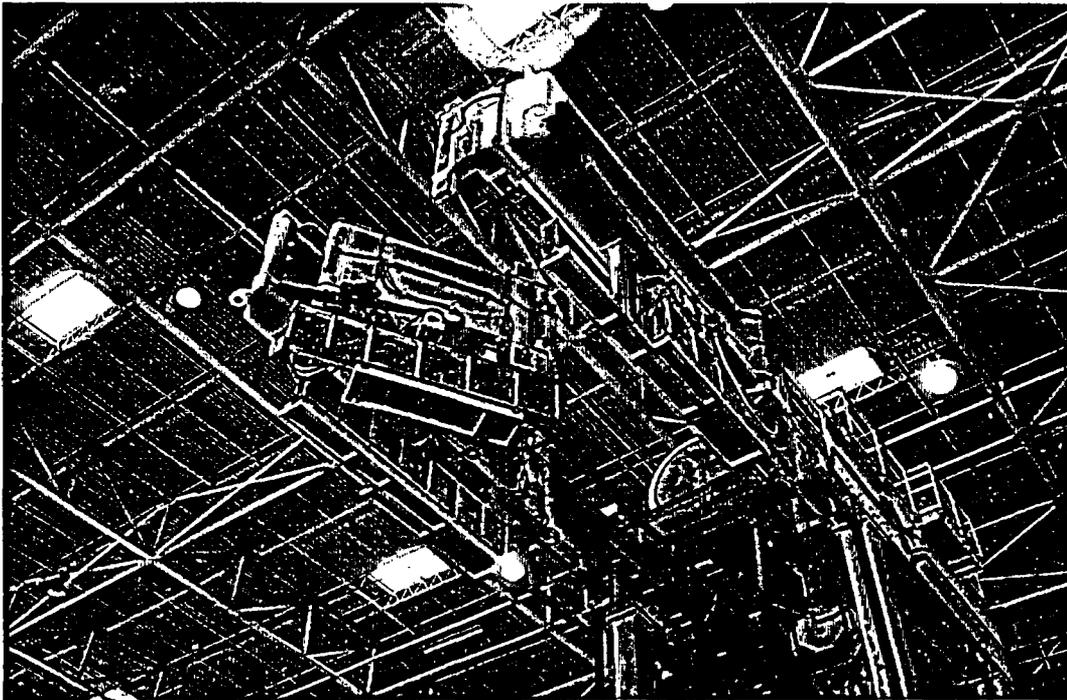
- (a) Movement of the trolley north towards the pool when the arms have not yet been extended and pinned in place;
- (b) Movement of the trolley when the main transfer hoist is at an operating elevation that does not allow the HI-TRAC to clear the south wall of the spent fuel pit; and
- (c) Movement of the trolley towards the pool when the turnbuckles have not been attached to the crane tie down points.

**Question 1 Response:**

There are multiple safety interlocks that prevent improper north motion of the trolley toward the fuel pool. The following interlocks described below need to be satisfied in order to allow trolley motion north towards the fuel pool. These design features in conjunction with detailed procedures and task specific training will ensure the movement of the trolley will occur at the appropriate times in the procedure when the interlocks are satisfied.

- a. Scenario - movement of the trolley north towards the pool when the arms have not yet been extended and pinned in place.

**Protection system –** The cantilever arms need to be extended and all pins locked in place. There are limit switches that verify the east, west and end-tie girder actuators are fully extended (cantilever arms extended). Also there are limit switches that verify the east, west and end-tie upper and lower locking pins are locked in place. Finally a redundant mechanical limit switch is actuated when the end-tie girder is fully closed. This end-tie fully closed limit switch can only actuate when the east, west and end-tie girders are completely closed. These hard-wired interlocks will prevent trolley motion if not satisfied. An operator input at the girder pendant activates the PLC sequencing of the Girder Mechanization System. The PLC is an independent system that does not control trolley movement or any interlocking of the trolley.

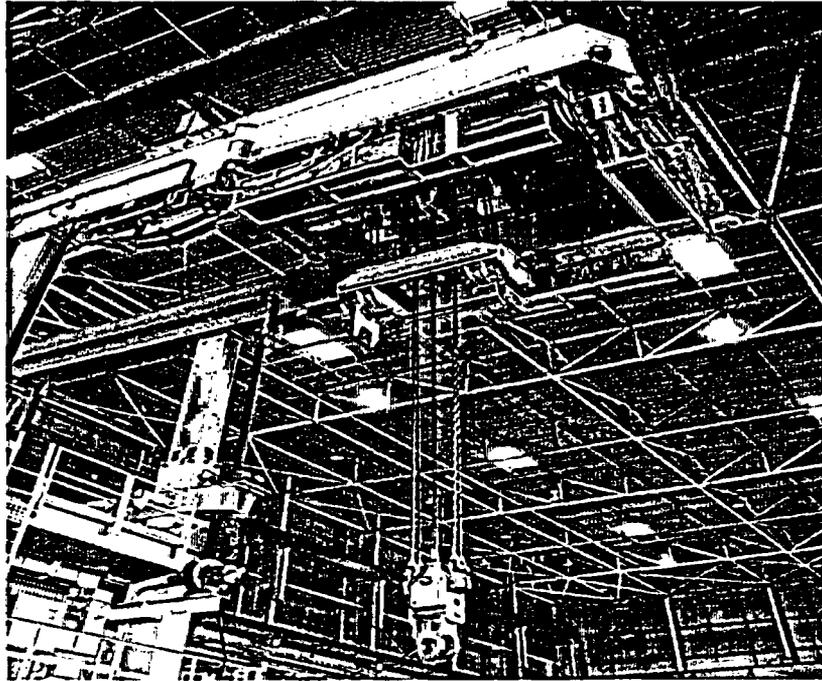


**Note –** If the cantilever arms are not extended and all pins are not locked in place, the trolley should always be pinned in the seismically restrained position. Locking of the trolley shall only be manually performed by trained personnel following written administrative procedure.

- b. **Scenario –** Movement of the trolley when the main transfer hoist is at an operating elevation that does not allow the HI-TRAC to clear the south wall of the spent fuel pit.

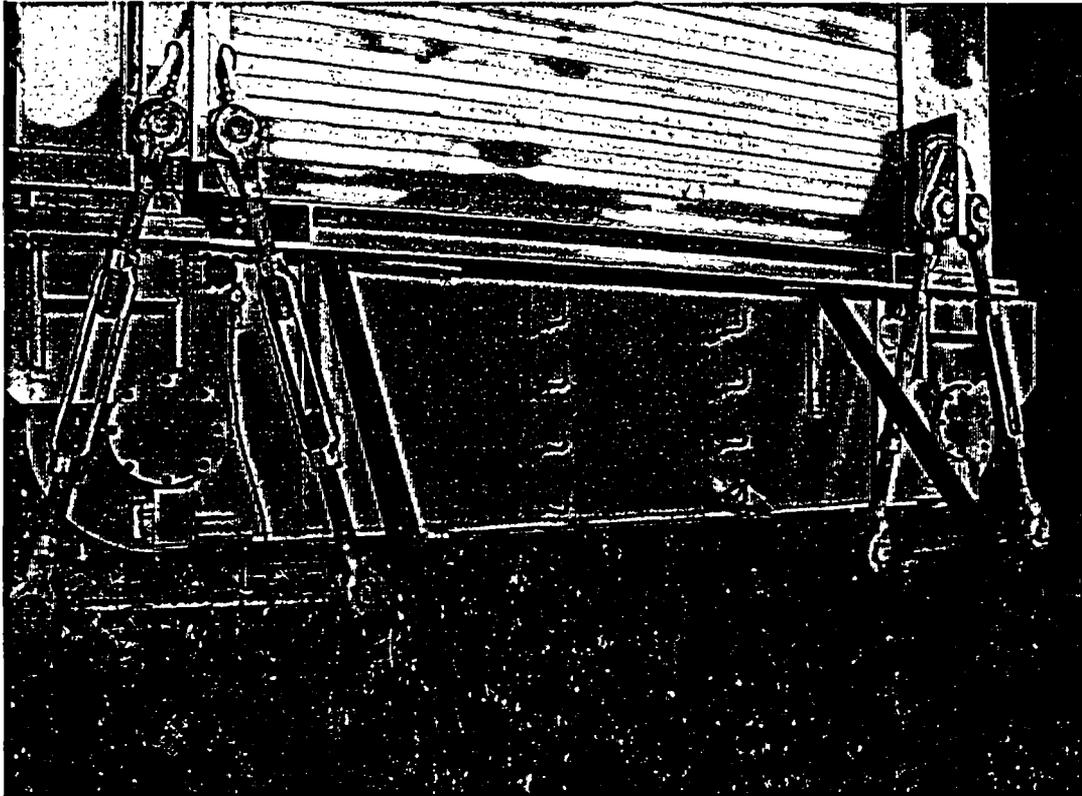
**Protection System –** The main hoist and canister hoist must be raised to their respective geared upper limit positions before the trolley is allowed to move north or south over the pool wall. These hard-wired interlocks prevent the trolley motion if not satisfied. If these interlocks are not satisfied, a primary cantilever limit switch will stop the trolley

motion prior to movement onto the cantilever. If the trolley moves beyond the primary cantilever switch, a secondary cantilever limit switch will remove 480v AC power to the trolley motor controller and brake. Removal of power to the brake control sets the brakes.



- c. Scenario – Movement of the trolley towards the pool when the turnbuckles have not been attached to the crane tie down points.

Protection system – Four (4) turnbuckles are attached on the south truck tie down points. See picture below. Two (2) similar turnbuckles are attached on the north truck tie down points. When all six (6) turnbuckles are mechanically secure, six (6) individual tie down proximity switches are actuated. These hard-wired interlocks prevent trolley motion if not satisfied. If these interlocks are not satisfied, a primary cantilever limit switch will stop trolley motion prior to movement onto the cantilever. If the trolley moves beyond the primary cantilever switch, a secondary cantilever limit switch will remove 480v AC power to the trolley motor controller and brake. Removal of power to the brake control sets the brakes.



Note – The “Pool” position must be selected by the operator on the Cask Handling Key switch to allow trolley movement onto the cantilever. The key will be removed and administratively protected when the switch is in the “Normal” position. The operators cannot override any interlocking logic as there are no bypass switches that are available to allow trolley movement north towards the fuel pool if conditions described in scenarios a through c (above) are not met.

**Question 2:**

Describe how training will address operation of the crane and interlocks to provide some measure of defense-in-depth against the events described above.

**Question 2 Response:**

The procedure for the set-up and operation of the new gantry crane and crane operator training were commitments submitted in the original License Amendment Request submitted November 1, 2004.

**Previous Commitments:**

*Gantry crane operating procedures utilized for cask and cask component lifts will be prepared to include: identification of required equipment; inspections and acceptance criteria required before load movement; the steps and proper sequence to be followed in handling the load; defining the safe load path; and other precautions. A specific cask loading and handling procedure will provide additional details for controlled movement during cask handling operations.*

*Crane operators receive training that includes the provisions of Chapter 2-3 of ANSI B30.2.0 – 1976. In addition, completion of a crane-specific on-the-job-training qualification card is required.*

Training of personnel is based on the procedures to be used for Dry Cask Storage. The development of the gantry crane procedure will have all the requirements for setting up the crane for the specific evolution. The interlocks discussed in this letter as well as other design features of the crane is be part of the procedure. The specific actions or evolutions will be discussed in training class and followed with On the Job Training (OJT). Upon completion of the training the crane operators will need to complete a qualification card that ensures proficiency in crane operations.

The following identified procedural requirements shall describe how training will provide assurances that the operators of the crane and its controls system will avoid events listed in question 1.

- The Cask Handling Key Switch will always be removed and administratively protected with the switch in the “Normal” position except when the operation over the pool is required. Only trained personnel would be allowed use of the key with the authorization of the program manager. Switching to the “Pool” position is just one interlock which must be satisfied to allow movement of the trolley onto the cantilever.
- After the cantilever arms are completely extended and all the locking pins are locked in place, power from the Girder Mechanization System will be shut off by switching the disconnect switch on the Girder Mechanization Panel to the “off” position. This removes power to the PLC, all girder actuators and girder locking pin solenoids. The pressurized air system shall also be disconnected from the Girder Mechanization System piping. These steps will prevent inadvertent operation of any portion of the Girder Mechanization system during crane operations.
- The trolley locking pin (seismic restraint) will always be installed except when the cantilever arms are closed and locked in place and the crane turnbuckles are in place securing the crane. This locking pin will mechanically prevent any movement of the trolley.
- Moving the trolley over the pool wall must also be visually monitored carefully at all times.

The above protection system with trained and qualified operators will assure proper and safe crane operation.