August 1, 2005

Mr. Christopher M. Crane
President and Chief Nuclear Officer
Exelon Nuclear
Exelon Generation Company, LLC
Quad Cities Nuclear Power Station
4300 Winfield Road
Warrenville, IL 60555

SUBJECT: QUAD CITIES NUCLEAR POWER STATION, UNITS 1 AND 2
NRC INSPECTION REPORT 072-00053/05-001(DNMS)

Dear Mr. Crane:

On May 10, 2005, the NRC completed its onsite inspection activities at the Quad Cities Nuclear Power Station. The purpose of this routine team inspection was to determine whether the HI-STORM 100 overpack construction activities were conducted safely and in accordance with NRC requirements. Specifically, the inspector observed the placement of concrete in four storage casks. At the conclusion of the onsite inspection, on May 10, 2005, the NRC inspector discussed the preliminary inspection findings with members of your staff. A final exit meeting was conducted by telephone between members of your staff and the inspector on July 15, 2005, to discuss the final results of the onsite inspection and the in-office review. The in-office review included the results of the 28-day break tests performed on samples of concrete by your independent laboratory.

The inspection consisted of an examination of the dry cask storage cask construction activities at the Quad Cities Nuclear Power Station as they relate to safety and compliance with the Commission's rules and regulations and with the conditions of your license. Areas examined during the inspection are identified in the enclosed report. Within these areas, the inspection consisted of a selective examination of procedures and representative records, observations of activities in progress, and interviews with personnel.

Based on the results of this inspection, the NRC did not identify any violations. The HI-STORM 100 overpack construction activities reviewed were being conducted in accordance with applicable regulations and license conditions.

In accordance with 10 CFR 2.390 of the NRC's "Rules of Practice," a copy of this letter and its enclosure will be available electronically in the NRC Public Document Room or

from the Publicly Available Records (PARS) component of NRC's document system (ADAMS). The NRC's document system is accessible from the NRC Web site at http://www.nrc.gov/reading-rm/adams.html.

Sincerely,

/RA/

Jamnes L. Cameron, Chief
Decommissioning Branch

Docket No. 072-00053

Enclosure: Inspection Report 072-00053/05-001(DNMS)

cc w/encl: Site Vice President - Quad Cities Nuclear Power Station
Plant Manager - Quad Cities Nuclear Power Station
Regulatory Assurance Manager - Quad Cities Nuclear Power Station
Chief Operating Officer
Senior Vice President - Nuclear Services
Senior Vice President - Mid-West Regional
Operating Group
Vice President - Mid-West Operations Support
Vice President - Licensing and Regulatory Affairs
Director Licensing - Mid-West Regional
Operating Group
Manager Licensing - Dresden and Quad Cities
Senior Counsel, Nuclear, Mid-West Regional
Operating Group
Document Control Desk - Licensing
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Mid American Energy Company
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U.S. NUCLEAR REGULATORY COMMISSION

REGION III

Docket No.	072-00053
Report No.	072-00053/05-001(DNMS)
Licensee:	Exelon Generation Company, LLC
Facility:	Quad Cities Nuclear Power Station, Units 1 and 2
Location:	22710 206th Avenue North Cordova, IL 61242
Inspection Dates:	May 10, 2005 (onsite) July 11 through 15, 2005
Final Exit Meeting:	July 15, 2005
Inspector:	Magdalena Gryglak, Reactor Inspector
Approved by:	Jamnes L. Cameron, Chief Decommissioning Branch Division of Nuclear Materials Safety

EXECUTIVE SUMMARY

Quad Cities Nuclear Power Station
NRC Inspection Report 072-00053/05-001(DNMS)

The purpose of the inspection was to observe and evaluate the licensee's construction activities of four HI-STORM 100 storage overpacks. During the inspection period, the inspector observed placement and consolidation of concrete, reviewed the work package and the associated field tests, and evaluated the final laboratory analyses of the quality of the concrete.

Independent Spent Fuel Storage Pad Construction

- The inspector concluded that the construction of the HI-STORM 100 concrete storage overpacks complied with the structural provisions of the Final Safety Analysis Report and the licensee's specifications. (Section 1.1)

Report Details

1.0 Independent Spent Fuel Storage Pad Construction (60853)

1.1 Concrete Placement Activities

a. Inspection Scope

The inspector evaluated the compatibility of construction of the HI-STORM 100 concrete storage overpacks with the structural provisions of the Holtec Final Safety Analysis Report (FSAR), Revision 2, "Final Safety Analysis Report for the Holtec International Storage and Transfer Operation Reinforced Module Cask System, (HI-STORM 100 Cask System)," and the licensee's approved specifications. The review included observations of the concrete placement and the results of the 28-day cylinder break tests. In addition, the inspector reviewed the field notes which included: 1) the overpack shell receipt inspection checklists; 2) the concrete mix design records and the material qualification checklists; 3) the concrete batch plants certification and the surveillance records; 4) the concrete batch tickets; and 5) records of the unit weight, temperature and slump tests.

b. Observations and Findings

Prior to construction of the overpacks, the licensee held a pre-job brief, during which the project manager discussed the concrete placement procedures and safety precautions to take when placing concrete in the overpack shells. Holtec representatives had direct supervision over the work activities and the licensee provided additional oversight.

The four fabricated HI-STORM 100 overpack shells were clean and free of debris. The concrete was delivered in truck agitator units and discharged through a trunk that ensured an unrestricted vertical drop to prevent aggregate segregation. The staff placed the concrete in layers that were two feet in elevation. After completion of each layer in the four quadrants of the circle, the workers used a vibrator to ensure proper consolidation of the concrete. During the placement of the concrete, personnel performed unit weight, temperature, and slump tests as specified by the applicable American Concrete Institute (ACI) standards. In addition, the personnel sampled and collected eight sets of test cylinders; two sets for each HI-STORM 100 overpack. The cylinders were cured and tested after 28 days by a licensee independent laboratory to measure the compressive strength of the concrete. The averages of all sets of three consecutive strength tests exceeded the minimum required compressive strength of 3300 pounds per square inch, as specified in the FSAR. The material specifications and the results of the field tests met the design requirements.

c. Conclusions:

The inspector concluded that the construction of the HI-STORM 100 concrete storage overpacks complied with the structural provisions of the FSAR and the licensee's specifications.

2.0 Unresolved Items (URI)

(CLOSED) URI 072-00053/04-002-01: Licensee's relaxation of the requirement for the National Ready-Mix Concrete Association (NRMCA) certification in the design of the proposed Independent Spent Fuel Storage Installation (ISFSI) pad.

During the previous inspection, Inspection Report No. 072-00053/04-002(DNMS), Section 2.0, the inspectors identified that the licensee's work specifications specified that the licensee certify the concrete batch plant in accordance with NRMCA recommendations. Those recommendations specified that a licensed professional engineer certify the batch plant. The licensee subsequently accepted and approved a concrete batch plant that had been certified in accordance with Illinois Department of Transportation (IDOT) specifications. Those specifications did not include certification by a licensed professional engineer and the batch plant was not certified by a licensed professional engineer.

The inspector reviewed the NRMCA and IDOT recommendations, the license, Technical Specifications, and the Final Safety Analysis (FSAR), Revision 2. The FSAR referenced the American Concrete Institute (ACI) standards for the construction of the ISFSI pad. The ACI standards did not provide any recommendations regarding the batch plant certification.

The inspector reviewed the licensee's process associated with plant design changes. After the identification of the discrepancy between the IDOT certification of the batch plant supplying concrete and the NRMCA batch plant certification requirement in the work specifications, the licensee subsequently revised the work specifications. The licensee followed its plant procedures to perform a red line change within the site's specific pad design specifications. The licensee did not alter the NRC-approved methods or change the design function of the ISFSI pad.

The licensee's application of IDOT recommendations, rather than those of NRMCA, regarding the certification of the concrete batch plant, did not constitute a violation of NRC regulatory requirements or an unreviewed safety concern. In addition, the inspector confirmed that the concrete compressive strength results and the stiffness analyses of the pad met the design requirements. Therefore, this unresolved item is closed.

3.0 Exit Meeting Summary

On July 15, 2005, the inspector conducted a final exit meeting by telephone to present the final results of the inspection. The licensee acknowledged the findings presented and did not identify any information discussed as being proprietary.

PARTIAL LIST OF PERSONS CONTACTED

Dan Moore	Dry Cask Storage Project Manager
Brian Maze	Project Management
Mark Wagner	Regulatory Assurance
Harish Patel	Design Engineering

INSPECTION PROCEDURE USED

IP 60853 Construction of an Independent Spent Fuel Storage Installation

ITEMS OPENED, CLOSED, AND DISCUSSED

Opened

None

Closed	Type	Summary
072-00053/04-002-01	URI	Licensee's relaxation of the requirement for NRMCA certification in the design of the proposed ISFSI pad.

Discussed

None

LIST OF DOCUMENTS REVIEWED

Holtec Final Safety Analysis Report, "Final Safety Analysis Report for the Holtec International Storage and Transfer Operation Reinforced Module Cask System (Hi-Storm 100 Cask System)," Revision 2.

Procedure, "Ready Mixed Concrete and Grout Requirement for its "B" Applications," dated February 16, 2005.

Report, Laboratory Results, "Concrete Compressive Strength Test, dated June 8, 2005.

Supplementary Construction Document Package, HI-STORM 172-175, "Concrete Mix Design and Test Results," dated May 2005.

Field Documents, HSP-169 (cask #172-175), "HI-STORM 100 Storage Cask," dated May 13, 2005.

American Concrete Institute, ACI 301-89, "Standard Specifications for Structural Concrete."

American Concrete Institute, ACI 349-97, "Code Requirements for Nuclear Safety Related Concrete Structure."

American Concrete Institute, ACI 318-95, "Building Code Requirements for Structural Concrete and Commentary."

Pad design specifications, No. R-4452, "Concrete Work, Inspection and Testing for ISFSI Facilities," Revision 0, dated March 24, 2004.

Letter, “Comments on Questions of NRMCA Certification,” dated September 24, 2004.

Letter, “QCGS ISFSI Concrete Evaluation,” dated January 7, 2005.

50.59 Review, EC 344688, "Dry Cask Storage-Installation of Reinforced Concrete Pad, " Revision 1.

Policy Memorandum, “ Approval of Concrete Plants and Delivery Trucks,” dated January 15, 2002.

Quality Control Manual, “Certification of Ready Mixed Concrete Production Facilities,” Revision 8.

Illinois Department of Transportation, “Concrete Plant Survey,” dated February 15, 2002.

Illinois Department of Transportation, “Annual Inspection Certification for Concrete Plant,” Attachment B, dated February 3, 2004.

LIST OF ACRONYMS USED

ADAMS	Agencywide Documents Access Management System
CFR	Code of Federal Regulations
FSAR	Final Safety Analysis Report
IDOT	Illinois Department of Transportation
ISFSI	Independent Spent Fuel Storage Installation
NRC	Nuclear Regulatory Commission
NRMCA	National Ready Mix Concrete Association
PARS	Publicly Available Records
URI	Unresolved Item