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R. E. DENTON  
GENERAL MANAGER  
CALVERT CLIFFS

February 4, 1991

U.S. Nuclear Regulatory Commission  
Washington, D.C. 20555

ATTENTION: Document Control Desk

SUBJECT: Calvert Cliffs Nuclear Power Plant  
Unit No. 1; Docket No. 50-317; License No. DPR 53  
Licensee Event Report 88-015, Revision 01

Gentlemen:

The attached report is being sent to you as required under 10 CFR 50.73 guidelines. Should you have any questions regarding this report, we will be pleased to discuss them with you.

Very truly yours,

RED/REF/bjd  
Attachment

cc: D. A. Brune, Esquire  
J. E. Silberg, Esquire  
R. A. Capra, NRC  
D. G. McDonald, Jr., NRC  
T. T. Martin, NRC  
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LICENSEE EVENT REPORT (LER)

ESTIMATED BURDEN PER RESPONSE TO COMPLY WITH THIS INFORMATION COLLECTION REQUEST: 50.0 HRS. FORWARD COMMENTS REGARDING BURDEN ESTIMATE TO THE RECORDS AND REPORTS MANAGEMENT BRANCH (P-630), U.S. NUCLEAR REGULATORY COMMISSION, WASHINGTON, DC 20555 AND TO THE PAPERWORK REDUCTION PROJECT (3150-0104), OFFICE OF MANAGEMENT AND BUDGET, WASHINGTON, DC 20503.

FACILITY NAME (1) Calvert Cliffs, Unit 1	DOCKET NUMBER (2) 0 5 0 0 0 3 1 7	PAGE (3) 1 OF 4
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TITLE (4)  
Movement of Heavy Loads Over the Spent Fuel Pool

EVENT DATE (5)			LER NUMBER (6)			REPORT DATE (7)			OTHER FACILITIES INVOLVED (8)																
MONTH	DAY	YEAR	YEAR	SEQUENTIAL NUMBER	REVISION NUMBER	MONTH	DAY	YEAR	FACILITY NAMES	DOCKET NUMBER(S)															
1	2	3	0	8	8	8	8	8	0	1	5	0	1	0	2	0	4	9	1		0	5	0	0	0

OPERATING MODE (9) 1	THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR 5: (Check one or more of the following) (11)									
POWER LEVEL (10) 0 0 0	<input type="checkbox"/> 20.402(b)	<input type="checkbox"/> 20.406(c)	<input type="checkbox"/> 60.73(a)(2)(iv)	<input type="checkbox"/> 73.71(b)						
	<input type="checkbox"/> 20.406(a)(1)(i)	<input type="checkbox"/> 60.36(e)(1)	<input type="checkbox"/> 60.73(a)(2)(v)	<input type="checkbox"/> 73.71(e)						
	<input type="checkbox"/> 20.406(a)(1)(ii)	<input type="checkbox"/> 60.36(e)(2)	<input type="checkbox"/> 60.73(a)(2)(vi)	OTHER (Specify in Abstract below and in Tab. NRC Form 366A)						
	<input type="checkbox"/> 20.406(a)(1)(iii)	<input type="checkbox"/> 60.73(a)(2)(i)	<input type="checkbox"/> 60.73(a)(2)(viii)(A)							
	<input type="checkbox"/> 20.406(a)(1)(iv)	<input checked="" type="checkbox"/> 60.73(a)(2)(ii)	<input type="checkbox"/> 60.73(a)(2)(viii)(B)							
<input type="checkbox"/> 20.406(a)(1)(v)	<input type="checkbox"/> 60.73(a)(2)(iii)	<input type="checkbox"/> 60.73(a)(2)(ix)								

LICENSEE CONTACT FOR THIS LER (12)

NAME R. E. Franke, Engineer	TELEPHONE NUMBER AREA CODE: 3 0 1 2 6 0 - 2 0 6 0
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COMPLETE ONE LINE FOR EACH COMPONENT FAILURE DESCRIBED IN THIS REPORT (13)

CAUSE	SYSTEM	COMPONENT	MANUFACTURER	REPORTABLE TO NRPDS	CAUSE	SYSTEM	COMPONENT	MANUFACTURER	REPORTABLE TO NRPDS

SUPPLEMENTAL REPORT EXPECTED (14)

<input type="checkbox"/> YES (If yes, complete EXPECTED SUBMISSION DATE)	<input checked="" type="checkbox"/> NO
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EXPECTED SUBMISSION DATE (15)

MONTH	DAY	YEAR

ABSTRACT (Limit to 1400 spaces, i.e., approximately fifteen single-space typewritten lines) (16)

In May, 1983, the NRC issued a safety evaluation documenting the staff's approval of Baltimore Gas and Electric's (BG&Es) resolution of Generic Issue A-36, Control of Heavy Loads Near Spent Fuel. This resolution included the use of administrative controls to prevent the movement of heavy loads over the spent fuel pool. On December 30, 1988, it was discovered that one of these administrative controls was not being properly maintained and that a heavy load (the spent fuel cask crane load block) had been moved over the spent fuel pool.

Immediate corrective action was taken to prevent recurrence by not allowing the crane to travel over spent fuel. The cause of this event was personnel responsible for controlling crane movement were unaware that the crane load block, in and of itself, constituted a heavy load. Preventive measures were to revise the controlling procedures to ensure the safe movement of heavy loads over the spent fuel pool.

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TEXT (if more space is required, use additional forms)

I. DESCRIPTION OF EVENT

NRC Generic Issue A-36 addressed the safety implications of handling heavy loads at nuclear power plants. Under A-36, the NRC staff examined existing licensing criteria and the adequacy of measures in effect at operating plants, and then recommended necessary changes to assure the safe handling of heavy loads. Guidelines were developed that offered various alternatives to licensees in this area. These guidelines are described in NUREG-0612, "Control of Heavy Loads at Nuclear Power Plants - Resolution of Task A-36."

On December 22, 1980, the NRC issued a generic letter pursuant to 10 CFR 50.54(f) requesting a response to NUREG-0612. Baltimore Gas and Electric (BG&E) responded to the NRC on January 4, 1982, with a detailed list of cranes and heavy loads in use at Calvert Cliffs and the measures in place to control their movement. One of the cranes identified in NUREG-0612 and at Calvert Cliffs was the spent fuel cask crane. The spent fuel cask crane has been used since initial commercial operation for tasks involving travel over spent fuel. The cask crane is comprised of two hooks, a large one for carrying spent fuel casks and a smaller one used with various fuel handling tools. Each hook has an associated load block attached to it. To prevent the large hook and load block from being raised or lowered when moving fuel, interlocks were installed as part of the original design. These interlocks are in place to prevent an active failure of the crane such as a "two-blocking" event. A "Two-blocking" event occurs when the upper head block and the load block are brought into contact due to a continuous upward motion by the load block. This event can create excessive loads with the possibility of eventually dropping the load block.

The load blocks for the cask crane were identified as heavy loads in NUREG-0612 and were confirmed as heavy loads by BG&E. As part of BG&E's response to NUREG-0612, a procedure was generated to control the movement of the spent fuel cask crane with its associated heavy loads near the spent fuel pool. The procedure specified that mechanical stops shall be in place to prevent crane movement near the pool. However, the procedure did not list the load block as being a heavy load.

As such, the users of the crane believed that the mechanical stops were in place to prevent heavy loads from being carried by the hooks over spent fuel. Therefore any time a heavy load was suspended from a hook the stops were in place. However, when travel over the pool was required and a heavy load was not suspended from a hook, the mechanical stops were removed without realizing the load blocks were considered heavy loads by themselves.

In December, 1988, the System Engineer responsible for the crane asked the Licensing Unit to clarify the requirements of NUREG-0612 with respect to the load blocks. After a preliminary review it was decided a potential problem existed

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and on December 30, 1988, the spent fuel cask handling crane was tagged to prevent continued operation until the matter could be resolved.

II. CAUSE OF EVENT

Chapter 9 of the Updated Final Safety Analysis Report (UFSAR) discusses the use of the spent fuel cask handling crane and the mechanical and administrative limits that apply to it, but it does not specifically identify heavy loads. Two procedures and one manual at Calvert Cliffs described the guidelines to be followed when moving the spent fuel pool cask handling crane. Crane operators specifically used Maintenance Procedure HE-7 (Auxiliary Building Cask Handling Crane Operators Checklist for Remote Operations) when moving the crane. This procedure also referenced Calvert Cliffs Instruction (CCI)-210C, Material Handling Operations. Within CCI-210C is a reference to the Calvert Cliffs Heavy Loads Manual. These documents imposed the administrative restrictions on the movement of heavy loads; however, none of these documents provided an actual list of heavy loads. Consequently, these restrictions were interpreted by personnel responsible for controlling crane movements as applying only to heavy loads carried by the crane and not the actual load blocks. This misunderstanding allowed the crane to be moved over spent fuel with a heavy load (crane load blocks) attached.

III. ANALYSIS OF EVENT

This event is reportable under 10 CFR 50.73(a)(2)(ii)(A) in that the movement of load blocks over spent fuel placed the plant in an unanalyzed condition. In the past, both the large and small load blocks were moved over spent fuel assemblies. Through subsequent analysis we have determined there was no safety significance associated with the potential of dropping either load block.

To determine the potential consequences in the past of dropping either the large or small load block on fuel assemblies in the Spent Fuel Pool, various analysis were performed. In April, 1989, Nuclear Energy Services (NES) prepared a report that described the Spent Fuel Pool rack deformation and the number of fuel assemblies that would be impacted if either load block were dropped.

Combustion Engineering (CE) was also contracted to determine the potential for criticality and exceeding offsite doses. On August 20, 1990, CE provided the final results of this report.

A third in-house analysis, compiled past crane movements over the Spent Fuel Pool. This analysis looked at the worst case scenarios for each unit, including the greatest number of new assemblies together; the greatest number of spent fuel assemblies together, including the length they had been out of the core; and the boron concentration of the pool under the various scenarios.

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By combining the results of all three analyses it has been determined that a large or small load block drop would have created offsite doses far below 25 percent of the 10 CFR 100 limits (a restriction imposed by NUREG-0612), nor would it have created any type of event involving inadvertent criticality. These results demonstrate that these events created no conditions adverse to public health and safety.

IV. CORRECTIVE ACTIONS

As mentioned above, the spent fuel handling crane had been temporarily restricted to operations that did not require travel over spent fuel. These restrictions were instituted until appropriate administrative controls were established.

Recently, these administrative controls were approved. The latest revision to Maintenance Procedure HE-7 includes the placement of mechanical stops and the inclusion of a precautionary statement identifying load blocks as heavy loads and forbidding their movement over spent fuel.

V. ADDITIONAL INFORMATION

No similar events at Calvert Cliffs have been reported.