



A Centennial Energy Company

EDISON PLAZA
300 MADISON AVENUE
TOLEDO, OHIO 43652-0001

NP-33-96-005-1

AB-96-0031

Docket No. 50-346

License No. NPF-3

August 16, 1996

United States Nuclear Regulatory Commission
Document Control Desk
Washington, D. C. 20555

Gentlemen:

LER 96-005, Revision 1
Davis-Besse Nuclear Power Station, Unit No. 1
Date of Occurrence - April 16, 1996

Enclosed please find Revision 1 to Licensee Event Report (LER) 96-005 which is being submitted to document completion of the analysis of this event and update corrective actions taken. The changes are marked with a revision bar in the margin. Please destroy or mark superseded on previous copies of the LER.

Very truly yours,

J. H. Lash
General Manager
Davis-Besse Nuclear Power Station

GLW:tam

Enclosure

cc: Mr. A. B. Beach
Regional Administrator
USNR Region III

Mr. Stan Stasek
DB-1 NRC Sr. Resident Inspector

Utility Radiological Safety Board

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LICENSEE EVENT REPORT (LER)

(See reverse for required number of digits/characters for each block)

ESTIMATED BURDEN PER RESPONSE TO COMPLY WITH THIS INFORMATION COLLECTION REQUEST: 500 HRS. FORWARD COMMENTS REGARDING BURDEN ESTIMATE TO THE INFORMATION AND RECORDS MANAGEMENT BRANCH (MNBB 7714), U.S. NUCLEAR REGULATORY COMMISSION, WASHINGTON, DC 20555-0001, AND TO THE PAPERWORK REDUCTION PROJECT (3150-0104), OFFICE OF MANAGEMENT AND BUDGET, WASHINGTON, DC 20503.

FACILITY NAME (1)

Davis-Besse Unit Number 1

DOCKET NUMBER (2)

05000 - 346

PAGE (3)

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TITLE (4)

Inadequate Control of Heavy Loads in the Containment Building

EVENT DATE (5)			LER NUMBER (6)			REPORT NUMBER (7)			OTHER FACILITIES INVOLVED (8)	
MONTH	DAY	YEAR	YEAR	SEQUENTIAL NUMBER	REVISION NUMBER	MONTH	DAY	YEAR	FACILITY NAME	DOCKET NUMBER
04	16	96	96	-- 005 --	01	08	19	96	FACILITY NAME	DOCKET NUMBER
										05000
									FACILITY NAME	DOCKET NUMBER
										05000

OPERATING MODE (9) 6

POWER LEVEL (10) 0

THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR §: (Check one or more) (11)

20.402(b)	20.405(c)	50.73(a)(2)(iv)	73.71(b)
20.405(a)(1)(i)	50.36(c)(1)	50.73(a)(2)(v)	73.71(c)
20.405(a)(1)(ii)	50.36(c)(2)	50.73(a)(2)(vii)	OTHER
20.405(a)(1)(iii)	50.73(a)(2)(i)	50.73(a)(2)(viii)(A)	(Specify in Abstract below and in text, NRC Form 366A)
20.405(a)(1)(iv)	X 50.73(a)(2)(ii)	50.73(a)(2)(viii)(B)	
20.405(a)(1)(v)	50.73(a)(2)(iii)	50.73(a)(2)(x)	

LICENSEE CONTACT FOR THIS LER (12)

NAME

Gerald M. Wolf, Engineer - Licensing

TELEPHONE NUMBER (Include Area Code)

(419) 321-8114

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)

YES (if yes, complete EXPECTED SUBMISSION DATE)	X NO	EXPECTED SUBMISSION DATE (15)	MONTH	DAY	YEAR

ABSTRACT (Limit to 1400 spaces, i.e., approximately 15 single-spaced typewritten lines) (16)

On April 16, 1996, a Potential Condition Adverse to Quality Report (PCAQR) documented lifting the reactor vessel head lifting tripod (RVHLT) and improperly traversing a portion of the open reactor vessel with fuel in the reactor. The RVHLT is considered a heavy load and is procedurally restricted from movement over the open reactor vessel with irradiated fuel in the reactor. The RVHLT was moved from the west secondary shield wall, across the northeast portion of the Reactor Vessel (RV) to the Incore Tank (IT) area. Further review determined that this event involved a postulated drop scenario which was not bounded by previous heavy load evaluations. On April 23, 1996, it was determined that this condition is considered reportable in accordance with 10CFR50.73(a)(2)(ii)(B) as a condition outside the design basis. Lack of knowledge on what constituted a heavy load and a safe lift load path over fuel caused the inadequate evaluation of this RVHLT lift. Immediate corrective action included direction from the Plant Manager to the Outage Directors and training of affected personnel to re-emphasize load path restrictions in the Containment Vessel (CV). During the investigation it was discovered that other lifts occurred which encroached upon the heavy load exclusion zone at the CV periphery. Commitments for handling of heavy loads with the Polar Crane (PC) will be reviewed and additional corrective actions will be implemented prior to the next refueling outage as determined necessary.

LICENSEE EVENT REPORT (LER)
TEXT CONTINUATION

ESTIMATED BURDEN PER RESPONSE TO COMPLY WITH THIS INFORMATION COLLECTION REQUEST: 50.0 HRS. FORWARD COMMENTS REGARDING BURDEN ESTIMATE TO THE INFORMATION AND RECORDS MANAGEMENT BRANCH (MNBB 7714), U.S. NUCLEAR REGULATORY COMMISSION, WASHINGTON, DC 20555-0001, AND TO THE PAPERWORK REDUCTION PROJECT (3150-0104), OFFICE OF MANAGEMENT AND BUDGET, WASHINGTON, DC 20503.

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				96	- 005 -	01	

TEXT (If more space is required, use additional copies of NRC Form 366A) (17)

Description of Occurrence:

On April 16, 1996, a PCAQR (96-0502) documented lifting the RVHLT and improperly traversing a portion of the RV with irradiated fuel in the reactor. The RVHLT is considered a heavy load and, as such, is procedurally restricted from movement over the reactor vessel with the reactor vessel head (RVH) removed and fuel in the reactor. In addition, during the investigation of this event, it was recognized that other heavy load lifts had been made in the past over the heavy load exclusion zone at the CV periphery.

At the beginning of this event, the RVHLT had been used to remove the RVH and the lifting tripod was rigged to the PC main hook in the CV. The RVHLT was positioned over the west secondary shield wall in the CV. This resulted in the main hook rigged with the RVHLT being closest to the CV wall and the auxiliary hook on the inside toward the center of containment. A deviation from the preferred outage sequence resulted in the IT floor plugs not being removed prior to removing the RVH. The IT floor plugs can be removed by either the main or auxiliary hook, provided the hook selected is closest to the CV wall. However, the auxiliary hook of the PC is preferred to lift the IT floor plugs. Several options were being considered to perform the lift of the IT floor plugs. One of the options that was being considered at the end of the night shift on April 16 was moving the PC to the IT area without removing the RVHLT, which was still needed to lift the RV plenum assembly. However, this option required moving the PC trolley over the open RV to obtain the proper positioning of the auxiliary hook over the IT floor plugs toward the outside of the CV. At the time of shift turnover from the night shift to the day shift, this option was considered unsatisfactory.

Early on the day shift, the option to move the PC trolley directly to the IT with the RVHLT attached was reconsidered by the Containment Coordinator, the Crane Operator, and an individual dispatched by Outage Central Management who was familiar with possible options. After discussion between these individuals, a decision was made that the lift and load path were satisfactory as long as on-line communication was established with the Shift Supervisor for the portion of the load path that traversed the RV. The perception was concurrently developed that the RVHLT was rigging and did not constitute a heavy load. At approximately 0900 hours the PC trolley with the RVHLT attached was moved over the RV to its desired location on the opposite side of the CV over the IT floor plugs.

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Description of Occurrence: (Continued)

Subsequent review of this event during evaluation of reportability determined that this even involved a postulated drop scenario that had not been analyzed. It was determined that previous analysis had established the drop of the RV plenum as the limiting analyzed heavy load drop with the RV head removed and fuel in the RV. Traversing the RV with the RVHLT attached to the PC potentially involves a greater kinetic energy that could be transferred to the fuel in the event the RVHLT is dropped. The analyzed drop of the plenum does not result in any fuel damage which is considered to be the design basis.

In addition, submittals by Toledo Edison in response to NUREG-0612, Control of Heavy Loads at Nuclear Power Plants, discounted movement of heavy loads over the RV with the RVH removed and fuel in the RV. On April 23, 1996, it was determined that until it can be shown that the result is bounded by previous analysis, this condition is considered reportable in accordance with 10CFR50.73(a)(2)(ii)(B) as a condition outside the design basis.

Apparent Cause of Occurrence:

When the options available to position the PC over the IT floor plugs were reconsidered, several misconceptions were developed in lieu of consulting with procedures or further consulting with Outage Central Management. The RVHLT was incorrectly perceived as rigging rather than a load that constituted a heavy load. The crane operator was aware of heavy load restrictions from the procedure Polar Crane Operation (DB-MM-06002) but was willing to move the RVHLT over the RV as long as the Shift Supervisor granted permission and communication with the Shift Supervisor was established during the portion of the lift during which the RVHLT traversed the RV. There was also a recollection that the PC had been moved in previous outages over the RV with the RVHLT attached. The procedure DB-MM-06002 contains an attachment which specified acceptable load path options. Although personnel involved in the decision knew the procedure contained load path restrictions, they didn't fully comprehend the context of these restrictions and their underlying background.

Analysis of Occurrence:

Lifting of the RVHLT over the open RV with fuel in the RV is considered outside the current design basis of the DBNPS. The load path traveled by the PC trolley caused the RVHLT to traverse the northeast portion of the RV. It was initially anticipated that analysis could show that a postulated drop of the RVHLT in the

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Analysis of Occurrence: (Continued)

configuration that existed during this event would not have resulted in fuel damage. It was expected that the RVHLT would first impact the RV flange/refueling canal and that the plenum structure would deform, absorbing some of the energy. However, there is a possibility that the one leg of the RVHLT could first directly impact a Control Rod Drive (CRD) Guide Tube. In this case, the kinetic energy of the RVHLT would be transferred to the CRD Guide Tube, driving it directly into the fuel assembly below. In this specific circumstance it can not be shown with the analytical techniques used for this calculation that fuel would not be damaged. It is more likely that the CRD Guide Tube would not be impacted directly, and the Guide Tube would deform on impact, absorbing some of the kinetic energy involved in the drop. It is most likely that the RVHLT would strike the RV flange with at least one leg, and the RV flange and plenum would absorb some of the kinetic energy. The containment equipment hatch was installed at the time of the event. The personnel hatch doors were open, but personnel were stationed near the doors who would immediately close them if directed. The Containment Purge System was operating on the CV, and the Containment Purge radiation monitor and containment isolation valves were operable to provide isolation of the CV.

During the investigation of this event, it was also recognized that a weakness exists with the control of heavy load lifts over the exclusion zone at the periphery of the CV.

Corrective Actions:

Immediate corrective action was to provide direction (Memorandum DSP-96-00029) from the Plant Manager to the Outage Directors on April 23, 1996, to re-emphasize acceptable load paths in the CV. The commitment made to the NRC by Toledo Edison in response to NUREG 0612 relative to safe load paths allowed exception to these load paths only upon approval of the Plant Manager. For the outage currently in progress, the memorandum delegated this authority to the Outage Directors. A training lesson plan (MMS-CQT-I001) was prepared and presented to outage management personnel and crane operators. The lesson reviews the definition of a heavy load and specific load path restrictions for the PC. The lesson plan reinforced that the RVHLT is a heavy load.

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Corrective Actions: (Continued)

The analysis of the drop of the RVHLT on the RV was completed and discussed with the resident NRC Inspector on July 18, 1996. Commitments for handling heavy loads with the PC will be reassessed prior to the next refueling outage. Procedures for handling heavy loads with the PC will also be reassessed. Identified procedural enhancements as determined necessary will be completed prior to the next refueling outage.

Failure Data:

There have been no LERs in the previous three years involving lifting heavy loads that are considered to be potentially outside the design basis of the DBNPS.

NP-33-96-005-1

PCAQR 96-0502