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September 19, 1980

Mr J G Keppler, Regional Director Office of Inspection & Enforcement US Nuclear Regulatory Commission Region III 799 Roosevelt Road Glen Ellyn, IL 60137

MIDLAND NUCLEAR PLANT UNIT NO 1, DOCKET 40 50-329 UNIT NO 2, DOCKET NO 50-330 HELBA RESTRAINT DESIGN FILE: 0.4.9.41 UFI: 73*10*01 SERIAL: 8830

This letter confirms the 50.55(e) item concerning HELBA Restraint Design, reported by telephone call to R Knop, USNRC Region III, Glen Ellyn, IL, on August 21, 1980.

The attachments to this letter describe the conditions and actions taken concerning this item.

Another report, either interim or final, will be sent on or before December 1, 1980.

James W. Cook

WRB/lr

Attachment: 1) Management Corrective Action Report (MCAR-1), Report No 40, dated August 21, 1980

- 2) MCAR-40, Interim Report 1, High Energy Line Break Analysis (HELBA), Pipe Whip Restraint Designs, dated September 11, 1980
- CC: Director of Office of Inspection & Enforcement Att Mr Victor Stello, USNRC (15)

Director of Office of Management Information and Program Control, USNRC (1)

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R Cook, USNRC Resident Inspector Midland Nuclear Plant (1)

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	MANAG	EMENT CORREC	NCE PROGRAM Attachment 1 TIVE ACTION REPORT Serial: 8830 R-1
			REPORT NO 40
72	20011302	0.100 1.102	DATE: 8/21/80
I DESCRIPTION (M Contrary to the BN-TOP-2, stead Q-listed pipe w fabrication pur	ncluding Reference requirements y state rathe hip restraint poses and mos	es) of FSAR 3.6.2. r than peak thr s. Design docu t of the restra	2 and the referenced sections of ust forces were used in the design of ments have been release for construction/ ints have been installed.
RECOMMENDED	ACTION . (Option	al):	
The high en and provide necessary t designs to	ergy line bre the civil ar o perform a r assure their	ak analysis (HE d plant design eanalysis of the compliance with	LBA) group to develop disciplines with data e pipe whip restraint FSAR subsection 3.6.2.2.
REFERRED TO:	IX Engineerin	g 🗆 Constru	uction QA Management D
	Procureme	nt	ISSUED BY: Dichie Bie Stack
II REPORTABLE DE	FICIENCY:	Potentially Reportable	NOTIFIED CLIENT: 8/21/20
D NO		□ YES	Hoject Manager Date Date
III CAUSE: CORRECTIVE AC	TION TAKEN:		
			AUTHORIZED BY:
AAPD DISTRIBUTION MORI OF CONSTRUCTION MORI OF ENGINEEANS MORI OF PROCUREMENT	PROJ DISTRIBUTION CHIEF CONSTR OC ENGR CLIENT PFOCE	OTHER DISTRIBUTION MGR OF QA - TPO GPD - QA MGR LAPD - QA MGR SEPD - QA MGR	FORMAL REPORT TO CLIENT
MGR OF QUALITY ASSURANCE PROJECT ENGP		NGR SFPD DA MGR	CORRECTIVE ACTION IMPLEMENTED
CONSTRUCTION MGR ENCINEERING MGR SUPPLIER CUALITY MGR GE SUPERVISOR	PROJECT MGR PROJ PHOCUHEMINT M SITE MGR	5 9	POOR ORIGINAL
*Describe in space prov	ided and attach refere	nce document	VERIFIED BY Project OA Engineer Date
0000 GTA	Section	Num	ber Page of

MCAR 40 Page 2

RECOMMENDED A Or for 3 & Atinued

- The plant design discipline to develop and provide plastic hinge lengths for the reanalysis of the pipe whip restraint designs.
- 3. The civil discipline to review affected pipe whip restraint design documents, considering the peak thrust forces, to assure that they shall perform adequately during a high energy pipe rupture. If necessary revise design documents.
- Have the cognizant Chief Engineers office review the HELBA group assumptions and work processes to determine if other similar potential problems exist.
- 5. If thru the review process certain pipe whip restraints are identified as requiring modification, notify Construction, Quality Control and the PQAE. This notification should be provided as soon as practical after the necessary modification is identified.
- Investigate and identify the root cause and provide corrective action to preclude recurrence.
- Develop and submit a written report to the PQAE for coordination with Consumers Power Company containing available information on or before 9/11/80.

Bechtel Associates Professional Corporation

OII918 SUBJECT:

MCAR 40 (issued 8/21/80)

High-Energy Line Break Analysis (HELBA), Pipe Whip Restraint Designs

INTERIM REPORT 1

DATE: September 11, 1980

PROJECT: Consumers Power Company Midland Plant Units 1 and 2 Bechtel Job 7220

Introduction

This report is submitted regarding the interim status and actions pursuant to the subject MCAR.

Description of Discrepancy

FSAR Section 3.6.2.2 states that the analysis of the thrust forces which result in the event of a pipe rupture is described in BN-TOP-2. Contrary to the intent of BN-TOP-2, the steady-state thrust forces rather than the transient peak thrust forces were used in the energy balance techniques for the design of HELBA pipe whip restraints (see attachment, Figure B). Design documents have been released for construction/fabrication and most of the restraints have been installed.

Cause

The cause of this discrepancy has been identified as a misinterpretation of the requirements of BN-TOP-2.

Safety Implication

The safety-related function of a pipe whip restraint is to limit pipe movement following a high-energy line break to prevent unacceptable damage to essential systems or components. Designing the restraint using the steady-state thrust force instead of the higher transient thrust force could compromise this safety function. The size of the restraints may be inadequate for the increased loads, and/or their location may be inadequate as a higher thrust force may cause the plastic hinge length to decrease outside the range of the restraint. This deficiency, were it to have remained uncorrected, may have adversely affected the safety of operations at the Midland plant if certain types of accidents were to occur.

Analytical Reevaluation Action

The affected restraints are being reevaluated using conservative thrust force time-histories input to energy balance and/or time history methods as described in BN-TOP-2.

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MCAR 40 Interim Report 1 September 11, 1980 Page 2

Corrective Action

Corrective action depends upon the results of the analytical reevaluation.

Forecast Dates

The next interim report is scheduled to be issued by November 21, 1980.

Reportability

This condition was reported by Consumers Power Company to the NRC as a potential 10 CFR 50.55(e) reportable condition on August 21, 1980. A 30-day report is due to be sent to the NRC on September 20, 1980.

Submitted by: Jaclements Approved by: Engludes for LHC ET'S Concurrence by: K. D. Bailey

JAC/LHS/bjm 9/3/7 TYPICAL THRUST FORCE TRANSIENTS



TIME (MILLISECONDS)

A. Thrust Force Transient, Very Low Friction Flow

