M1995089

Northern States Power Company

Monticello Nuclear Generating Plant
2807 West Hwy 75
Monticello, Minnesota 55362-9637

April 27, 1995

Voluntary Report
10 CFR Part 50, Section 50.73

U.S. Nuclear Regulatory Commission
Attn: Document Control Desk
Washington, DC 20555

MONTICELLO NUCLEAR GENERATING PLANT
Docket No. 50-263 License No. DPR-22

LER 95-003
Equipment Supports Connected to Steel Shoring Plates

The Voluntary Licensee Event Report for this occurrence is attached. This report contains no NRC commitments.

Please contact Tom Parker at (612) 295-1014 if you require further information.

William J Hill

William J Hill
Plant Manager
Monticello Nuclear Generating Plant

c: Regional Administrator - III NRC
Sr Resident Inspector, NRC
NRR Project Manager, NRC
State of Minnesota,
Attn: Kris Sanda

Attachment

IE22
1/1

NRC FORM 366 (5-92) U.S. NUCLEAR REGULATORY COMMISSION

APPROVED BY OMB NO. 3150-0104
EXPIRES 5/31/95

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.

LICENSEE EVENT REPORT (LER)

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

FACILITY NAME (1)	DOCKET NUMBER (2)	PAGE (3)
MONTICELLO NUCLEAR GENERATING PLANT	05000 - 263	1 OF 7

TITLE (4)
Equipment Supports Connected to Steel Shoring Plates

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
03	28	95	95	003	00	04	27	95		05000
									FACILITY NAME	DOCKET NUMBER 05000

OPERATING MODE (9)	N	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)
POWER LEVEL (10)	100 %	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)	50.73(a)(2)(ii)	50.73(a)(2)(viii)(B)	VOLUNTARY
		20.405(a)(1)(v)	50.73(a)(2)(iii)	50.73(a)(2)(x)	

LICENSEE CONTACT FOR THIS LER (12)

NAME	TELEPHONE NUMBER (Include Area Code)
Tom Parker	612-295-1014

COMPLETE ONE LINE FOR EACH COMPONENT FAILURE DESCRIBED IN THIS REPORT (13)

CAUSE	SYSTEM	COMPONENT	MANUFACTURER	REPORTABLE TO NPRDS		CAUSE	SYSTEM	COMPONENT	MANUFACTURER	REPORTABLE TO NPRDS

SUPPLEMENTAL REPORT EXPECTED (14)			EXPECTED SUBMISSION DATE (15)	MONTH	DAY	YEAR
YES (If yes, complete EXPECTED SUBMISSION DATE)	✓	NO				

ABSTRACT (LIMIT TO 1400 SPACES, I.E., APPROXIMATELY 15 SINGLE-SPACED TYPEWRITTEN LINES) (16)
NCR FORM 366 (5-91)

Pipe and cable tray supports were found to be anchored to shoring plates, rather than embedded plates or base plates. Most of this work was done during original construction. All supports have been modified or analyzed, and currently meet the code requirements.

Description

In 1993, during a stress re-analysis of the Scram Discharge Volume (EIIS System Code: AA), a Scram Discharge Volume support (EIIS Component Code: SPT)(Support number H-231) was found attached to a steel shoring plate. During a 1989 modification, the support was moved and attached to the shoring plate. The design engineers assumed the plate was an embedded plate, but the plate was actually a shoring plate[1]. Shoring plates have a Nelson stud and a threaded rod attached every 12" (See Figure). The threaded rods were used to hold the shoring plates in place during the concrete pour.

As a result of the configuration found on the Scram Discharge Volume, other supports (for pipe and cable trays) were reviewed in areas where floors were made from concrete "T" beams. Various cable trays were found to be attached to shoring plates. The table on the next page identifies the safety related pipe supports found to be attached to (or partially attached to) shoring plates (H-231, which was discussed above, is included for completeness).

Cause

All the attachments are believed to have been made during original construction except the support for the Scram Discharge Volume (H-231). The Scram Discharge Volume support was attached to what was assumed to be an embedded plate. Engineering personnel should have better identified the characteristics of the plate the support was being attached to.

During original plant construction engineering calculations may have been performed to justify attaching supports to these shoring plates. This is logical as the shoring plates

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[1] Shoring plates were used between concrete "T" beams in some of the reactor building floors. These floors were constructed from parallel concrete "T" beams and the shoring plates were used to contain the concrete poured between the beams to make the floor. Embedded plates are generally thicker with Nelson studs attached to provide support and flush with the concrete as the concrete was poured around them. Base plates are thicker than shoring plates also, but are attached after the concrete surface is poured. They are typically attached with concrete anchor bolts.

were installed with Nelson studs every 12 inches. The Nelson studs serve no purpose for a shoring plate, but are standard on embedded plates. However, no calculations have been found to support this.

PIPE SUPPORT NUMBER	SUPPORTS AFFECTED SYSTEM	LINES SUPPORTED	LINE NUMBER
H-231	CONTROL ROD DRIVE SYSTEM	12" WEST CRD SCRAM DISCHARGE VOLUME HORIZONTAL SECTION	CRD16A-12"CCD
PS-1 PS-6 PS-11 PS-16	MAIN STEAM (EIIS System Code: SB)	4 - 18" MAIN STEAM LINE	PS1-18"ED PS2-18"ED PS3-18"ED PS4-18"ED
PSH-116 PSH-117	HIGH PRESSURE COOLANT INJECTION (HPCI) (EIIS System Code: BJ)	8" HPCI STEAM SUPPLY	PS18-8"ED
PSH-114	REACTOR CORE ISOLATION COOLING (EIIS System Code: BN)	3" RCIC STEAM SUPPLY	PS17-3"ED
TWH-140	RESIDUAL HEAT REMOVAL (EIIS System Code: BO)	12" RHR PUMP DISCHARGE LINE (DIVISION II)	TW23-12"GE
TWH-159	RESIDUAL HEAT REMOVAL	4" RHR HEAD SPRAY LINE	TW36-4"ED
SR-298 SWH-808	EMERGENCY SERVICE WATER (EIIS System Code: BI)	DIVISION I EMERGENCY SERVICE WATER TO THE RHR AND CORE SPRAY MOTORS AND THE ASSOCIATED ROOM COOLER	SW30A-2"HF
OAH-3 THROUGH OAH-9	PRIMARY CONTAINMENT ATMOSPHERE MONITORING (EIIS System Code: IK)	3/4" SAMPLE LINES	OA1-3/4"EF

Analysis

This event is being reported as a voluntary report. Since the supported equipment was operable at all times, no reportable condition exists.

PIPE SUPPORTS

In order to be operable, the pipe supports must be able to carry all loads including the loads associated with a faulted condition[2]. For operability, the supports are not required to meet the American Institute of Steel Construction (AISC) code allowables for working conditions. However, the supports must eventually be brought into code compliance. The faulted condition is:

> DEAD WEIGHT LOADS (DW) + THERMAL LOADS (TH) + EITHER THE SAFE SHUTDOWN EARTHQUAKE LOADS OR THE LIMITING TRANSIENT WHICH EVER IS MORE LIMITING

Appendix F of the American Society of Mechanical Engineers code allows supports to carry 1.2 times their yield strength in faulted condition.

Scram Discharge Volume

> The Scram Discharge Volume support was determined to be operable in the as found condition. Operability was determined by inspection of the support. The system had been through several limiting transients since its installation in 1989. No deformation or defects were observed from recent inspections and from past Inservice Inspections. Therefore, the support and shoring plate have not been stressed beyond yield and meet the faulted condition operability requirement (not exceeding 1.2 times the yield stress). Compliance with the code requirements for working stresses is addressed in the corrective action section below.

[2] This methodology is consistent with the guidance provided by Generic Letter 91-18.

Main Steam

The Main Steam supports were determined to be operable in the as found condition. Stresses occurring during a turbine stop valve fast closure (TSVFC) are larger than the Safe Shutdown Earthquake stresses. Therefore, the limiting transient is the sum of the dead weight stresses (DW), the thermal stresses (TH) and the turbine stop valve fast closure stresses. The sum of these stresses was found to less than 1.2 times the yield stresses. Therefore, the supports were operable.

DW + TH + TSVFC < FAULTED CONDITION CODE ALLOWABLES

In addition, there have been several turbine stop valve fast closure transients since these supports were installed. The main steam line supports were inspected in July of 1993 and no signs of deformation were found. Therefore, the supports have not experienced stresses greater than yield stresses.

The operability criteria is met. Compliance with the code requirements for working stresses is addressed in the corrective action section below.

RHR and Emergency Service Water

Supports TWH-140 and TWH-159 were found to meet all code requirements in the as found state. SR-298 and SWH-808 were found acceptable in comparison to TWH-140.

HPCI and RCIC

The HPCI and RCIC supports were found to meet all code requirements in the as found state.

Primary Containment Atmosphere Monitoring

The loads on these supports are very minor due to the small pipe size and were determined by inspection to meet all code requirements.

CABLE TRAYS

The cable trays supports were walked down to ensure that no damage had occurred to the cable trays. Therefore, the existing configuration is adequate to support the dead loads; existing stresses are below yield stress. The safe shutdown earthquake vertical loads are small (8% of dead weight) and engineering judgment was used to consider the cable trays as a group operable. Horizontal earthquake loads are minor as any horizontal force will cause the tray to swing.

All cable trays were found to be operable.

Corrective Actions

1. The plant was inspected to identify safety related supports attached to shoring plates (the results were discussed above).

2. The Scram Discharge Volume and Main Steam supports were modified. The rest of the pipe supports were determined to comply with the code in their existing condition. All supports comply with code requirements.

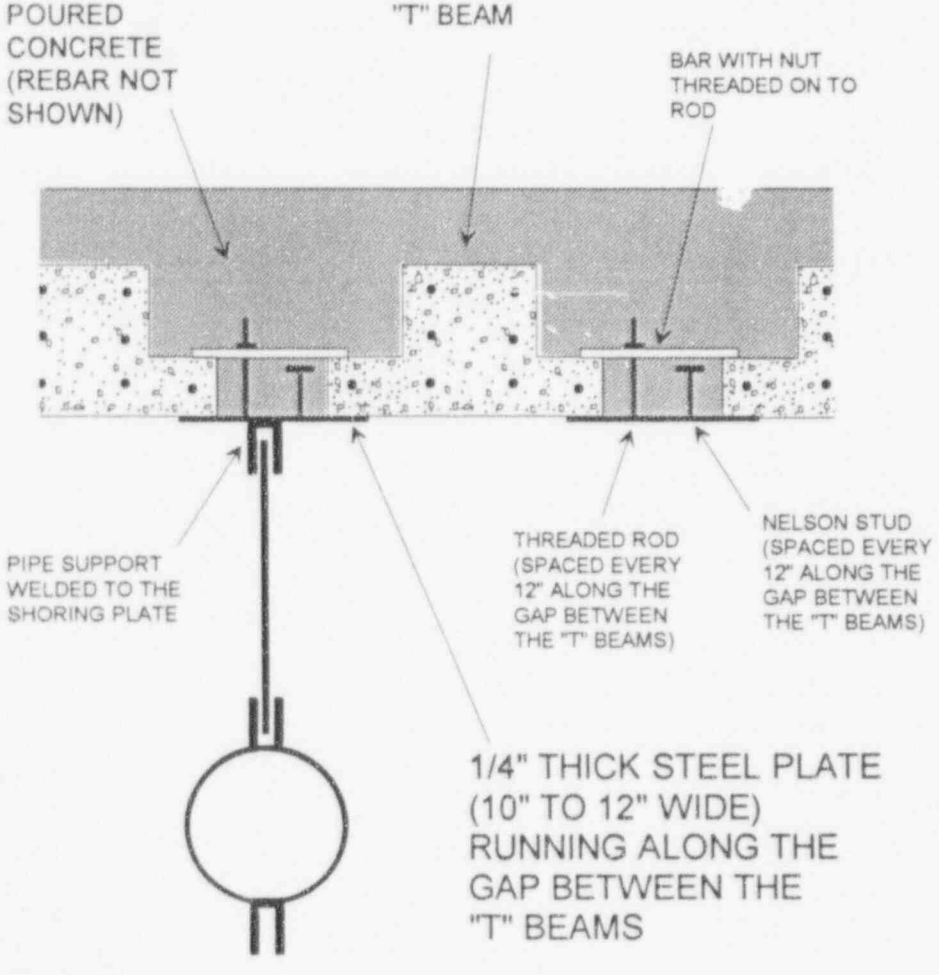
3. The cable tray support plates have been analyzed to meet all applicable code requirements.

4. This report will be discussed at Engineering Technical Staff Training.

Failed Component Identification - None

Previous Similar Events - None

FLOOR CROSS SECTION



TYPICAL CROSS SECTION
NOT TO SCALE