U. S. NUCLEAR REGULATORY COMMISSION
OFFICE OF INSPECTION AND ENFORCEMENT

REGION III

Report of Operations Inspection

IE Inspection Report No. 050-263/75-02

Licensee: Northern States Power Company
414 Nicollet Mall
Minneapolis, Minnesota 55401

Monticello Nuclear Generating Plant
Monticello, Minnesota

License No. DPR-22
Category: C

Type of Licensee: BWR (GE), 595 MWe

Type of Inspection: Special, Announced

Dates of Inspection: January 23 and 24, 1975

Dates of Previous Inspection: January 15-17, 1975 (Operations)

Principal Inspector: R. J. Cook R.J. Cook 3/3/75 (Date)

Accompanying Inspector: C. M. Erb C.M. Erb

Other Accompanying Personnel: None

Reviewed By: H. C. Dance H C Dance 3/4/75 (Date)
Senior Reactor Inspector

SUMMARY OF FINDINGS

Enforcement Action: None

Licensee Action on Previously Identified Enforcement Matters:

None inspected.

Unusual Occurences

Indications of cracking at fitting welds in both recirculation pump discharge valve 4 inch by-pass lines was detected by ultrasonic examination as per RO Bulletin 10A. (Paragraph 7)

Other Significant Findings

A. Current Findings: None

B. Unresolved Matters: None

C. Status of Previously Reported Unresolved Matters:

None Inspected.

Management Interview

A management interview was conducted by Messrs. Cook and Erb with Messrs. Krumpos, Harmsen, Swedberg and Hoetvaagan at the completion of the inspection.

The following items were discussed

A. External forces applied to the piping system was discussed. The licensee stated that an attempt would be made to measure piping spring back when the original pipe is cut. (Paragraph 5)

B. Confirmation of as built prints was discussed. The licensee stated a comparison of the installed system with the prints would be performed. (Paragraph 5)

C. The inspectors expressed a desire for a sample of the removed pipe for further evaluation by the NRC and stated that the licensee would be contacted at a later time. (Paragraph 8)

D. Nondestructive testing including hydrostatic testing after repairs was discussed. It appeared that the minimum requirements of the ASME Code could be met by utilizing appropriate waivers. (Report Details, Part II, Paragraph 3)

REPORT DETAILS

Part 1

Persons Contacted

C. Larson, Plant Superintendent
P. Krumpos, Quality Assurance Engineer
C. Harmsen, Technical Service Metallurgist
J. Swedberg, Plant Engineering and Construction
L. Hostvawsen, Minnesota State Code Inspector
T. Lambert, NSC Manager of Plant Testing

1. General

The inspection was performed to review the licensee's activities pertinent to cracks detected in 4 inch recirculation pump discharge by-pass lines and subsequent repairs.

2. Water Chemistry

Water chemistry records from November 3, 1974 through January 12, 1975 were examined. No oxygen concentration information was available as primary coolant oxygen testing is not required by the technical specifications or contractual agreements with suppliers and vendors.

Results of some primary coolant sample analyses, which the licensee claims are typical, are listed below:

Anlaysis	Range	Weekly Average
pH	6.2 - 7.8	6.2 - 7.4
Conductivity (umho/cm)	0.14 - 0.45	0.16 - 0.32
Chloride (ppb)	10	10

Two sets of primary coolant metallic analyses were examined for the period from November 1974. The following are the results of these analyses.

Filtrate (ppb)	Fe	Ni	Cu	Ci
	1.444	0.73	16.8	0.22
	1.65	0.47	29.2	0.31
Crud (ppb)	1.15	0.35	1.43	0.51
	1.34	0.12	1.77	0.23

3. Original Pipe Material

A review of the piping material analysis report revealed that the original material was 4 inch schedule 80 type 304 seamless pipe

Three of the suspect welds occurred in the "A" loop and are designated RBAJ-6, RBAJ-7 and RBAJ-8. The fourth weld, which showed indications of the most severe crack propogation is designated RBBJ-10 and is located in the "B" loop.

Generally, the strip charts for January 1975 UT inspections reveal longer circumferential indications of cracking than were exhibited from the November, 1974 strip charts. The November 1974 strip charts when compared to the current strip charts, showed minor indications which were not classified as being characteristic of crack indications but were considered indicative of surface nonhomogeneities.

8. Sample of Original Pipe

The inspector indicated during this inspection that the NRC might be interested in procuring a sample of the original piping for independent metallographic analyses. Subsequent to the inspection, the licensee was contacted by telephone with a request to set aside a sample of one weld containing a crack. The licensee agreed to do this but indicated the sample might be cut and retained at the laboratory performing the metallographic work.

REPORT DETAILS

Part II

Prepared By: C. M. Erb — C. M. Erb — 3/3/75 (Date)

Reviewed By: D. M. Hunnicutt — D. M. Hunnicutt, Chief, Construction and Engineering Support Branch — 3/3/75 (Date)

1. Purpose

This inspection was made to review NDT test results on the two four-inch bypass line welds in the recirculation system and to ascertain corrective action for those areas where defective welds were identified.

2. Persons Contacted During This Inspection

See Management Interview list.

3. Conclusion

A study of the ultrasonic test results of January 1975, together with radiographic evidence, established that three welds, two in Loop "A" and one in Loop "B", contain cracks, emanating from the inside surface in the weld heat affected zone. An examination of the UT results of November 1974 indicates that one, and possibly two, of these welds contained a linear indication which propagated to the larger size shown in January 1975.

Sections of the bypass lines, containing the defective welds, will be removed and replaced with certified pipe and fitting materials as in the original installation. The nonisolatable end of the loop and part of the isolatable with sound welds will not be replaced.

Details

The original repair plan called for usage of Type 304L replacement fittings. It was pointed out to the licensee that usage of this material would constitute a design change, due to its lower allowable,

as compared to Type 304 and Type 316. The licensee has since procured certified Type 304 fittings from the Dresden site which will be used.

The following material certifications of replacement pipe and fittings are shown below:

Quantity	Grade	Specification	Tensile	Yield	Chemistry
2 Ells, 90° 9', 4"	316	A403/A312	80,000	43,180	OK
Schedule 80S	304H	A312	86,300	43,100	OK

Subsequent to this inspection, the licensee initiated an investigation to establish that this heat of 304H steel is identical to Type 304 stainless steel. The licensee has qualified two welding procedures for the repair. One procedure utilizes an EB consumable insert in the root, while the other procedure uses the open butt method for the root. In both cases, the root (two layers) of Tungsten Inert Gas (TIG) weld will be completed, using the Shielded Metal Arc Process (SMAW).

The construction NDT (Radiography and Penetrant Test) will be performed by qualified personnel. The next step will involve pressurization of the two repaired loops to 1,000 psi, followed by an ultrasonic, base-line inspection to Procedure NVT-NC-1A. This base-line inspection will be performed by Nuclear Services Corporation (NSC) who has done the previous UT inspections, except for the original base-line inspections.

UNITED STATES
NUCLEAR REGULATORY COMMISSION
OFFICE OF INSPECTION AND ENFORCEMENT
REGION III
799 ROOSEVELT ROAD
GLEN ELLYN, ILLINOIS 60137

A. IE Inspection Report No. 050-263/75-02

Transmittal Date : March 4, 1975

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