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

REGION III

Report No. 50-301/79-12

Docket No. 50-301 License No. DPR-27

Licensee: Wisconsin Electric Power
Company
231 West Michigan
Milwaukee, WI 53201

Facility Name: Point Beach Nuclear Power Plant, Unit 2

Inspection At: Point Beach Site, Two Creeks, Wisconsin

Inspection Conducted: July 2-20, 1979

Inspectors: J. J. Harrison 8/16/79

K. D. Ward 8/16/79

Approved By: D. H. Danielson, Chief 8/16/79
Engineering Support Section 1

Inspection Summary

Inspection on July 2-20, 1979 (Report No. 50-301/79-12)
Areas Inspected: QA/QC program implementing procedures, observation of work activities, review and evaluate welding and nondestructive examination (NDE) data, reports and radiographs of feedwater piping. This inspection involved 120 on site inspector-hours by two NRC inspectors
Results: No items of noncompliance or deviations were identified.

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DETAILS

Persons Contacted

Wisconsin Electric Power Company (WEPCo)

*G. Reed, Plant Manager
*J. Greenwood, Assistant to the Manager
S. Burnstein, Executive Vice President
*R. Harris, Technical Assistant
G. Gross, Project Engineer (Milwaukee Nuclear Projects Office)

Phillips Getschow Company (PGCo)

P. Meyers, Regional Manager
A. Marconi, Welding Engineer/NDE Level III
P. Hugget, Site Superintendent
G. Marquardt, Manager Quality Assurance

Superior Industrial X-Ray Company (SIX)

R. Gardner, Field Manager, NDE Level III

Southwest Research Institute (SWRI)

L. Villa, Inspection Engineer

Hartford Steam Boiler Engineering and Insurance Company

F. Roose, Authorized Nuclear Inspector

The inspector also contacted and interviewed other licensee and contractor employees.

*Denotes those present at the exit interview.

Functional or Program Areas Inspected

1. General

The NRC forwarded IE Bulletin 79-13 to all Pressurized Water Reactor Licensees, subject "Cracking in Feedwater System Piping" for specific action to be taken.

In order to meet the requirements of the bulletin and accomplish some system repairs, the licensee shutdown Unit 2 and performed radiographic and ultrasonic examinations on the "A" and "B" steam generator feedwater nozzle to reducer welds (9271-37 and 9271-52) and reducer to pipe welds (9271-37A and 9271-52A).

These radiographic examinations revealed varying degrees of linear indications in all the welds. The licensee made the decision to cut the reducers on both steam generators to facilitate proper evaluation of the indications. Ultrasonic examination conducted prior to cutting revealed no rejectable indications. Some cracking was substantiated and repairs were made accordingly.

2. Procedures/Manuals

The following procedures and manuals were reviewed:

a. Phillips Getschow Company

- Quality Assurance Manual (Control Copy No. 69) Point Beach Supplements dated November 1, 1979.
- Procedure PB-8, Feedwater Pipe Repair/Replacement Rev. 0, dated July 3, 1979.
- Welding Procedure, IA-MA-11, Rev. 2A.
- Welding Procedure, IA-MA-13, Rev. 3.

b. Superior Industrial X-Ray Company

- Liquid Penetrant, PTI, Rev. 2, April 3, 1979 (ASME Section III, 1977, Winter 1978 Addenda).
- Radiographic, RTI, Rev. 2, April 1, 1978 (ASME Section III, 1977, Winter 1978 Addenda).
- Magnetic Particle, MTI, Rev. 2 (ASME Section III, 1977, Winter 1978 Addenda).
- QA Manual, May 1, 1978.

c. Southwest Research Institute

- SWRI-NDT-600-3, Rev. 6, June, 1978, Manual Ultrasonic Examination of Pressure Piping Welds (ASME Sections XI and V, 1974, Summer 1975 Addenda).

d. Wisconsin Electric Power Company

- NDE-1 Control of the NDE Procedures Manual, Rev. 0, dated April 5, 1978.
- NDE-2 Preparation and Revision of NDE Personnel, Rev. 0, dated April 5, 1978.

- NDE-3 Qualification and Training of NDE Personnel, Rev. 0, dated April 5, 1978.

- NDE-4 Control of NDE Subcontractors Rev. 0, dated April 5, 1978.

No items of noncompliance or deviations were identified.

3. Personnel Certifications

The following personnel certifications were reviewed:

a. Phillips, Getschow Company

Welder	Symbol
J. Eastman	JE
L. Retel	LR
R. Rathe	TU
M. Radka	MR
D. Hembel	AC
R. Brauer	N
R. Vertz	KJ

b. Superior Industrial X-Ray Company

Name	Level	Method
R. Gardner	III	RT-PT
"	II	MT
K. Mavity	II	PT-RT-MT
R. Preston	II	RT-MT-PT-UT
R. Huerter	II	RT-MT-PT-UT
S. Turner	III	UT
"	II	RT-MT-PT
M. Turner	II	RT-PT
"	I	MT

c. Southwest Research Institute

Name	Level	Method
S. Wenk	III	RT-PT-MT-VT
E. Ruescher	III	RT-PT-UT
W. Clayton	III	UT-PT-MT
R. Niemeyer	II	UT-PT
L. Villa	II	UT-VT-PT
"	I	MT-ET
L. McFarland	II	ET-VT-PT-UT
"	I	MT

W. Meredith	I	VT
"	I - LTD	MT-PT-UT
W. Wilson	I - LTD	UT
J. Brode	I	UT

d. Wisconsin Electric Power Company

J. Rettmann	II (tester)	UT
"	II (observer)	PT-MT

No items of noncompliance or deviations were identified.

4. Material and Equipment Certifications

The following material certifications were reviewed.

a. Reducer - 18" to 16", wall 1.031", Ht. AFVR
b. Bare wire - 3/32" E70-S-2, Ht. L40165
c. Bare wire - 3/32" E70-S-2, Ht. L23065
d. Bare wire - 1/8" E70-S-2, Ht. L23065
e. Bare wire - 1/16" E70-S-2, Ht. L39265
f. Bare wire - 1/16" E70-S-2, Ht. 28065
g. Insert - E70-S-2, Ht./Lt. 2562-131
h. Coated electrodes - 7018, 5/32" Ht. 401E699a, Lt. 03-2-H829K
i. Coated electrodes - 7018, 3/32" Ht. 412H6743, Lt. 02-3-D923Q
j. Coated electrodes - 7018, 1/8" Ht. 412H9561, Lt. 02-2-E907T
k. Coated electrodes - 7018, 1/8" Ht 432E0081, Lt. 02-3-B913R
l. Weldolet - 16" x 3" Lt P482
m. Magnaflux Materials (Liquid Penetrant Inspection) -
   Cleaner - batch No. 79F107
   Penetrant - batch No. 0J030
   Developer - batch No. 2C041
n. Ultrasonic couplant - Ultragel II, batch No. 4378
o. Various ultrasonic transducers, calibration blocks and instruments.
p. Magnetic Particle machine and red powder batch No. 79C012.

No items of noncompliance or deviations were identified.

5. Reducer Removal

The reducers on both steam generators were removed by cutting through the center of the existing welds. The reducer, with partial weld attached, from the "A" steam generator that revealed the most severe linear indications was forwarded to SWRI for metallurgical evaluation. The preliminary metallurgical examination concluded the following:

- Linear indications were oxide-filled cracks up to .043" deep.

- Multiple crack nucleation occurred at stress concentrators, such as the weld fusion line, machining grooves, and the counterbore transition zone. All cracking was restricted to the reducer internal diameter.

- Oxide-filled pits are associated with deeper cracks.

- Cracks were shallow, less than 0.043", and appear to have been present for a lengthy period.

- The brittle to ductile transition temperature of the reducer material appears to be below room temperature.

- The most probable cause of cracking is corrosion fatigue.

Visual (VT) and liquid penetrant (PT) examinations were performed on the outside diameter (OD) and inside diameter (ID) of the steam generator nozzles and existing piping. The examinations revealed pitting and some linear indications, that were satisfactorily repaired by blending or welding as required.

No items of noncompliance or deviations were identified.

6. Observation of Work and Work Activities

The inspectors observed the following activities on steam generators "A" and "B":

a. Fit-up on welds 9271-37 and 9271-57 consumable insert joints, and 9271-37A and 9271-57A open butt joints.

b. In-process welding of the above welds.

c. Visual, liquid penetrant, magnetic particle, radiographic and ultrasonic examinations. Ultrasonic examination was performed to establish a base line for ISI, this included weld preparation, instrument calibration as well as actual scan.

d. The 3" auxiliary feedwater line connecting to the 16" generator feedwater system also required repair due to orginal improper fabrication. The 3" line was cut at the 16" connection and weldolets were installed. Liquid penetrant and ultrasonic examinations were performed and the welds were found to be acceptable.

No items of noncompliance or deviations were identified.

7. Radiography

The inspectors reviewed the radiographs on inprocess welds (partials) and on completed welds prior to and after post weld heat treatment as follows:

a. Two feedwater piping welds upstream of the replacement reducer welds at the first piping restraint were also examined per IE Bulletin 7-13. Welds 9271-38A ("A" S/G) and 9271-51A ("B" S/G)

revealed rejectable indications that required repairs, some by welding. Acceptable radiographs were obtained prior to post weld heat treatment. However, following post weld heat treatment linear indications, shallow surface cracks were observed through visual and liquid penetrant examination. Subsequently, following repairs, satisfactory examinations were obtained by the visual, liquid penetrant, and radiographic examination methods.

b. Final radiographic review of the replacement/repair welds were as follows:

(1) "A" Steam Generator:

- 9271-37 (R-1), 18" Nozzle to Reducer, acceptable.
- 9271-37A, 16" Reducer to Pipe, acceptable.
- 9271-38A, 16" Ell to Pipe, existing weld, repaired, acceptable.
- 9271-56B, 3" to Weldolet, acceptable.

(2) "B" Steam Generator:

- 9271-52, 18" Nozzle to Reducer, acceptable.
- 9271-52A, 16" Reducer to Pipe, acceptable.
- 9271-51A, 16" Ell to Pipe, existing weld, repaired, acceptable.
- 9271-57B (R-1), 3" Pipe to Weldolet, acceptable.
- 9271-57C, 3" Pipe to Pipe, acceptable.

No items of noncompliance or deviations were identified.

8. Record and Data Review

The following records/data were reviewed for each weld/weld repair:

a. Nondestructive examination records/data for radiographic, ultrasonic, liquid penetrant, magnetic particle and visual testing methods.

b. Nonconformance reports that related to this repair.

c. Field fabrication process and data sheet data as follows:

- Welder ID
- Filler material ID - Insert, bare wire, coated electrode
- Inspection hold point sign-offs

d. Post weld heat treatment strip charts.

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e. Wall thickness and ID.

f. Instrument calibration measurement

No items of noncompliance or deviations were identified.

Exit Interview

The inspector met with site representatives at the conclusion of the inspection and summarized the scope and findings of the inspection. The licensee acknowledged the information.

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