



ATTACHMENT TO LICENSE EVENT REPORT NO. 80-002/01T-2

Wisconsin Electric Power Company  
Point Beach Nuclear Plant Unit 2  
Docket No. 50-301

Unit 2 was taken off line at 0225 hours on February 28, 1980 following confirmation of primary-to-secondary leakage in the "A" steam generator. The leak had begun as a slight indication about noon the previous day and gradually increased to 70 gallons per day (estimated) by 2200 hours on February 28. The decision was made to shut down at 2340 hours upon a further large increase in the air ejector radiation monitor reading. A static head leak check identified the leaking tube at position R18C37 and a subsequent eddy current inspection placed the defect at eight to ten inches above the tube end, i.e., 13 to 15 inches deep in the crevice of the tubesheet. The previously scheduled refueling outage steam generator eddy current inspection was performed during the outage. The extent of the inspection was expanded during the outage as six tubes with greater than 50% through-wall indications, in addition to the leaking tube, were discovered in the "A" steam generator. Eighteen tubes with indications between 40 and 49% were also found. The "A" steam generator hot leg program was first expanded by a 2S sample then to 100% as required by the Technical Specifications.

The 25 defective or degraded tubes in the "A" steam generator were explosively plugged on March 10, 1980. The leaking tube was mechanically plugged on the inlet side. This tube has been pulled during the April 1980 refueling outage for further examination.

Eight tubes which exhibited 39% defect indications were also explosively plugged as a conservative measure. Two tubes, R22C62 and R9C54, also with 39% defects, were plugged on the cold leg only. These tubes were mechanically plugged on the hot leg side during the April 1980 refueling outage.

An 800 psi hydrostatic test of the "B" steam generator revealed no leaking tubes or plugs. Approximately 700 tubes in each of the hot and cold legs of the "B" steam generator were examined and one cold leg tube was found to have a 41% defect indication. The one 41% degraded tube in the "B" steam generator was explosively plugged on March 9, 1980.

Unit 2 was placed on line at 1802 hours on March 13, 1980.

The average radioactive release rate via the Unit 2 air ejector during this event has been calculated to be 0.051% of the allowable annual release rate of 0.2 Curies per second.

This event is reportable per Technical Specification 15.6.9.2.A.3.

The approximate exposures recorded during the outage are as follows: (All exposure data are based on dosimeter information.)

|                             |              |
|-----------------------------|--------------|
| Steam Generator Manway Work | 1.8 Man Rem  |
| Visual Inspections          | 0.8 Man Rem  |
| Eddy Current Inspections    | 14.7 Man Rem |
| Tube Plugging               | 5.9 Man Rem  |
| Health Physics Coverage     | 3.4 Man Rem  |

EDDY CURRENT RESULTS FOR PLUGGED TUBES

STEAM GENERATOR "A" INLET

| <u>Tube</u> | <u>% Defect</u> | <u>Location</u>     |
|-------------|-----------------|---------------------|
| R21C58      | 42              | Top of tubesheet*   |
| R10C59      | 39              | Top of tubesheet    |
| R20C59      | 41              | Top of tubesheet    |
| R21C59      | 39              | Top of tubesheet    |
| R20C61      | 42              | Top of tubesheet    |
| R20C63      | 51              | Top of tubesheet    |
| R21C63      | 56              | Top of tubesheet    |
| R10C64      | 42              | Top of tubesheet    |
| R21C64      | 46              | Top of tubesheet    |
| R19C65      | 51              | Top of tubesheet    |
| R18C68      | 39              | Top of tubesheet    |
| R12C73      | 43              | Top of tubesheet    |
| R34C73      | 43              | First support plate |
| R11C74      | 39              | Top of tubesheet    |
| R07C21      | 39              | Top of tubesheet    |
| R13C19      | 40              | Top of tubesheet    |
| R12C31      | 41              | Top of tubesheet    |
| R13C34      | 43              | Top of tubesheet    |
| R14C34      | 57              | Top of tubesheet    |
| R14C35      | 42              | Top of tubesheet    |
| R15C35      | 44              | Top of tubesheet    |
| R13C36      | 42              | Top of tubesheet    |
| R14C36      | 39              | Top of tubesheet    |
| R10C39      | 45              | Top of tubesheet    |
| R13C41      | 56              | Top of tubesheet    |
| R18C37      | 100             | 9" above tube end   |
| R28C42      | 45              | Top of tubesheet    |
| R20C43      | 39              | Top of tubesheet    |
| R12C44      | 41              | Top of tubesheet    |
| R20C47      | 39              | Top of tubesheet    |
| R21C57      | 43              | Top of tubesheet    |
| R22C57      | 42              | Top of tubesheet    |
| R10C58      | 52              | Top of tubesheet    |

STEAM GENERATOR "B" OUTLET

R07C36                      41                      1½" above tubesheet

\*The notation "top of tubesheet" refers to defect indications which have been separated from the tubesheet entry eddy current signal using multi-frequency techniques. The recent development of this technique, which was used for the first time on Unit 2 during this inspection, permits much better discrimination of low volume defect indications from the tubesheet signal. During previous inspections, using only 400 KHZ eddy current signals, the majority of these top of tubesheet indications were referred to as either distorted tubesheet signals or less than 20% indications. In some cases they were not characterized as abnormal signals. In only two of the tubes, R20C47 and R21C64, had previous tube defects at or near the tubesheet been consistently reported and quantified. Table 1 summarizes the previous inspection reports of these tubes.

EDDY CURRENT RESULTS FOR PLUGGED TUBES - STEAM GENERATOR "A" INLET

In order to establish whether the remaining defects had been present in previous inspections, the 400 KHZ eddy current tapes for all previous tube inspections, dating from as early as 1974, were reviewed and compared to the 400 KHZ signal alone from this 1980 inspection. The object of this comparison was to evaluate whether the 400 KHZ eddy current tubesheet entry signal was essentially unchanged from inspection to inspection. It was concluded from this comparison that the majority of tubesheet entry signals for those tubes having been previously inspected, were unchanged from the 1980 400 KHZ signal. From this comparison it was concluded that the majority of these top of tubesheet defect indications have been present but undetectable in previous eddy current inspections. Table 2 summarizes the results of this comparison.



TABLE 1  
PREVIOUSLY REPORTED STEAM  
GENERATOR EDDY CURRENT INSPECTION RESULTS  
UNIT 2, "A" INLET

| ROW - COL. | 1980      | 1979       | 1978       | 1977        | 1976        | 1974        |
|------------|-----------|------------|------------|-------------|-------------|-------------|
| 13 19      | 40 - TTS  | NI         | NI         | NI          | NI          | NI          |
| 7 21       | 39 - TTS  | NI         | NI         | NI          | NI          | NI          |
| 12 31      | 41 - TTS  | NI         | --         | DTS         | --          | --          |
| 13 34      | 43 - TTS  | NI         | --         | DTS         | --          | --          |
| 14 34      | 57 - TTS  | NI         | --         | DTS         | --          | --          |
| 14 35      | 42 - TTS  | NI         | --         | DTS         | --          | --          |
| 15 35      | 44 - TTS  | NI         | --         | DTS         | DTS         | --          |
| 13 36      | 42 - TTS  | NI         | NI         | <20-TTS     | <20-TTS     | <20-TTS     |
| 14 36      | 39 - TTS  | NI         | --         | DTS         | --          | --          |
| 10 39      | 45 - TTS  | --         | NI         | NI          | --          | --          |
| 13 41      | 56 - TTS  | NI         | NI         | DTS         | DTS         | --          |
| 23 42      | 45 - TTS  | NI         | NI         | NI          | <20-1/2"ATS | <20-1/2"ATS |
| 20 43      | 39 - TTS  | COPPER     | --         | DTS         | <20-1/2"ATS | 23-1/2"ATS  |
| 12 44      | 41 - TTS  | NI         | --         | <20-TTS     | <20-TTS     | --          |
| 20 47      | 39 - TTS  | 30-1/2"ATS | 31-1/2"ATS | 30-1/2"ATS  | 31-1/2"ATS  | 23-1/2"ATS  |
| 9 54       | 39 - TTS  | NI         | NI         | DTS         | <20-1/2"ATS | <20-1/2"ATS |
| 21 57      | 43 - TTS  | NI         | --         | <20-TTS     | <20-TTS     | --          |
| 22 57      | 42 - TTS  | NI         | --         | DTS         | NI          | --          |
| 10 58      | 52 - TTS  | NI         | --         | DTS         | DTS         | --          |
| 21 58      | 42 - TTS  | NI         | NI         | <20-1/2"ATS | <20-1/2"ATS | <20-TTS     |
| 10 59      | 39 - TTS  | NI         | --         | <20-1/2"ATS | <20-1/2"ATS | <20-1/2"ATS |
| 20 59      | 41 - TTS  | NI         | --         | <20-TTS     | <20-TTS     | <20-TTS     |
| 21 59      | 39 - TTS  | NI         | NI         | DTS         | DTS         | --          |
| 20 61      | 42 - TTS  | NI         | --         | DTS         | DTS         | --          |
| 22 62      | 39 - TTS  | NI         | --         | DTS         | DTS         | --          |
| 20 63      | 51 - TTS  | NI         | --         | DTS         | DTS         | --          |
| 21 63      | 56 - TTS  | NI         | --         | <20-TTS     | <20-TTS     | <20-TTS     |
| 10 64      | 42 - TTS  | NI         | NI         | DTS         | --          | NI          |
| 21 64      | 46 - TTS  | 30-TTS     | COPPER     | 21-TTS      | 22-TTS      | NI          |
| 19 65      | 51 - TTS  | NI         | --         | DTS         | NI          | NI          |
| 13 68      | 39 - TTS  | NI         | NI         | NI          | NI          | NI          |
| 12 73      | 43 - TTS  | NI         | NI         | NI          | NI          | NI          |
| 34 73      | 43 -#1TSP | NI         | NI         | NI          | NI          | NI          |
| 11 74      | 39 - TTS  | NI         | NI         | NI          | NI          | NI          |

TTS = Top of Tubesheet  
NI = Not Inspected  
ATS = Above Tubesheet

TSP = Tube Support Plate  
DTS = Distorted Tubesheet Signal  
-- = Inspected with No Signal Comment

TABLE 2

COMPARISON OF PREVIOUS EDDY CURRENT SIGNAL

The following table presents the results of the visual comparison of previously recorded 400 KHZ tubesheet entry signals to the 1980 inspection 400 KHZ tubesheet entry signal for the listed tubes from the "A" steam generator inlet. Tubes R7C21, R13C19, R18C68, R12C73, R34C73 and R11C74 were not inspected prior to 1980.

NI = Not inspected

S = Signal same as 1980

| <u>ROW</u> | <u>COLUMN</u> | <u>1979</u>     | <u>1978</u>     | <u>1977</u>         | <u>1976</u>   | <u>1974</u>  |
|------------|---------------|-----------------|-----------------|---------------------|---------------|--------------|
| 12         | 31            | NI              | SMALL CHANGE    | ALMOST NORMAL       | ALMOST NORMAL | SAME AS 1976 |
| 13         | 34            | NI              | S               | S                   | S             | CHANGE       |
| 14         | 34            | NI              | POSSIBLE CHANGE | S                   | ALMOST NORMAL | SAME AS 1976 |
| 14         | 35            | NI              | POSSIBLE CHANGE | S                   | S             | S            |
| 15         | 35            | NI              | SOME CHANGE     | SAME AS 1978        | S             | CHANGE       |
| 13         | 36            | NI              | NI              | S                   | S             | S            |
| 14         | 36            | NI              | POSSIBLE CHANGE | SAME AS 1978        | S             | S            |
| 10         | 39            | POSSIBLE CHANGE | NI              | NI                  | SAME AS 1979  | CHANGED      |
| 13         | 41            | NI              | NI              | CHANGED             | SAME AS 1977  | SAME AS 1977 |
| 28         | 42            | NI              | NI              | NI                  | S             | S            |
| 20         | 43            | S               | S               | S                   | S             | SMALL CHANGE |
| 12         | 44            | NI              | POSSIBLE CHANGE | S                   | S             | SMALL CHANGE |
| 20         | 47            | S               | S               | S                   | S             | S            |
| 9          | 54            | NI              | NI              | SMALL CHANGE        | SAME AS 1977  | CHANGED      |
| 22         | 57            | NI              | S               | S                   | NI            | S            |
| 10         | 58            | NI              | CHANGED         | SOME CHANGE TO 1978 | SAME AS 1977  | SAME AS 1977 |
| 21         | 58            | NI              | NI              | S                   | S             | S            |
| 10         | 59            | NI              | CHANGE          | SAME AS 1978        | SAME AS 1977  | SAME AS 1977 |
| 20         | 59            | NI              | S               | S                   | S             | S            |
| 21         | 59            | NI              | NI              | S                   | S             | SMALL CHANGE |
| 20         | 61            | NI              | S               | S                   | CHANGE        | S            |
| 22         | 62            | NI              | S               | S                   | S             | S            |
| 20         | 63            | NI              | POSSIBLE CHANGE | S                   | S             | S            |
| 21         | 63            | NI              | POSSIBLE CHANGE | S                   | S             | S            |
| 10         | 64            | NI              | NI              | S                   | CHANGE        | NI           |
| 21         | 64            | S               | S               | S                   | CHANGE        | NI           |
| 19         | 65            | NI              | S               | S                   | NI            | NI           |
| 21         | 57            | NI              | S               | S                   | S             | S            |