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POWERING

MICHIGAN'S PROGRESS

Big Rock Point Nuclear Plant, 10269 US-31 North, Charlevoix, MI 49720

William L. Beckman
Plant Manager

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Nuclear Regulatory Commission
Document Control Desk
Washington, DC 20555

DOCKET 50-155 - LICENSE DPR-6 - BIG ROCK POINT PLANT - RESPONSE TO A REQUEST FOR ADDITIONAL INFORMATION (RAI) DATED DECEMBER 11, 1990 CONCERNING CONSUMERS POWER RESPONSE TO NRC GENERIC LETTER 88-01 (NRC POSITION ON IGSCC IN BWR AUSTENITIC STAINLESS STEEL PIPING)

NRC review of Consumers Power Company's response to NRC Generic Letter 88-01 had determined that additional information was required to evaluate a number of positions taken regarding the implementation of an IGSCC Monitoring program at Big Rock Point. The following provides our response to the requested information.

1. Your future inspection plans; in specific, your plans not to inspect IGSCC Category D welds.

Response: Big Rock Point has plans for the inspection of all IGSCC Category D welds. These plans are contained in Attachment 1 of the Big Rock Point IGSCC Inspection Program, Revision 3. Although the re-inspection schedule does not agree with Generic Letter 88-01 guidelines for Category D welds, its deemed appropriate since the initial inspections to date have not identified any IGSCC indications. These results are also supported by the examinations conducted by the NRC during the 1990 refueling outage as documented in Inspection Report 90-021, dated 12/20/90.

Attachment 2 to this response contains a listing of the welds associated with Generic Letter 88-01. The following changes have been made to the list since our last submittal of 4/25/90.

- A. Weld 6-SCS-101-1 was added to the listing as a Category G, this weld had been inadvertently left off the last listing.
- B. Four new welds were added to the listing, these welds were identified during an investigation of thermal sleeves at Big Rock. The new welds are located on two five inch thermal sleeves which connect the three inch Cleanup line to the Main Recirculation

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System. Of these four welds, two of them were inspected for IGSCC with acceptable results (Welds 3-RCS-121-14 and 3-RCS-122-13). The other two welds which connect the thermal sleeve to the 24" cast stainless steel elbows were unable to be examined due to their configuration. The four welds have been added as Category D or G, as appropriate.

- C. Also added to the listing are the IGSCC category A welds. This piping is made of A351-CFBM-316 material which is resistant to IGSCC. Previous Consumers Power submittals dated 7/30/81, 5/12/83 and 6/22/83 provide detailed discussions on these welds and materials.
 - D. The IGSCC welds in Attachment 2 have been broken into groups for clarity.
2. Your decision not to follow guidance provided in Generic Letter 88-01 with regard to inspection methods and personnel.

Response: Big Rock Point has followed the guidance provided by Generic Letter 88-01 with respect to inspection methods and personnel. The IGSCC examinations performed at Big Rock have been performed using EPRI qualified personnel and procedures in accordance with the Generic Letter. Big Rock will continue to use personnel and procedures qualified in accordance with Generic Letter 88-01 for all future IGSCC examinations.

The Big Rock Point IGSCC Inspection Program Revision 2 submitted on April 25, 1990 contained an incorrect reference when it referred to IE Bulletin. The correct reference should have been Generic Letter 88-01 which Big Rock has been using with respect to qualification of personnel and procedures.

3. Your position not to amend the Technical Specifications to include a statement concerning inservice inspection as required by Generic Letter 88-01.

Response: Welds susceptible to IGSCC have been identified in the Big Rock Point Forty Year Master Plan, Revision 8, Part VII, Examination Scheduling Tables. Section 3.9 of the Big Rock Point updated FHSR also discusses our program to address the concerns of Generic Letter 88-01. These two documents will insure that the IGSCC examination requirements are met without a need to revise the Technical Specifications. The Updated FHSR will be revised to reflect the program discussed in this response following acceptance by the staff. Attachment 1 is the Big Rock Point IGSCC Inspection Program.

4. Your position regarding the inspection of inaccessible welds.

Response: The following is a description of the inaccessible IGSCC welds at Big Rock:

SHUTDOWN COOLING SYSTEM

The Shutdown Cooling System Piping contains six welds which are inaccessible for examination (these welds are listing in Attachment 2). These six welds are located approximately 30 feet from the floor of the Recirculating Pump Room behind block walls which makeup the Reactor Cavity.

MAIN RECIRCULATING WATER SYSTEM RISERS

The Main Recirculating System has six 14" Risers which connect the Reactor Vessel and the Steam Drum. IGSCC exams of the pipe-to-safe end and safe end-to-nozzle welds at the Steam Drum have been performed with acceptable results. The Reactor pipe-to-safe end and safe end-to-nozzle welds will be examined for IGSCC during the next refueling outage (these welds are only accessible from the reactor vessel interior by a remote mechanized examination device) provided qualified techniques are available.

There are two welds on each of five Risers and three welds on the sixth Riser which have limited accessibility due to their location in the Recirculating Pump Room. These welds are all located in very high radiation areas. Examinations for ISI have not been performed on these welds. Therefore these welds have never been prepped for examination and still have their original weld bead crowns which would have to be removed to enable examination of these welds. It is expected that it would require at least six Man-Rem to perform each exam or a total of over seventy eight Man-Rem to perform all thirteen Riser exams. This estimate is based on the amount of time it would require to scaffold for the exams, removal of asbestos insulation, preparation of the weld for examination, examination of the weld, reinsulation of the piping and removal of scaffolding.

It is believed that adequate assurance is provided that these lines are free of IGSCC by the examinations which have been performed on similar welds located at the Steam Drum end of the Risers.

MAIN RECIRCULATION SYSTEM 20" LINES

The two 20" Main Recirculating Water lines each contain two welds which are considered IGSCC susceptible. These welds are located beneath the reactor and have limited accessibility. In order to gain access to these welds, shielding trays containing aggregate are removed from beneath the reactor. Even after tray removal, access is gained to only 1/3 of the weld. The accessible portions of these pipe-to-safe end welds were examined for IGSCC in 1983 with acceptable results. Examination of the accessible portions of the two safe end-to-nozzle welds was also attempted during the 19P¹ outage however these welds proved to have configurations which precluded meaningful examination.

The accessible portions of the two pipe-to-safe end welds will be re-examined during the next refueling outage.

5. Your position concerning the frequency of leakage monitoring (daily vs every four hours as described in the Generic Letter.

Response: As pointed out in past submittals regarding this subject, the Big Rock Point Plant leak monitoring frequency and methods were deemed acceptable by a specific analysis (NUREG-0824, May 1984).

The technical basis for approval of the Big Rock Leak Detection Program was drawn from detailed information provided in Consumers Power submittal of 6/6/83.

In addition, the Big Rock Technical Specifications specify an unidentified leakage limit of 1 gpm which is more restrictive than 5 gpm or 2 gpm increase limit required by the Generic Letter and the Standard Technical Specifications for BWR's. As discussed in the 6/6/83 submittal, other indications (e.g. Containment Temperature and Humidity) of PCS integrity are available to plant operators. Past experience has shown that when these monitors indicate increased leakage, additional leakrate calculations are performed to insure compliance with Technical Specifications.

6. Your decision not to amend the Technical Specifications to include requirements regarding the operability of monitoring instruments as outlined in the Generic Letter.

Response: The bases for not amending the technical specifications are contained in Consumers Power submittal of 6/6/83 regarding SEP Topic V-5, under the section titled "Technical Specification Requirements". This position was accepted by the staff as documented in NUREG-0824, dated May 1984.

In addition, Consumers Power response to Generic Letter 88-01 was also discussed with Mr R Hermann, NRR and other NRC representatives at a meeting on August 23, 1990 in Washington, DC. This meeting was also used to plan the activities for the NRC NDE Mobile Team which conducted a special IGSCC inspection during the 1990 Refueling Outage. The results of the inspection are documented in Inspection Report 90-021 dated December 20, 1990. The inspection team performed IGSCC ultrasonic exams on eight welds, two of which were on the three inch clean-up system piping. The results of the examinations supported Consumers Power conclusions to date in that IGSCC is not occurring on the Reactor Coolant System at Big Rock Point. These results are additional evidence to support the future examination program outlined for Big Rock Point.

With respect to the Reactor Water Clean-up, the system at Big Rock Point contains 85 three inch IGSCC susceptible welds. The complete system is located within containment thus not requiring containment isolation valves

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which is a misunderstanding as discussed in the December 11, 1990 letter from the NRC. It is estimated that it would require approximately 30 man-Rem exposure to perform the IGSCC exams on the Clean-up System welds. However, in response to the staffs recommendation, a portion of this piping will be included in the IGSCC Program following program approval, even though it is less than the four inch minimum diameter criteria defined in the Generic Letter; nor is it required by Section XI of the ASME Code. As outlined in Attachment 1, the IGSCC Inspection Program, Big Rock Point intends to inspect approximately six (6) welds in the Clean-up System each inspection period during the next inspection interval. It is believed that by performing these inspections on welds in close proximity to the defect found in the Clean-up system piping in July of 1990, adequate assurance of system integrity is provided.

In conclusion, Big Rock Point has operated for almost 30 years. All of examinable Generic Letter 88-01 welds have been inspected in the past seven years with no indications attributed to IGSCC. Although Consumers Power Company can not definitively discuss the reasons why, the results at Big Rock Point to date, differ significantly from that of the BWR Industry where IGSCC has been a major concern resulting in major repair efforts at the majority of, if not all BWR's. Consumers Power Company believes that the Inspection Program outlined for Big Rock Point is commensurate with the past inspection results and supports the Industry efforts regarding this issue.


William E. Beckman

William L. Beckman
Plant Manager

CC: Administrator, Region III, USNRC
NRC Resident Inspector - Big Rock Point

Attachments