

UNITED STATES OF AMERICA  
NUCLEAR REGULATORY COMMISSION

OFFICE OF NUCLEAR REACTOR REGULATION  
Harold R. Denton, Director

In the Matter of

CONSUMERS POWER COMPANY  
(Big Rock Point Plant)

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Docket No. 50-155  
(10 C.F.R. 2.206)

DIRECTOR'S DECISION UNDER 10 C.F.R. 2.206

By petitions dated November 4, 1979, and January 6, 1980, Ms. JoAnn Bier and Ms. Shirley J. Johns requested that the Nuclear Regulatory Commission's (NRC or the Commission) Director of Nuclear Reactor Regulation issue an order to Consumers Power Company (the licensee) to delay startup of the Big Rock Point Plant pending resolution of eight items considered by them to be safety issues. Six of the seven issues identified in the November 4, 1979 request were repeated, with clarifications, in the request of January 6, 1980. An eighth issue was added in the January 6, 1980 submittal. Notice of receipt of the November 4, 1979 petition was published in the Federal Register on December 11, 1979 (44 FR 71489).

The petitions were not received by the Commission prior to restart of the Big Rock Plant. Consequently, the petitions have been treated as requests for an order to show cause why Facility Operating License No. DPR-6 for the Big Rock Point Plant should not be suspended pending resolution of the issues raised. A preliminary safety assessment of the issues raised in the petitions was issued on March 5, 1980. Based on that assessment I concluded that sufficient assurance of safety existed to permit the Big Rock facility to continue operating pending final disposition of the issues raised in the petitions.

Evaluation of the issues raised in the petition has now been completed. Based on analysis of each of the issues raised which is set forth below, I have

determined that the operating license for the Big Rock facility should not be suspended. The analyses for Items 2, 3, 5, and 6 of the November 4, 1979 petition and Item 4 of the January 6, 1980 petition are unchanged from those contained in the March 5, 1980 Safety Assessment.

#### DISCUSSION

Issue: "1. We demand that our school systems have workable, safe evacuation plans for our children and that all private citizens be informed of appropriate individual evacuation actions."

Response: The Big Rock Point Emergency Plan currently approved by the NRC requires notification of a number of government organizations including the local sheriffs, Michigan State Police and the Michigan State Department of Health in the event of a serious emergency. Local and State officials would be responsible for notification of local school systems and evacuation, if needed.

New emergency planning regulations were published in the Federal Register on August 19, 1980 (45 FR 55402). These new regulations (copy attached) became effective on November 3, 1980 and are generally to be implemented by April 1, 1981 by licensees of operating plants. Section II A, B, and C of the revised Appendix E states:

"As a minimum, the following items shall be described:

A. Onsite and offsite organizations for coping with emergencies and the means for notification, in the event of an emergency, of persons assigned to the emergency organizations.

B. Contacts and arrangements made and documented with local, State, and Federal governmental agencies with responsibility for coping with emergencies, including identification of the principal agencies.

C. Protective measures to be taken within the site boundary and within each EPZ to protect health and safety in the event of an accident; procedures by which these measures are to be carried out (e.g., in the case of an evacuation, who authorizes the evacuation, how the public is to be notified and instructed, how the evacuation is to be carried out); and the expected response of offsite agencies in the event of an emergency."

The Big Rock Point Plant's Emergency Plan is being evaluated against these requirements.

On September 5, 1980, we requested Consumers Power Company to begin implementation of their June 9, 1980 version of the Big Rock Point Emergency Plan, although we have not yet completed our review. This request was based on our finding that this version provides an improvement over the previous plan, affords a greater margin for protection of public health and safety, and does not decrease the effectiveness of emergency preparedness. Consumers Power Company has recently informed us that they expect to implement the June 9, 1980 version of the Emergency Plan by December 31, 1980.

Based on: (1) the existence of an approved Emergency Plan which conforms to our current regulations, and (2) the results so far of our review of the draft revision of the plan, we have not identified any deficiencies in emergency planning which are so significant as to require suspension of the operating license.

Issue: "2. We demand accountability for all diffuser pieces, which if left within the reactor vessel could interfere with rod movement and cause flow blockage as in the partial meltdown at the Fermi I Plant in Detroit."

Response. On April 20, 1979, during shutdown conditions, Big Rock Point personnel detected a vibration-type noise in the lower pressure vessel when the No. 1 recirculation pump was in service. Because of an unrelated problem (a leak in a control rod drive housing) the reactor core was defueled and vessel internals removed. Subsequent inspection revealed that the No. 1 recirculation inlet baffle plate was loose from its mounting brackets on the vessel wall. The recirculation inlet baffle plates were not completely effective, and in 1963 a new skirt baffle was installed on the core support plate and completely encircled all the support tubes. The old baffle plates had been left in place and over the years the three hold-down bolts were worn through allowing the baffle plate to vibrate against the new skirt baffle. The safety consequences of this failure were minimal since the plates are designed such that they cannot enter the core or constitute a flow blockage. During the 1979 outage, new diffuser plates were installed using larger hold down bolts and positive nut locking devices.

All the bolt ends and nuts from the old plates were accounted for and the reactor vessel was cleaned and inspected to assure that there were no other loose materials that could affect reactor operations.

Issue: "3 We demand that Consumers Power Company systematically and absolutely make the necessary design alterations in the reactor level vessel instrument system LERE09 & LSRE09 which initiates reactor scram, containment isolation and core spray actuations."

Response: By Licensee Event Report 79-22 submitted to the NRC to letter of September 22, 1979, the licensee reported a potential deficiency in the water level instrumentation used for reactor scram and initiation of engineered safety features. CPCo modified the instrumentation and submitted an evaluation of the acceptability of the modification to us by letters of October 23 and October 31, 1979. By Amendment No. 31 dated November 2, 1979 (copy attached to our March 5, 1980 Assessment) we approved revised license Technical Specifications for the modified instruments. The Safety Evaluation accompanying that amendment addresses the acceptability of changes to the Technical Specifications and the acceptability of the modification made to the water level instruments. As explained in that document, we have concluded that the design alterations are acceptable and that no further actions are necessary.



Issue: "4. We demand that the biological shield be made sufficient to contain deadly gamma rays in the event of loss-of-coolant accident (LOCA), area residents would be protected and plant personnel would be able to perform necessary functions to bring the plant under control."

Response: One of the Lessons Learned from the TMI-2 accident is that radiation fields resulting from contained radiation sources after an accident may make it difficult to effectively perform accident recovery operations or may impair safety equipment. As a result, by letter of October 30, 1979 we asked nuclear power plant licensees to perform a design review of plant shielding by January 1, 1980 and to implement needed changes by January 1, 1981. Consumers Power Company submitted the design review by letter of December 27, 1979 and identified areas of the plant which would need additional shielding protection if NRC design criteria were to be met.

By letter dated February 22, 1980 and supplements dated April 2, May 6, August 25 and September 2, 1980, Consumers Power Company requested a delay in implementing the plant shielding requirement until the completion of an ongoing risk assessment of the plant. Consumers Power Company has estimated that this risk assessment will be completed by April 1981.

On September 5, 1980 in a letter to all licensees, we provided clarification of the TMI Action Plan requirements including modifications to the implementation schedules for certain items. These proposed changes included a delay in the scheduled implementation of post accident shielding until January 1, 1982. This schedule for the implementation of post accident shielding was subsequently approved by the Commission as indicated in NUREG-0737, "Clarification of TMI Action Plan Requirements." By letter dated October 14, 1980,

the staff responded to the licensee's request for this delay. Because the implementation date for these requirements has been delayed until January 1, 1982 for all licensees, as discussed above, we concluded that no additional delay specifically for the Big Rock facility is needed at this time.

As required by the staff, the licensee has completed a review of vital areas in which personnel occupancy may be limited by radiation during post-accident operations. Our safety evaluation of the implementation of "Category A" Lessons Learned requirements was issued on May 2, 1980 and stated that the control room, the interim Technical Support Center and the Operational Support Center are sufficiently shielded that they would remain accessible for continuous occupancy. The vital areas in which personnel occupancy may be limited are the backup emergency diesel, backup cooling water supply hose to the core spray heat exchanger and the emergency diesel general fuel supply. The licensee initiated work to implement changes for these three items, and two of them, the relocation of the backup emergency diesel and the modification to the emergency diesel general fuel supply, should be completed shortly. With respect to the third item, the licensee began implementation of the modifications but has recently informed us that preliminary results from the probabilistic risk assessment being conducted for the Big Rock Point plant could affect the need for the modification to the backup cooling water supply hose to core spray heat exchanger. Accordingly, they indicated that work on this third item has been stopped. Because of the delay in the implementation of additional shielding requirements until January 1, 1982, as discussed above, the licensee had additional time to further assess this modification.

The NRC design criteria assume a very severe accident with a very large radiation source term and assume that stringent limits on radiation exposure to personnel would be met.

Because of the staff safety evaluation which concluded that the control room, the interim Technical Support Center and the Operational Support Center would remain accessible under post accident conditions, and the steps already taken to protect two of the three remaining vital areas of concern, it is our judgment that a deferral of implementation of additional shielding protection requirements until 1982 will not result in exposure of plant personnel to significant risk from a loss-of-coolant accident or a greater risk to the public than previously evaluated, if such an accident should occur. However, we will require more immediate actions if further review indicates they are warranted.

Issue: "5. We demand that repetitive malfunction of their containment isolation valves CV/4096, CV/4097 be resolved."

Issue: "6. We demand that the repetitive malfunctions of valves CV/4027, CV/4117, CV/4105, MO/7050 be resolved."

Response: Repetitive malfunctions have occurred in several containment isolation valves. Valve CV/4097 is a butterfly valve in the supply line of the containment ventilation system. The valve is a replacement valve installed in April 1974. Excessive leakage through this valve was reported March 31, 1975, June 5, 1975, May 3, 1976, July 2, 1976, February 1, 1978, September 12, 1978 and February 1, 1979. Our records indicate that with the possible exception of one test, the leak rate through the line during accident conditions would have been



acceptably limited by another operable insulation valve (CV/4096) in the same line. In one instance (LER R0-12-76 dated July 2, 1976) our readily available records do not indicate whether the leak rate through the line would have been acceptably low. In each case, the licensee took corrective action to bring the leakage back to within acceptable limits and after repetitive failures the licensee initiated a review with the vendor to bring about long term improvements. We will continue to monitor the test results on CV/4097 to determine if additional corrective actions are needed. Our records do not indicate repetitive failures of valve CV/4096.

MO/7050 is a main steam isolation valve. A failure of this valve to close was reported April 5, 1973. The licensee ordered a new type of valve packing as a long term corrective action. We will also continue to monitor the test results on this valve to assure that the corrective action taken is sufficient.

CV/4027 is an automatic isolation valve in the reactor and fuel pit drain line. Leakage in excess of technical specification limits for this line was reported by Licensee Event Reports (LERs) dated June 10, 1975, and September 27, 1978. In each instance, Valve CV/4117, which is redundant to Valve CV/4027, was operable and would have prevented excessive leakage through the line. The valve seats of CV/4027 have been machined to reduce the leak rate and the licensee has committed to installation of new valve seats. A recent LER dated October 17, 1980 reported through seat leakage in excess of technical specifications limits. Backup valve CV/4117 has been disabled in the closed condition until repairs can be made.

We have no record of failures on valve CV/4117. This valve was identified in several Licensee Event Reports noted above as the valve which provided redundancy to a valve with excessive leakage.

CV/4105 is an air operated isolation valve on the demineralized water line inside containment. Our records do not indicate a repetitive failure of this valve.

Based on our review of these valve malfunctions and the corrective actions taken by the licensee, it is our judgment that these events did not significantly affect the health and safety of the public. It is our further judgment that these valve malfunctions do not indicate a significant pattern of valve failures. Therefore, we conclude that these valve malfunctions do not require shutting down the Big Rock Point Plant.

Issue: "7 We demand evidence that the BRNPF could withstand the crash of a B-52 Bomber without disaster to surrounding environment."

Response: The concern with overflight of the Big Rock facility by aircraft began in 1963, when the Air Force installed an aircraft tracking station at Bayshore, Michigan, which is located approximately five miles from the Big Rock Point Plant. Following this installation, the Air Force began training the tracking station personnel in the detection of approaching aircraft. Concurrently, the Air Force was training the flight crews in avoiding detection by the radar station.

In the beginning it appeared that the Air Force was using the Big Rock Point Plant as a flight target, since there were many close overflights. Consumers Power Company management complained to the Atomic Energy Commission (AEC) regarding this matter, and an agreement was reached with the Air Force at that time to discontinue the direct low level overflights. Low level overflights in the near vicinity of the plant continued until 1970 when the Big Rock Point Plant insurer raised the insurance rates because of these training

flights in the near vicinity of the plant. At that time, the Consumers Power President, James H. Campbell, contacted Congressman Gerald Ford, requesting that these training flights in the near vicinity of the Big Rock Point Plant be discontinued. At about this same time, in January of 1971, a flight crashed into the Little Traverse Bay approximately two miles from shore and about two miles from the plant. As a result of these events the Air Force established a training corridor which misses the Big Rock Plant by three miles. Air Force charts were also marked to show that overflights of the Big Rock Point Plant were "Off-Limits" and all training flights were to be confined to the corridor. From that time until July 1979 no low level overflights have been observed by plant personnel. In July 1979 a low level overflight was observed and a complaint was registered by Consumers Power Company management. The Air Force stated that restrictions on overflights would also be added to the flight checklists.

We reviewed the risk associated with aircraft near Big Rock Point in the Systematic Evaluation Program. At the request of the NRC staff, the Air Force undertook a study to update an earlier analysis of the risk of a military aircraft on training route IR 600/601 crashing into the plant. The study was based on recorded data on flight frequency, navigation error, and crash rate. The Air Force calculated that the probability of a crash at the plant (represented by a square target area 3.45 miles on a side) was approximately  $10^{-8}$  per year. The staff has reviewed the Air Force analysis and is in essential agreement with the methodology

employed and the finding that a military aircraft crash at the plant is an extremely remote event. Furthermore, in the course of this review, the staff was informed by the Air Force that permission had been requested from the Federal Aviation Administration (FAA) to adjust route IR 600/601 so that in effect it would be located at a greater distance from the plant. The staff was subsequently informed that the request had been approved and the Air Force has published the new route. The adjusted route will pass approximately 12 miles west of the plant. We conclude that the risk to plant safety of military aircraft on route IR 600/601 in its present configuration meets the acceptance criteria of section 2.2.3 of the NRC Standard Review Plan for new plants and is therefore acceptable.

Issue: "8. We demand that minimum requirements as established by the Nuclear Regulatory Commission for the Fire Protection System be met."

Response: By License Amendment No. 17, dated March 6, 1978, No. 25, dated April 4, 1979, and No. 32 dated March 27, 1980, we issued license conditions to assure that an acceptable level of fire protection is achieved at the Big Rock Point Plant. Amendments No. 17 and No. 25 added limiting conditions of operation and surveillance requirements to assure that existing fire protection equipment is operable and to require that modifications be made on a time schedule specified in Amendment No. 25 to further enhance fire protection at the plant. The staff safety evaluations associated with these amendments summarize our considerations in imposing these limiting conditions. Amendment No. 32 increased the number of fire brigade members from three to five. It is our judgement that sufficient measures have been taken to permit

continued plant operation prior to full implementation of all identified improvements identified in License Amendment No. 25.

In addition, the Commission published on November 19, 1980 (45 FR 76602), a revised Section 10 CFR 50.48 and a new Appendix R to 10 CFR 50 regarding fire protection features of nuclear power plants. The revised Section 50.48 and Appendix R will become effective February 17, 1981. A copy of this Federal Register Notice is enclosed. Appendix R and Section 10 CFR 50.48 contain provisions and implementation dates applicable to the Big Rock Point Plant.

The petition of November 4, 1979 included one concern not repeated in the petition of January 6, 1980. That item (concern number 4) is addressed below.

Issue: "4. We demand that all NRC requirements issued to Consumers Power Company regarding the Oyster Creek occurrence [sic] be implemented with no proposed changes, technical specifications or administrative control compromises allowed."

Response: Following a loss of feedwater event at Oyster Creek Nuclear Generating station on May 2, 1979, we determined that Big Rock Point was susceptible to a similar problem and would require a change in the technical specifications appended to the license prior to startup from the 1979 outage. Our evaluation indicated that two additional technical specifications were appropriate for Big Rock Point and these technical specifications were issued October 30, 1979 prior to plant startup. Amendment No. 30, which changed the technical specifications and a copy of the associated NRC Staff Evaluation was included with our Assessment dated March 5, 1980. It is our judgement that the changes made are appropriate for Big Rock Point and do not constitute any compromise of safety.