

June 18, 1997

Nuclear Regulatory Commission  
Document Control Desk  
Washington, DC 20555

**DOCKET 50-155 - LICENSE DPR-6 - BIG ROCK POINT PLANT - RESPONSE TO APPARENT VIOLATIONS IN INSPECTION REPORT NO. 50-155\97005(DRS).**

On April 28, 1997, the NRC completed a radiation protection program inspection at the Big Rock Point Nuclear Power Plant facility. During the inspection, three specific radiological control events were reviewed: a tour of the a high radiation area by a qualified shift supervisor and a senior radiation protection technician under abnormal radiological conditions; the spread of contamination throughout the turbine building during radioactive waste processing activities; and the entry into a high radiation area by a worker who had not completed the required training for access.

Based on the results of this inspection, three apparent violations are being considered by the NRC for escalated enforcement action in accordance with the "General Statement of Policy and Procedure for NRC Enforcement Actions" (Enforcement Policy), NUREG-1600.

Consumers Energy through self-assessments and event evaluations recognizes that improvements in the radiation protection program and plant culture are necessary. Our evaluations indicate that site personnel do not fully appreciate the importance of radiation protection requirements. Continued plant operation and future decommissioning activities dictate that major improvement efforts in radiation protection are necessary.

These conclusions have lead to a significant increase in management focus on plant culture as it relates to radiation protection. Several staff and department communication meetings were targeted at plant personnel insensitivity to radiation protection hazards and controls. The Chemistry and Healthy Physics department was reorganized and resources added to improve the radiological work control process and field monitoring.

Before the NRC decides on enforcement action, Big Rock Point staff was provided the opportunity to either (1) respond to the apparent violations addressed in this inspection report by June 18, 1997, or (2) request a predecisional enforcement conference.

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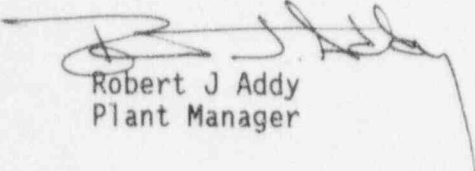


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NUCLEAR REGULATORY COMMISSION  
BIG ROCK POINT PLANT  
RESPONSE TO INSPECTION 97005  
June 18, 1997

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The Big Rock Point staff contacted your Mr. Thomas Kozak and notified him that we would respond to the apparent violations in a letter in lieu of a predecisional enforcement conference. Attached to this letter is the required response.



Robert J Addy  
Plant Manager


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

ATTACHMENT

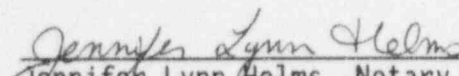
CONSUMERS ENERGY COMPANY

To the best of my knowledge, information and belief, the contents of this submittal are truthful and complete.

By

  
Robert J Addy  
Plant Manager

Sworn and subscribed to before me this 18th day of June 1997.

  
Jennifer Lynn Helms, Notary Public  
Charlevoix County, Michigan

My commission expires August 29, 1999.

(Seal)

ATTACHMENT

CONSUMERS ENERGY COMPANY  
BIG ROCK POINT PLANT  
DOCKET 50-155

DOCKET 50-155 - LICENSE DPR-6 - BIG ROCK POINT PLANT - RESPONSE TO APPARENT  
VIOLATIONS IN INSPECTION REPORT NO. 50-155\97005(DRS).

Submitted June 18, 1997

## RESPONSE TO APPARENT VIOLATIONS IN INSPECTION REPORT 97005

### ESCALATED ENFORCEMENT ITEM 50-155/97005-01a

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10 CFR Part 20.1501, requires licensee's to make surveys that are reasonable under the circumstances to evaluate the extent of radiation levels and the potential radiological hazards that could be present. The failure of the workers to evaluate the extent of radiation levels and the potential radiological hazards that could be present (gamma dose rates ranged up to 7 rem/hour and the neutron dose rates ranged up to 1.5 rem/hour during the grand tour) to ensure compliance with 10 CFR 20.1201(a)(1), is an apparent violation of 10 CFR 20.1501(a) (EEI 50-155/97005-01a).

### ESCALATED ENFORCEMENT ITEM 50-155/97005-02a

Failure to exit the HRA after receiving electronic dosimetry alarms during the grand tour is an example of an apparent violation of Technical Specification (TS) 6.11. This TS refers to Administrative Procedure 5.8, "High Radiation Area Key and Access Control," Revision 10, which requires in Step 5.1.f.7. that a HRA be immediately exited on either an ED dose or dose rate alarm (EEI 50-155/97005-02a).

Consumers Energy Company agrees with the apparent violations as assessed.

#### (1) The reason for the apparent violations.

A team investigation concluded the station was exhibiting a casual approach to radiation protection and radiation work practices.

- The radiation work permit (RWP) did not adequately characterize the actual radiological conditions in the areas being inspected. Historical data that was readily available was not utilized. For example, the maximum dose rate-general area, indicated on the RWP was 2 Rem/hour. Actual general area dose rates of 6 - 7 Rem/hour gamma and 1.5 Rem/hr neutron existed in the area. The RWP reflected plant shutdown conditions, but the tour was conducted during low power operation.
- The RWP did not clearly define the neutron monitoring requirements. As a result, based on the initial neutron survey in the lower recirculation pump room, both individuals thought that the neutron dose rate along the inspection path was approximately 180 mrem/hour. However, the actual neutron dose rate in the steam drum area was approximately 1500 mrem/hour.
- The dose rate and entry dose level (EDL) alarms identified on the RWP were inappropriate for the actual conditions. The dose rate alarm was set at 3 Rem/hour and the entry dose level (EDL) alarm was set at 100 mrem. Previous low power radiological data for the area shows dose rates in excess of 3 Rem/hour in the areas. Also, previous experience conducting tours shows that 150 to 300 mrem is typically received.
- The As Low As Reasonably Achievable (ALARA) planning for the inspection was superficial and did not consider several key factors, such as the route to be followed and previous at-power entry dose rates.
- The job planning and the prejob briefing with respect to Operations Department activities did not address ALARA or the radiological conditions expected in the area.

- The individuals involved did not adequately review and understand the RWP conditions and requirements. For example, the personnel knew that a 100 mrem entry dose level (EDL) was probably too low for the task, but did not question the limit.

Requirements and expectations for procedure adherence were not well understood by station personnel. In this case, both individuals knew the requirement upon receiving a dose rate or entry dose level (EDL) alarm, but they did not follow through with the proper action.

- Both individuals received the dose rate alarm while climbing the ladder to the steam drum area. They should have stopped and exited the area upon receiving the alarm, but they proceeded on. Shortly thereafter, both received an entry dose level (EDL) alarm, then discussed their situation and decided to continue with the inspection to avoid a subsequent entry. The expectation is clear on receiving an entry dose level (EDL) alarm: stop, exit the area and contact radiation protection personnel.

Senior management, department managers and first line supervision were not sufficiently involved in the radiological aspects of this type of operations activity to ensure the proper focus and attention is directed to the planning and execution of these evolutions. In this specific event, management was not sensitive to the need for or the precautions required to be taken for an at-power entry "grand tour" into the recirculation pump room. Further, several opportunities to correct the deficiencies in the planning of this inspection, such as in the development of the RWP, the conduct of the prejob brief, and the communication of dose rate monitoring expectations, were missed because senior management was not meaningfully involved.

(2) The corrective steps that have been taken and the results achieved.

Immediate

- A. The Plant Manager immediately required an interim measure making his approval necessary prior to performing work in a high radiation area. Further, all radiation work permits were rereviewed and received Chemistry/Health Physics Manager's approval.
- B. The appropriate discipline was administered to the two individuals involved in the event.

Short Term

- A. The lessons learned from this event were communicated to all plant personnel by March 4, 1997 via a memorandum from the Plant Manager to all station personnel. The memo addressed the casual approach adopted by all station personnel concerning radiation protection, procedural adherence inadequacies and inadequate management attention to important plant work. These expectations were personally presented to the management staff by the Plant Manager. The event and expectations were also discussed with the radiological protection, maintenance, operations, and other appropriate on-site personnel by the management staff with the assistance of Health Physics management.



- B. On March 1, 1997, the Chemistry/Health Physics department was reorganized to improve supervisory coaching and oversight; and improve radiation protection technician support in the technician and ALARA planning functions. Two new supervisory positions were added to improve the planning and implementation of radiation protection work. Three additional technicians have been contracted. Further, one additional technician was added to the staff to improve ALARA work planning.
- C. The Chemistry/Health Physics Manager developed a performance enhancement plan to address the deficiencies identified with the RWP preparation and RP preplanning for this event. The plan also addresses radiation protection equipment requirements and needs.

(3) The corrective steps that will be taken to avoid further violations.

- A. A case study will be developed and presented to all radiation workers on the lessons learned from this event. The purpose of this case study will be to emphasize management's expectation for procedure adherence, commitment to ALARA, and the need to improve the radiation work permit and radiation work practices.

THIS ACTION WILL BE COMPLETED BY SEPTEMBER 1, 1997.

- B. Enhanced training in RWP preparation and radiation protection coverage techniques including dose reduction techniques will be conducted by the Chemistry/Health Physics Manager. Radiation protection equipment requirements and needs will also be discussed.

THIS ACTION WILL BE COMPLETED BY SEPTEMBER 1, 1997.

(4) The date when full compliance will be achieved.

The facility is currently in full compliance.

ESCALATED ENFORCEMENT ITEM 50-155/97005-01b

*Although pre-job and ALARA reviews were performed prior to the filter transfer job, insufficient attention was given to the changed plant and radiological conditions such as the ventilation system being placed in a cold weather configuration, higher than normal dose rates on the filters, and the longer storage time for the filters which allowed them to dry out making it much more likely that contamination would become airborne. Because HRA work was on hold, the filters began to accumulate in the RWPA causing the higher than usual dose rates, and the filters had dried out for a month compared to a normal week or two. A significant airborne radioactive material condition resulted when the filters were transferred without the use of engineering controls. The failure to properly evaluate the potential radiological hazards associated with the transfer of the highly contaminated filters is an additional example of an apparent violation of 10 CFR 20.1501(a). (EEI No. 50-155/97005-01b).*

Consumers Energy Company agrees with the apparent violations as assessed.

(1) The reason for the apparent violations.

The major cause for this violation is the failure of the radiological planning and control processes to adequately account for changes in work methods. Other contributing factors were also involved.

The radioactive waste filter barrel (RWFB) was installed in the spring of 1996 in order to provide a temporary overflow location for filters when the radioactive waste filter cask (RWFC) became full and there were more filters requiring change before transport to the radwaste building could be accomplished. Prior to installing the RWFB, excess filters had been placed in plastic bags and lain on the floor. The bagged filters that had to be recovered manually from within the radioactive waste room at significant expense of dose. The RWFB allowed filter transfer into the RWFC remotely (long handled pole) from above. The evolution resulted in approximately 15 person-mrem as compared to approximately 150 person-mrem when the filters were individually bagged. Because radioactive waste disposal site criteria limit the water content of shipped waste, the new RWFB is perforated to allow drainage. It is not covered purposely to allow ease of filter additions (covering and uncovering would add time and therefore dose during use). The open and perforated configuration promotes drying.

Transfer of filters from the RWFB to the RWFC caused no airborne radioactivity problems throughout 1996. The latest barrel to cask transfer prior to the event on February 24, 1997, appears to have been on September 26, 1996. After the September, 1996 date, filters were transported to the radioactive waste building directly by use of the transfer cask (barrel is used only for overflow, and was not necessary). The last such direct transport was on January 24, 1997. After that, the RWFC was filled and the RWFB started to be used when the High Radiation Area Radiation Work permits (RWPs) went on hold due to the EDL incident on January 31, 1997. The next direct transport of filters occurred just prior to the transfer incident (in order to empty the transfer cask so that the filters from the barrel could then be transferred to the cask). The transport went without incident.

The RWFC holds about 24 filters, and the overflow RWFB holds approximately 96. The barrels are currently empty.

The transfer between the RWFB and transport cask performed February 24, 1997, appears to be the first time such transfers have been performed under "cold weather" conditions with most or all outside air louvers closed. Since the flow went through the turbine building rather than to the stack plenum as indicated in plant drawings, it appears that air flow under the current ventilation mode caused the problem of contamination spread in the turbine building.

Additional information pertinent to this event is provided in the response to apparent violation 50-155/97005-03.

(2) The corrective steps that have been taken and the results achieved.

The radioactive waste damper was aligned to provide the correct ventilation flowpath (i.e., negative pressure for the filter area). Flow was verified by the use of a smoke generator. The Chemistry/Health Physics work control group established controls and barriers within the procedure and radiation work



permit to accomplish the transfer. A safety evaluation was completed to review barriers and plant configuration. Since the realignment of the ventilation system, casks have been successfully loaded and transferred to the radwaste building.

Drying of the filters contributed to the problem by creating loose radioactive particles available for transport. This has been controlled by use of a gentle spray mist to dampen filter surfaces. Use of a local High Efficiency Particulate (HEPA) filter has also been implemented. The ceiling plug, which used to be opened to allow manipulation of the filters from above, will now remain closed. New tools have been purchased that allow the filters to be changed from within the room.

(3) The corrective steps that will be taken to avoid further violations.

No further actions will be taken. The action taken above has adequately addressed the plant's filter change process.

(4) The date when full compliance will be achieved.

The facility is currently in full compliance.

**ESCALATED ENFORCEMENT ITEM 50-155/97005-02b**

*On January 20, 1997, the licensee identified that a station engineer who was not high radiation area access (HRAA) qualified entered the reactor water clean up pump room on two occasions. Although he was accompanied by an auxiliary operator who was HRAA qualified, this was not in accordance with Administrative Procedure 5.8.c, "HRA Key and Access Control," which states that entry into HRAs is not allowed unless there are two persons, both of whom should be HRAA qualified, and if one person is not, then he/she will be provided with dedicated RPT coverage. The area entered was posted and controlled as a HRA with some sections having general area dose rates in excess of 1 rem/hr. The failure of the non-qualified engineer to be provided with RPT coverage is an additional example of an apparent violation of TS 6.11 requirements that radiation protection procedures be established and adhered to. (EEI No. 50-155/97005-02b).*

Consumers Energy Company agrees with the apparent violation as assessed.

(1) The reason for the apparent violation.

The cause of this event is similar in nature to EEI No. 50-155/97-02a. In particular, the lack of sensitivity of station personnel to the radiological aspects of work at the station, and radiological interfaces with plant activities resulted in this incident.

(2) The corrective steps that have been taken and the results achieved.

Station management reorganized and enhanced the Chemistry/Health Physics organization to address the station issue of lack of sensitivity to radiation protection and the radiological planning process. A Chemistry/Health Physics work control line function was established to review all plant work, improve the inadequacies identified in RWP preparation, integrate RP into the plant planning process and plan the radiological aspects of plant work. Thresholds for job coverage, formal and informal briefings have been lowered. An up-to-

date listing of High Radiation Area Access (HRAA) qualified individuals is maintained and readily available for verification of HRAA qualification. Further, an industry experienced Chemistry/Health Physics planner position and an additional supervisor was added to the staff. These additions will provide immediate assistance for planning the radiological aspects of station work, and management oversight in the field will be enhanced.

Station management communicated the incident to the plant staff through briefings with Chemistry/Health Physics and Engineering personnel, and a comprehensive memorandum to all plant personnel was issued by the Plant Manager. Individuals involved in the incident were also counseled as to the expectations associated with this incident.

(3) The corrective steps that will be taken to avoid further violations.

- A. A case study will be developed and presented to all radiation workers on the lessons learned from the events identified in 50-155/97005-01a and 50-155/97005-02a. The purpose of this case study will be to emphasize management's expectation for procedure adherence, commitment to ALARA, and the need to improve the radiation work permit and radiation work practices.

**THIS ACTION WILL BE COMPLETED BY SEPTEMBER 1, 1997.**

- B. Enhanced training in RWP preparation and radiation protection coverage techniques including dose reduction techniques will be conducted by the Chemistry/Health Physics Manager. Radiation protection equipment requirements and needs will also be discussed.

**THIS ACTION WILL BE COMPLETED BY SEPTEMBER 1, 1997.**

(4) The date when full compliance will be achieved.

The facility is currently in full compliance.

**ESCALATED ENFORCEMENT ITEM 50-155/97005-03**

*The gaseous waste management system description in Final Hazards Safety Report (FHSR), Section 11.3.2, states that air flow rates will remain sufficient to minimize build-up of airborne contamination and that flows begin in radioactively clean areas and are directed to potentially more highly contaminated areas then exhausted to the stack. Drawing number 0740G40124, which is referenced in FHSR Section 11.3.2, indicates that air flows from the RWPA directly into the exhaust plenum and out the plant stack. During this event, the air flow was reversed (from the RWPA through the turbine building, into the pipe tunnel, and out the main stack). This flow was from an area of high contamination to one of lower contamination levels. During the licensee's investigation of the event, the damper on the RWPA exhaust plenum was found to be closed (this was not expected even in a cold weather configuration), thereby considerably restricting the air flow of the exhaust system, which caused the flow to reverse. It was not determined when or how long the damper had been closed. This modification to the air flow pathway was not adequately analyzed. No design change or 10 CFR 50.59 safety evaluation was performed to address the new ventilation flow path. This is considered an example of an apparent violation of 10 CFR 50.59 (EEI No. 50-155/97005-03(DRS)).*

Consumers Energy Company agrees with the apparent violation as assessed.

(1) The reason for the apparent violations.

The position of the damper was not adequately controlled by procedure. Previous filter transfers had not resulted in contamination problems; therefore, the need for procedural control had not been recognized and the associated design considerations made. Additional detail on the circumstances surrounding this event is provided in the response to apparent violation 50-155/97005-01b.

(2) The corrective steps that have been taken and the results achieved.

The past method of transfer was discontinued and the use of additional engineering controls was established. Including changing the method of transfer from a stabbing to a grasping action with shorter tools that do not require removal of the ceiling plug. The damper position was reestablished and a 50.59 evaluation performed on its as-left position.

(3) The corrective steps that will be taken to avoid further violations.

Big Rock Point has recognized that existing procedures may lack specific guidance for addressing all of the possible plant configurations. Recent management emphasis on procedure compliance and adequacy is stressing the need to assure proper plant configuration and procedure revision, when necessary to maintain it.

**THIS ACTION WILL BE COMPLETED BY SEPTEMBER 1, 1997.**

(4) The date when full compliance will be achieved.

The facility is currently in full compliance.