DD-00-05

UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

OFFICE OF NUCLEAR REACTOR REGULATION
Samuel J. Collins, Director

In the Matter of	)	Docket Nos. 50-321 and 50-366
	)	
SOUTHERN NUCLEAR OPERATING COMPANY	)	License Nos. DPR-57 and NPF-5
	)	
Edwin I. Hatch Nuclear Plant, Units 1 and 2	)	

DIRECTOR'S DECISION UNDER 10 CFR 2.206

I. INTRODUCTION

By letter dated May 3, 2000, Mr. David A. Lochbaum, on behalf of the Union of Concerned Scientists (Petitioner), pursuant to Section 2.206 of Title 10 of the *Code of Federal Regulations* (10 CFR 2.206), requested that the U.S. Nuclear Regulatory Commission (Commission or NRC) take action with respect to Edwin I. Hatch Nuclear Plant, Units 1 and 2 (Hatch). Hatch is owned and operated by the Southern Nuclear Operating Company (the licensee). The Petitioner requested that the NRC ask questions of the licensee via a demand for information, related to the liquid and gaseous radwaste systems at Hatch.

II. BACKGROUND

The Petitioner contended that Hatch is being operated outside its design and licensing bases because the material condition of the piping, tanks, and other components of the liquid and gaseous radwaste systems is not being properly inspected and maintained. The NRC, by letter of June 27, 2000, asked for the information from the licensee, which partially satisfied the action requested by the Petitioner. The licensee responded in its letter of July 26, 2000. The

NRC staff has reviewed the licensee's response and concluded that the information provided by the licensee is responsive to your contentions.

III. DISCUSSION

Contention No. 1: The Hatch Nuclear Plant is being operated outside its design and licensing bases because the material condition of piping, tanks, and other components of the liquid radwaste system [is] not being properly inspected and maintained.

The Petitioner cited General Design Criterion (GDC) 60 and GDC 4 as the design and licensing bases. The Petitioner stated the following three specific concerns as the reason for the Petitioner's assertion that the liquid radwaste system at Hatch does not conform to its licensing and design bases: (1) susceptibility of liquid radwaste system piping to degradation, (2) susceptibility of liquid radwaste system tanks and vessels to degradation, and (3) degraded capability of valves that isolate liquid radwaste discharge. The Petitioner asserts that the liquid radwaste system is vulnerable to degradation mechanisms, such as flow-accelerated corrosion and microbiologically induced corrosion, but the liquid radwaste system piping is not covered by aging management programs. These aging management programs include the flow-accelerated corrosion program, the treated-water systems piping inspection program, and the evaluation program for buried or embedded piping. The Petitioner asserted, therefore, that it is reasonable to expect that the liquid radwaste system is degraded to an unknown extent and that it appears that Hatch is not in compliance with the licensing requirements.

Response: The liquid radwaste system is not needed to mitigate the effects of accidents and therefore is not considered safety related. The staff agrees with the Petitioner on the applicability of GDC 60 as a design and licensing basis, but GDC 4 does not apply. Standard Review Plan (SRP) 11.2, "Liquid Waste Management Systems," discusses the regulations that apply to the liquid radwaste system. GDC 60 is included as one of the regulatory requirements because the nuclear power plant needs to be designed to control the release of radioactive

materials in liquid and gaseous effluents during normal reactor operation, including anticipated operational occurrences. The staff has reviewed Section 9.2 of the Hatch Unit 1 Final Safety Analysis Report (FSAR) and Section 11.2.1 of the Hatch Unit 2 FSAR and confirmed that GDC 4 is not a design or licensing basis for the liquid radwaste system.

In support of the contention that the liquid radwaste system at Hatch is being operated outside of its design and licensing bases, the Petitioner cites an installation deficiency in the liquid radwaste system at Hatch, evidence of degradation in other systems at Hatch, and evidence of degradation in the liquid radwaste system at Millstone.

The Petitioner cites an installation deficiency in the Hatch Unit 1 liquid radwaste system which was reported in the Notice of Reportable Occurrence No. 50-321/1979-43, dated June 29, 1979. Subsequent to this notice, Licensee Event Report (LER) 79-43 was submitted on August 17,1979, to address the installation deficiency. The LER included corrective action taken and stated that “the piping supports were redesigned and installed to meet seismic Class I requirements.”

The Petitioner cites degradation problems with other systems at Hatch, such as plant service water and residual heat removal service water. The Petitioner states that the liquid radwaste system is as vulnerable as these other systems to certain degradation mechanisms. The Petitioner also cites three examples, in systems other than the radwaste systems, of the detrimental effects of valve aging at Hatch. The licensee, in its July 26, 2000, response stated that the conditions such as pressure, volume, and quality of the fluid in the liquid radwaste system are different than the conditions in other systems. Thus, the licensee concludes that the radwaste system is not as susceptible to many of the aging mechanisms that could affect other systems at Hatch.

The Petitioner cites NRC Information Notices (IN) 79-07 and 96-14 as examples of degradation that actually occurred at U.S. nuclear power plants; both involved the Millstone

Nuclear Power Station. IN 79-07 stated that “such events can be avoided by proper procedures and periodic examination if personnel are aware of the problem”. IN 96-14 stated that “a lack of continuing and preventive maintenance appeared to have allowed several systems and components to significantly degrade”. The licensee, in its July 26, 2000, response stated that Hatch operations personnel perform daily rounds during which systems are observed for proper performance and material condition (major portions of the radwaste systems at Hatch are accessible for observation).

NRC resident inspectors, during their inspection rounds, regularly tour the plant, including the radwaste systems. In addition, NRC inspectors specializing in radiation protection periodically inspect portions of the liquid radwaste system. Recent inspections of this nature have not identified any significant problems. For example, as discussed in Inspection Report Nos. 50-321/99-08 and 50-366/99-08, dated January 20, 2000, NRC inspectors reviewed the performance of several radiation monitors and the quantification of selected liquid samples, and found no problem. The Inspection Report stated that the radiation doses resulting from liquid effluent releases were a small percent of regulatory limits.

If a degraded condition is identified by the licensee, or is reported to the licensee by the NRC, the licensee should generate a condition report and the condition should be evaluated and repaired as required in accordance with the plant’s corrective action program. In addition, these condition reports are trended by the licensee. Further evaluation and appropriate corrective actions would be taken if an adverse trend was identified. Periodic inspections of the corrective action program are conducted according to the NRC inspection program to verify that licensees are identifying and correcting plant problems. For example, “NRC Integrated Inspection Report Nos. 50-321/99-11, 50-366/99-11 and 76-36/00-01,” dated March 6, 2000, stated that inspectors reviewed the Hatch Condition Reporting System procedure, which

describes the licensee's program for identifying and correcting deficiencies. The Inspection Report concluded that the licensee had satisfactorily identified and corrected deficiencies.

The Petitioner raised a concern related to the consequences of failures in the liquid radwaste system. The consequences of a potential simultaneous failure of all liquid radwaste tanks have been analyzed and reviewed by the staff in the "Safety Evaluation of the Edwin I. Hatch Nuclear Plant Unit 1," dated May 11, 1973. The analyses showed that the resulting releases would be a small fraction of 10 CFR Part 20 release limits. In the "Safety Evaluation Report Related to Operation of Edwin I. Hatch Nuclear Plant, Unit 2," (Unit 2 SER) dated June 1978, the NRC staff "determined that the estimated releases due to postulated failure of components of the liquid radwaste system will not result in concentrations in the unrestricted area in excess of the limits set forth in Table II of Appendix B to 10 CFR Part 20." In addition, Hatch has a Radiological Environmental Monitoring Program in place, as required by 10 CFR Part 50, Appendix I. This surveillance and monitoring program applies to various pathways through which radioactive material might be released to the air, river water, milk, and vegetation and entails taking periodic samples and conducting analyses of these samples. Any detected concentrations of radioactive material above predetermined limits are required to be reported. Also, the Georgia Department of Natural Resources monitors ground water in the vicinity around the plant. Neither program has identified concentrations of radioactive material above or near permitted limits.

The Petitioner asserts that a break in a liquid radwaste pipe inside one of the plant's buildings could result in significant exposure to the plant workers. The licensee is required by regulation (10 CFR Part 20) to have and maintain a radiation protection program to ensure that radiation exposure of plant workers is not only controlled below limits, but to go further and have a program to keep doses as low as reasonably achievable (ALARA). As part of this program, plant workers wear digital alarming dosimeters when entering plant areas containing

liquid radwaste system piping. Furthermore, radiation monitors are located in these areas. Therefore, the NRC staff concludes that there is reasonable assurance the plant workers will not receive a significant exposure in the event of a break in a liquid radwaste pipe inside one of the plant's buildings.

The liquid radwaste system is operated on a regular basis to control effluents, and any significant degradation of the material condition of the system would be quickly detected. Thus, operability of the system is demonstrated without the need for special inspections or testing. However, the licensee does perform quarterly testing on the discharge valves which close to terminate the release of radioactive water to the river.

The liquid radwaste system is designed and licensed to limit the doses from effluents to individual members of the public to levels as low as reasonably achievable (ALARA) to comply with Appendix I to 10 CFR Part 50. Based on the discussion above, the NRC believes that the liquid radwaste system is being operated within its design and licensing bases.

Contention No. 2: The Hatch Nuclear Plant is being operated outside its design and licensing bases because the material condition of piping and components of the gaseous radwaste system [is] not being properly inspected and maintained.

The Petitioner cited GDC 60 and GDC 4 as the design and licensing bases. The Petitioner stated the following two specific concerns as the reason for the Petitioner's assertion that the gaseous radwaste system at Hatch does not conform to its licensing and design bases: (1) susceptibility of gaseous radwaste system piping to degradation and (2) degraded capability of the gaseous radwaste system to preclude hydrogen burns and detonations. The Petitioner asserted that the offgas systems at Hatch are vulnerable to aging degradation but are not covered by aging management programs.

Response: The gaseous radwaste system is not needed to mitigate the effects of accidents and therefore is not considered safety related. The staff agrees with the Petitioner on the applicability of GDC 60 as a design and licensing basis, but GDC 4 does not apply. SRP 11.3, "Gaseous Waste Management Systems," discusses the regulations that apply to the gaseous radwaste system. GDC 60 is included as one of the regulatory requirements because the nuclear power plant needs to be designed to control the release of radioactive materials in liquid and gaseous effluents during normal reactor operation, including anticipated operational occurrences. The staff has reviewed Section 9.4 of the Hatch Unit 1 FSAR and Section 11.3.1 of the Hatch Unit 2 FSAR and confirmed that GDC 4 is not a design or licensing basis for the gaseous radwaste system.

The Petitioner raises concerns that the piping and other components of the offgas system may be degraded to an unknown extent. Evidence of degradation is monitored by operations personnel through daily rounds during which systems are observed for proper performance and material condition. NRC resident inspectors, during their inspection rounds, regularly tour the plant, including the radwaste systems. In addition, NRC inspectors specializing in radiation protection periodically inspect portions of the gaseous radwaste system. Recent inspections of this nature have not identified any significant problems. If a degraded condition is identified by the licensee or reported to the licensee by NRC inspectors, the licensee should generate a condition report and the condition should be evaluated and repaired as required in accordance with the plant's corrective action program. Periodic inspections of the corrective action program are conducted according to the NRC inspection program to verify that licensees are identifying and correcting plant problems.

The Petitioner raised concerns regarding a break in the offgas system piping running to the main stack. In Section 9.4.6.1 of the Unit 1 FSAR and Section 15.4.15.1.4.1 of the Unit 2 FSAR, the licensee has evaluated the consequences of a potential complete rupture of this

piping and concluded that the resulting calculated doses at the plant site boundary would not exceed the limits for normal plant operation specified in 10 CFR Part 20. The NRC staff has reviewed the results of the licensee's analyses and finds that the results satisfy the criteria stated in Branch Technical Position ETSB 11-5 and are therefore acceptable. In addition, Hatch has a Radiological Environmental Monitoring Program in place, as required by 10 CFR Part 50, Appendix I. This surveillance and monitoring program applies to various pathways through which radioactive material might be released to the air, river water, milk, and vegetation. Any detected concentrations of radioactive material above predetermined limits are required to be reported. This program has not identified concentrations of radioactive material above or near permitted values. Any leakage from the offgas system in the plant building would be detected by plant radiation monitoring instrumentation.

The Petitioner asserts that a break of the offgas piping running to the main stack could cause the radiation exposures to individuals in the power block to increase above negligible. As previously mentioned, the licensee is required by regulation to have and maintain a radiation protection program to limit radiation exposure of plant workers. As part of this program, workers wear digital alarming dosimeters when entering plant areas in the power block that contain the offgas piping which runs to the main stack. Furthermore, radiation monitors are located in these areas. Therefore, the NRC staff concludes that there is reasonable assurance that individuals in the power block will not receive significant radiation exposure in the event of a break of the offgas piping which runs to the main stack.

NRC inspectors periodically review portions of the gaseous radwaste system. For example, Inspection Report Nos. 50-321/99-04 and 50-366/99-04, dated August 4, 1999, stated that inspectors observed the filter change out for the Unit 1 and Unit 2 gaseous and particulate effluent monitors and determined that it was done in accordance with licensee procedures. The Inspection Report also stated that, based on a review of the licensee's 1998 Annual Effluent

Release Report issued prior to May 1, 1999, the amounts of activity released from the plant in liquid and gaseous effluents had remained stable over the last several years and the radiation doses resulting from those releases were a small percentage of regulatory limits.

The Petitioner questions the degraded capability of the gaseous radwaste systems to preclude hydrogen burns and detonations. Hydrogen burns and detonations are prevented by keeping the hydrogen concentration of gases from the air ejector below the flammable limit. This goal is achieved by maintaining adequate process steam flow for dilution at all times. This steam flow is monitored and alarmed in the control room. Hydrogen analyzers are used to monitor the offgas system to provide further assurance that the hydrogen concentration is maintained below the flammable limit. However, in the unlikely event of an uncontrollable hydrogen increase, plant procedures require that the plant be shut down. The offgas system piping and components are designed to withstand the unlikely event of a hydrogen burn or detonation. The NRC staff stated in the Unit 2 SER that design provisions incorporated to reduce the potential for gaseous releases due to hydrogen explosions in the gaseous radwaste system were acceptable.

The Petitioner states that there have been more than 25 hydrogen burns and detonations in offgas systems at plants similar to Hatch. In 1990, Hatch experienced an event involving possible ignition of hydrogen in the Unit 1 offgas system. The event was discussed in LER 321/90-012, dated July 20, 1990. The LER included corrective actions to replace valves and to revise system operating and abnormal occurrence procedures to assure specific actions are taken if hydrogen concentrations exceed certain limits. The LER also stated that Hatch Unit 2 was not susceptible to the identified cause of the Unit 1 event because of a difference in design of the offgas system. The LER concluded that the health and safety of the public was not affected by the event. The LER was reviewed by NRC inspectors and discussed in an inspection report dated June 23, 1992. The inspection report discusses a number of corrective

actions that were taken following the event. These corrective actions included repair or replacement of various components in the offgas system and revisions to procedures which directly affect the operation of the offgas system. The inspection report stated that these procedural revisions properly implemented corrective actions for this event.

The gaseous radwaste system is operated on a regular basis to control effluents, and any significant degradation of the material condition of the system would be quickly detected. Thus, operability of the system is demonstrated without the need for special inspections or testing.

The gaseous radwaste system is designed and licensed to limit the doses from effluents to individual members of the public to ALARA levels to comply with Appendix I to 10 CFR Part 50. Based on the discussion above, the NRC concludes that the gaseous radwaste system is being operated within its design and licensing bases.

IV. CONCLUSION

The NRC requested information from the licensee, which, in essence, satisfied the action requested by the Petitioner. However, for the reasons discussed above, the NRC staff does not agree with the Petitioner's contentions that Hatch is being operated outside its design and licensing bases because the material condition of piping, tanks, and other components of the liquid and gaseous radwaste systems is not being properly inspected and maintained.

A copy of this Director's Decision will be filed with the Secretary of the Commission in accordance with 10 CFR 2.206(c). As provided by that regulation, this Director's Decision will constitute the final action of the Commission 25 days after the date of issuance of this Director's

Decision unless the Commission, on its own motion, institutes a review of this Director's Decision within that time.

FOR THE NUCLEAR REGULATORY COMMISSION

/RA/

Samuel J. Collins, Director
Office of Nuclear Reactor Regulation

Dated at Rockville, Maryland,
this 18th day of October 2000.

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UNITED STATES NUCLEAR REGULATORY COMMISSION

SOUTHERN NUCLEAR OPERATING COMPANY

EDWIN I. HATCH NUCLEAR PLANT, UNITS 1 AND 2

DOCKET NOS. 50-321 AND 50-366

ISSUANCE OF DIRECTOR'S DECISION UNDER 10 CFR 2.206

By letter dated May 3, 2000, Mr. David A. Lochbaum, on behalf of the Union of Concerned Scientists (Petitioner), pursuant to Section 2.206 of Title 10 of the *Code of Federal Regulations* (10 CFR 2.206), requested that the U.S. Nuclear Regulatory Commission (Commission or NRC) ask questions via a demand for information concerning the liquid and gaseous radwaste systems at Edwin I. Hatch Nuclear Plant, Units 1 and 2 (Hatch), which is operated by Southern Nuclear Operating Company (SNC). As the basis for the Petitioner's request, the Petitioner contended that Hatch is being operated outside its design and licensing bases because the material condition of piping, tanks, and other components of the liquid and gaseous radwaste systems is not being properly inspected and maintained.

The NRC, in a letter dated June 27, 2000, requested SNC to furnish the information requested by the Petitioner, which, in essence, satisfied the action requested by the Petitioner. SNC provided this information in a letter to NRC dated July 26, 2000. The Director of the Office of Nuclear Reactor Regulation has addressed the technical concerns raised by the Petitioner in the "Director's Decision Pursuant to 10 CFR 2.206" (DD-00-05). DD-00-05 concludes that the NRC staff does not agree with the Petitioner's contention that Hatch is being operated outside its design and licensing bases because the material condition of piping, tanks, and other components of the liquid and gaseous radwaste systems is not being properly inspected and maintained. The complete text of the Director's Decision is available for public inspection at the Commission's Public Document Room located at 1 White Flint North, 11555 Rockville

Pike (1st floor), Rockville, MD., and is accessible electronically from the Agencywide Documents Access and Management System (ADAMS) public library component on the NRC Web site, http://www.nrc.gov (the electronic reading room).

A copy of the Director's Decision will be filed with the Secretary of the Commission in accordance with 10 CFR 2.206(c) of the Commission's regulations. As provided by this regulation, the Director's Decision will constitute the final action of the Commission 25 days after issuance of the Director's Decision unless the Commission, on its own motion, institutes a review of the Director's Decision within that time.

FOR THE NUCLEAR REGULATORY COMMISSION

/RA/

Samuel J. Collins, Director
Office of Nuclear Reactor Regulation

Dated at Rockville, Maryland,
this 18th day of October 2000.