From: Marvin Mendonca
To: Research and Test Reactor
Date: 10/23/2006 6:53:38 AM
Subject: Draft Directors Decision on uncontrolled/unmonitored releases

I believe I've previously shared the attached with you. I will send final which is due to be out soon.

Marv

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June 28, 2006

David Lochbaum, Director
Nuclear Safety Project
Union of Concerned Scientists
1707 H Street NW., Suite 600
Washington, DC 20006

Dear Mr. Lochbaum:

The U.S. Nuclear Regulatory Commission (NRC) staff has completed a preliminary review of the petition dated January 25, 2006, filed pursuant to Section 2.206 of Title 10 of the *Code of Federal Regulations* (10 CFR 2.206) by the Union of Concerned Scientists and numerous other organizations and individuals. We share your concerns regarding the control, monitoring, and reporting of possible releases of radioactive liquid effluents from NRC-regulated facilities. The participation by you, your co-petitioners, and other stakeholders has been helpful to the NRC and to our licensees in responding to this issue and related public concerns. However, we do not, at this time, believe that our response to this issue needs to involve issuance of enforcement actions such as the Demands for Information mentioned in your petition. The NRC staff's proposed Director's Decision (DD) on the petition is enclosed.

We appreciate you agreeing to serve as a point of contact for this petition. You may collect and organize the comments from your co-petitioners or they may provide them directly to the NRC staff for consideration. We especially seek comments on any portions of the DD that you believe involve errors or any issues in the petition that you believe have not been fully addressed. The NRC staff will then review any comments provided by the petitioners and consider them in the final version of the DD. Please provide your comments within 30 days of the date of this letter.

Please feel free to contact Mr. William Reckley, petition manager, at 301-415-1323, to discuss any questions related to this petition.

Sincerely,

/RA/

J. E. Dyer, Director
Office of Nuclear Reactor Regulation

Enclosure: Proposed Director's Decision

David Lochbaum, Director
Nuclear Safety Project
Union of Concerned Scientists
1707 H Street NW, Suite 600
Washington, DC 20006

June 28, 2006

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Sincerely,

/RA/
J. E. Dyer, Director
Office of Nuclear Reactor Regulation

Enclosure: Proposed Director's Decision

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NRR-106

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DATE	6/23/06	6/23/06	6/22/06	6/22/06	6/16/06	6/26/06	6/28/06

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Proposed DD-06-

UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION
OFFICE OF NUCLEAR REACTOR REGULATION

James E. Dyer, Director

In the Matter of	)	
	)	
Operating and Decommissioning	)	(10 CFR 2.206)
Power Reactors and	)	
Operating and Decommissioning	)	
Research and Test Reactors	)	

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

I. Introduction

By letter dated January 25, 2006, as supplemented by the letters dated February 2 and April 26, 2006, Mr. David Lochbaum, on behalf of the Union of Concerned Citizens and numerous other organizations and individuals (the Petitioners) filed a Petition pursuant to Title 10 of the *Code of Federal Regulations* (10 CFR), Section 2.206. The Petitioners requested that the U.S. Nuclear Regulatory Commission (NRC) respond to public concerns about nuclear reactors releasing water potentially contaminated with radioactive materials by taking the following action:

> .... take enforcement action against all applicable licensees* by issuing a Demand for Information requiring them to submit on the docket answers to the following questions:
>
> 1. What are the systems and components at your licensed facility that contain radioactively contaminated water?
>
> 2. What methods are being used to monitor leakage of radioactively contaminated water from the systems and components identified in response to question 1?
>
> 3. What is the largest leak rate that can remain undetected by the monitoring methods identified in response to question 2?

4. What methods are being used to monitor the grounds around the facility for potential leakage of radioactively contaminated water from the systems and components identified in response to question 1?

5. What assurance is there against a leak of radioactively contaminated water into the ground around your licensed facility from remaining undetected long enough to permit migration offsite in quantities exceeding federal regulations?

* Applicable licensees' are those licensees as listed in Appendix A, "U.S. Commercial Nuclear Power Reactors," Appendix B, "U.S. Commercial Nuclear Power Reactors Formerly Licensed to Operate," Appendix E, "U.S. Nuclear Research and Test Reactors Regulated by NRC," and Appendix F, "U.S. Nuclear Research and Test Reactors Under Decommissioning" in the "NRC Information Digest: 2004–2005 Edition," NUREG-1350, Vol. 16, Rev. 1, published February 2005 by the Nuclear Regulatory Commission.

As the basis for the request, the Petitioners cited several examples of contamination at NRC-licensed facilities and cited NRC regulations requiring licensees to have controls limiting the release of radioactive materials and limiting the radiation dose individuals receive from the operation of NRC-licensed facilities. In a letter dated March 1, 2006, the NRC informed the Petitioners that their request was received and that the issues in the Petition were being referred to the Office of Nuclear Reactor Regulation (NRR) for appropriate action.

As mentioned in the March 1, 2006, letter, the NRC has responded to specific cases of unmonitored releases from nuclear power reactors and to the general issue and related public concerns about possible groundwater contamination near NRC-licensed facilities. All available information on those releases shows no threat to the public health and safety. The NRC's actions include conducting special inspections, revising NRC inspection guidance, and forming a lessons-learned task force. The task force will evaluate cases of unmonitored releases of liquid effluents at nuclear power reactors and make recommendations for possible changes in the NRC's regulation and oversight of power reactor facilities. The NRC has held several meetings with licensees, industry groups, and other stakeholders regarding this matter and has committed to hold additional meetings in the months ahead.

The Petitioners request that the NRC issue a Demand for Information (DFI) requiring the subject licensees to provide specific information about the potential for unmonitored releases of liquid effluents containing radioactive materials and the licensees' ability to detect such releases before the contamination migrates beyond site boundaries. The administrative action of issuing a DFI is described in 10 CFR 2.204 as follows :

> (a) The Commission may issue to a licensee or other person subject to the jurisdiction of the Commission a demand for information for the purpose of determining whether an order under § 2.202 should be issued, or whether other action should be taken, which demand will:
>
> > (1) Allege the violations with which the licensee or other person is charged, or the potentially hazardous conditions or other facts deemed to be sufficient ground for issuing the demand; and
> >
> > (2) Provide that the licensee must, or the other person may, file a written answer to the demand for information under oath or affirmation within twenty (20) days of its date, or such other time as may be specified in the demand for information.

In addition, the NRC Enforcement Manual (available on the NRC Web site, (http://www.nrc.gov/what-we-do/r egulatory/enforc ement/guidance.h tml)) states:

> A DFI is a significant action. It should be used only when it is likely that an inadequate response will result in an order or other enforcement action.

During a meeting and teleconference on April 5, 2006, the Petitioners further explained and supported their Petition by providing additional information to the NRC's Petition Review Board (PRB). The transcript of this teleconference was treated as a supplement to the Petition and is available in the Agencywide Documents Access and Management System (ADAMS) for inspection under Accession No. ML061230344, and at the Commission's Public Document Room (PDR), located at One White Flint North, Public File Area O1 F21, 11555 Rockville Pike (first floor), Rockville, Maryland. Publicly available records will be accessible from the ADAMS Public Electronic Reading Room on the NRC Web site http://www.nrc.gov/reading-rm/adams.html. Persons who do not have access to ADAMS or who encounter problems in

accessing the documents located in ADAMS, should contact the NRC PDR Reference staff by telephone at 1-800-397-4209, 301-415-4737, or by e-mail to pdr@nrc.gov.

In addition to the specific meeting and teleconference with the Petitioners, the NRC staff has held several other public meetings on the topic of groundwater contamination near specific facilities and at NRC headquarters in Rockville, Maryland. Meetings with representatives from the Nuclear Energy Institute (NEI) and the nuclear power industry to discuss the issue and possible industry actions were held on March 22, May 9, and June 21, 2006. Many of the Petitioners participated in the public question and comment periods of these meetings. The NRC staff has posted information regarding the meetings and other activities related to groundwater contamination on its Web site at http://www.nrc.gov/reactors/operating/ops-experience/grndwtr-contam-tritium.html.

This proposed Director's Decision is being issued to solicit comments on the NRC's disposition of the Petition.

II. Discussion

The Petition requests that the NRC issue a DFI seeking information on the potential for and monitoring of liquid effluents from the following operating and decommissioning reactors: (1) commercial nuclear power reactors and (2) research and test reactors (RTRs). Because there is a clear distinction between the regulated communities and NRC programs for commercial nuclear power reactors and RTRs, the NRC specifically addresses each group in this Director's Decision.

1. Commercial Nuclear Power Reactors

During the meetings on May 9 and June 21, 2006, NEI described an industry initiative that includes the participation by licensees for all commercial nuclear power reactors, both operating and decommissioning. The initiative includes each licensee developing an action plan with the following elements:

- Assess sources and pathways;
- Assess site geo-hydrology; and
- Assess the current site monitoring program.

Each licensee also will share operating experience and best practices related to the control of liquid effluents and increase reporting to the NRC and State or local governments. Most of the information related to the initiative would be available to the public in documents such as the annual effluents release reports, which are submitted to the NRC.

An industry initiative, such as the one being undertaken to address the issue of groundwater contamination, defines a course of action for every licensee of an operating or decommissioning nuclear power reactor. The industry initiative was unanimously approved by the Chief Nuclear Officers for power reactor licensees and each licensee is contractually obligated as a member of NEI to implement the actions defined in the initiative. The NRC has and continues to encourage industry initiatives and other voluntary programs that result in licensees resolving operational problems and technical issues. The NRC staff will continue to interact with NEI and licensees on the development and implementation of the initiative.

As part of the industry initiative, each licensee will be asked to complete a questionnaire providing details on potential sources of inadvertent releases of radioactive liquids, monitoring programs in place to detect unplanned releases of radioactive liquids, and past occurrences of inadvertent releases of radioactive liquids. The information collected from this questionnaire will be provided to the NRC and will be made available to the Petitioners and other members of the public.

The NRC staff believes that the industry initiative and related questionnaire will satisfy the NRC's current information needs. The NRC will monitor the implementation of the action plans at power reactor facilities and will respond as appropriate to additional cases of groundwater contamination such as those referenced in the Petition. The NRC therefore has

concluded that a DFI to licensees for operating and decommissioning power reactors is not warranted at this time. Other forms of generic communication that would require a written response from licensees were considered but likewise are deemed unnecessary at the current time. In accordance with established NRC procedures (e.g., NRR Office Instruction LIC-503, "Generic Communications Affecting Nuclear Reactor Licensees"), the NRC staff may describe in a Regulatory Issue Summary the agency's acceptance of the industry initiative as part of the longer term resolution of this issue.

Because the NRC's interactions with NEI and power reactor licensees will result in the information requested by the Petitioners being available to the public, the NRC considers the portion of the Petition related to power reactors to be granted in part. The portion of the Petition requesting a DFI be used as the mechanism to obtain information is denied. The NRC will rely on the development and implementation of the industry initiative to ensure that the requested information is made available to the NRC, State and local governments, and the public. The NRC will revisit the need to issue a generic communication or take other action regarding power reactor licensees if problems arise with the implementation of the industry initiative or the NRC identifies additional concerns as a result of operating experience or activities such as the ongoing lessons learned task force.

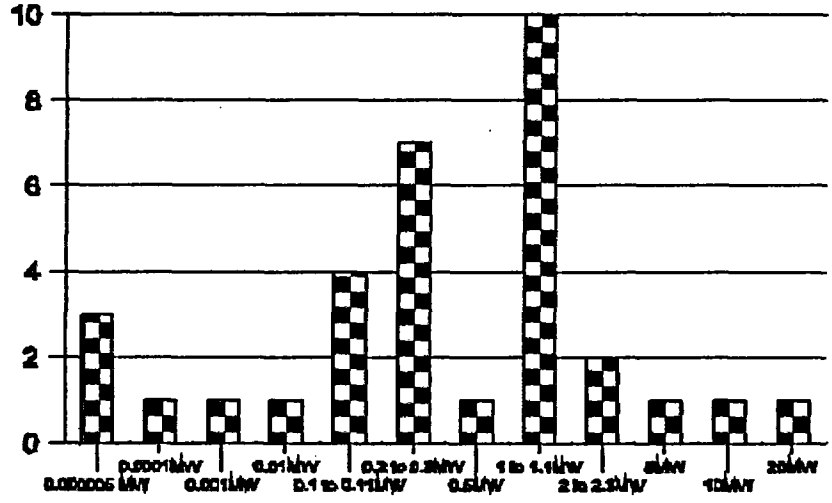
2. Research and Test Reactors

RTRs are not addressed by the industry initiative created to address the issue of groundwater contamination at operating and decommissioning commercial nuclear power reactors. The NRC staff therefore has assessed the licensed RTRs in terms of designs and operating characteristics, inventories of radioactive liquids, operating histories, and the potential for unplanned, uncontrolled releases of liquid radioactive effluents.

RTRs differ from commercial power reactors in several ways that significantly reduce the potential for and associated consequences of a release of radioactive liquid effluents. The

first is the sheer size difference, which can best be exemplified by licensed power levels. As shown in Figure 1, operating RTRs regulated by the NRC range in power levels from 5 watts to a maximum of 20 megawatts (MW). In comparison, the reactor core of a typical power reactor has a thermal power level of 3,000 MW or more than a factor of 100 greater than the power level of the highest power-level RTR.

Figure 1: Number of RTRs by Power Level



In addition, most RTRs are operated as needed to support specific research or educational needs, while power reactors are generally operated continuously between refueling and maintenance outages. Specifically, most RTRs operate for relatively short times at power levels up to the licensed power. The low power levels together with the noncontinuous operation of RTRs result in a much lower inventory of radioactive materials for RTRs than is associated with power reactors.

Another factor is that the volume of contaminated water at RTRs is much less than those routinely handled by power reactors. Further, the amount of inventory-mak eup water at RTRs to address evaporation and controlled leakage is well known and relatively small. Therefore, licensees will likely recognize even a small loss of water to the environment. This characteristic introduces a practical defense against the release of liquid effluents that supplements the environmental monitoring requirements in NRC regulations and RTR Technical Specifications. As part of the required programs, licensees assess the possibility of uncontrolled leakage of contaminated liquid and establish preventive measures and protective features.

NRC-licensed RTRs maintain radiological contamination of their liquids to a minimum (i.e., generally well below the levels allowed for release to the environment). This is accomplished by maintaining water chemistry within specified limits in these low power, low temperature reactors to minimize fuel leakage, activation, and corrosion. Further, monitoring of radioactivity levels provides acceptable assurance that actions are taken to correct any problem to keep radioactivity levels low and provides confidence in understanding the magnitude and consequences of a release if it occurs.

To ensure that radiation hazards are identified, each licensee is required to make radiological surveys necessary to comply with the regulations and to evaluate the magnitude and extent of radiation levels and concentrations or quantities of radioactive material. The

requirements and operating practices for RTRs provide assurance that radiological exposures to the public remain well below the established regulatory limits and that conditions related to a release of radioactive material would be identified, evaluated and corrected. These measures eliminate or dramatically reduce the potential for groundwater contamination, such as occurred at Brookhaven National Laboratories and power reactor facilities such as the Salem and Indian Point Nuclear Generating Stations.

Each licensee also is required to keep records of information important to the safe and effective decommissioning of the facility. Such information includes records of spills or other unusual occurrences involving the spread of contamination in and around the facility when significant contamination remains after performing the cleanup procedures or when there is reasonable likelihood that contaminants may have spread to inaccessible areas as in the case of possible seepage into porous materials. These controls and records evaluate if the facility can meet the radiological criteria for license termination in 10 CFR Part 20, Subpart E, "Radiological Criteria for License Termination."

Past operating practices and controls on some RTRs undergoing decommissioning have led to the discovery of radioactive materials outside the facility site boundaries. An example is the Plum Brook reactor previously operated by the National Aeronautical and Space Administration (NASA). The contamination near Plum Brook was discovered as part of the site characterization , decontaminatio n, and planned release of the site. Such activities have been or are being performed at the other RTRs being decommissioned to ensure compliance with the requirements 10 C.F.R . Part 20, Subpart E. Further, NRC has performed and will continue to perform confirmatory radiological surveys to ensure radiological criteria for license termination are satisfied, including radiation from potential environmental releases of licensed material. For those RTRs being maintained in a safe storage condition (SAFESTOR) prior to active decommissioning (DECON), routine monitoring, similar to an operating RTR, is

sufficient to detect a loss of inventory that might lead to an uncontrolled release of liquid effluents.

Based on the previous discussion, the NRC staff finds that NRC-licensed RTRs pose a minimal risk for a significant release of contaminated liquid effluents. We therefore believe that a DFI or other generic action is not warranted to address the control of liquid effluents at operating or decommissioni ng RTRs and deny the portion of the Petition related to RTRs. The NRC staff will conti nue to inspect fac ilities to ensure they meet the requirements for control of radioactive materials and contamination. Further, the NRC staff will conti nue to evaluate the need for site-specific and generic communications and inspections on RTRs. The NRC staff will incorporate, as needed, such discussions or inspections into its routine site-specific licensing and oversight activities.

III. Conclusion

The NRC staff shares the concerns expressed by the Petitioners. The NRC staff is addressing the concerns related to commercial nuclear power reactors that are operating or undergoing decommissioning by interacting with NEI and specific licensees. Because the industry initiative will provide the Petiti oners with the requested information, the portion of the Petition related to power reactors is considered granted in part even though the NRC will not use a DFI as the mechanism to obtain the information. The NRC denies the portion of the Petition related to RTRs because existing regulatory programs ensure that there is minimal risk for a significant release of contaminated liquid effluents and the NRC does not need additional information from the RTR licensees.

As provided in 10 CFR 2.206(c), a copy of this DD will be filed with the Secretary of the Commission for the Commission to review. As provided for by this regulation, the decision will constitute the final action of the Commission 25 days after the date of the decision unless the Commission, on its own motion, institutes a review of the decision within that time.

Dated at Rockville, Maryland, this th day of 2006.

FOR THE NUCLEAR REGULATORY COMMISSION

J. E. Dyer, Director
Office of Nuclear Reactor Regulation

2.206 Petition Dated January 25, 2006, as supplemented on February 2, 2006

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