

OCT 28 1988

In Reply Refer To:
Dockets: 50-72/88-01
50-407/88-01
EA 88-64

Dr. James J. Brophy
Vice President of Research
University of Utah
Salt Lake City, Utah 84112

Gentlemen:

Thank you for your letters of August 4 and August 25, 1988, in response to our Order and Notices of Violation and Deviation dated July 8, 1988. Our letter described violations and a deviation that were found during an NRC inspection conducted at your facility during February 16-19, 1988. You were also requested to respond to several open items addressed in the inspection report.

After careful consideration of your response which included denial of certain violations, and for the reasons given in the enclosures to this letter, with the current exception of Violation 5.c, we have concluded that the violations did occur as set forth in the Notice of Violation. Your response to Violation 5.c is still under review. Your proposed corrective actions for the violations and deviation appear adequate to prevent recurrence of the problems.

Sincerely,

ORIGINAL SIGNED BY
ROBERT D. MARTIN

Robert D. Martin
Regional Administrator

Attachments:
Enclosure 1 - Non-Proprietary
Enclosure 2 - Proprietary

cc:
Utah Department of Health
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DOCUMENT CONTAINS
PROPRIETARY INFORMATION

cc's continued: (see next page)

RIV: FRPS: RPB
DChaney

C: FRPS: RPB
RBAer

C: RPB
BMurray

D: BRSS
RBengart

EGS
GSanborn
10/28/88

RA
RMartin
10/28/88

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University of Utah

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DMB - IE-01

bcc w/enclosures 1 and 2:
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RIV File
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RPB-DRSS File
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bcc w/ enclosure 1 or ly:
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Lisa Shea, RM/ALF
MIS Coordinator
RSTS Operator
DRS
R. Hall-DRSS

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ENCLOSURE 1

In the August 4 and August 25, 1988, responses to the Order Modifying Licenses and Notices of Violation (NOV) and Deviation (NOD) issued July 8, 1988, the licensee admits certain of the violations and the deviation, but denies certain violations in whole or part, and provides reasons why they believe that portions of the Notice of Violation should be retracted. Provided below are: (1) a restatement of each violation contested by the licensee, (2) the licensee's response, and (3) the NRC's evaluation of the licensee's response and the NRC's conclusion.

1.A Restatement of Violation 2

TRIGA Technical Specification 6.8 requires that written operating procedures shall be adequate to ensure the safety of operation of the reactor, and that procedures shall be developed as a minimum for core changes and performing preventative maintenance on the reactor and associated equipment.

Contrary to the above, the NRC inspectors determined on February 18, 1988, that during December 1987 the licensee had shuffled fuel and performed maintenance on the core's trapezoidal heavy water (D₂O) tank without adequate written procedures. During reactor startup operations on January 4, 1988, following the December 1987 maintenance, an unexpected criticality was experienced due to the lack of a proper startup procedure and the reactor operator's lack of knowledge regarding recent core changes involving fuel movements and installation of the improperly reassembled D₂O tank in the core.

Summary of the Licensee's Response

The licensee denies that the heavy water tanks were handled without the use of adequate procedures and that the shuffling of the reactor's fuel was the most likely reason that the reactor "prematurely went critical." The licensee revised the heavy water tank handling procedure to provide additional instructions on maintenance activities. The licensee also revised the TRIGA reactor startup checklist to require the review of maintenance logs for any core alterations since last operation that may affect reactivity.

NRC's Evaluation of the Licensee's Response

The licensee's response contends that a procedure, approved in 1982, for handling the heavy water tanks does not address the wet or dry tubes and whether or not they need to be installed. Based upon the licensee's calculations of reactivity worths, it appears that the exclusion of the tubes would have a negligible effect on reactivity. The licensee does not address the issue that the reactor operator, whose operating log entries on the premature criticality and subsequent SCRAM of the reactor which prompted inspection of this event by the NRC, was not made fully cognizant of the reactor core modifications (including fuel shuffling) and the effect these changes would have on the approach to reactor criticality. Adequate written procedures should have required that the

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reactor operator be informed of the reactor core modification prior to reactor startup. The licensee's August 25, 1988, response provided additional assurance to the NRC that, in the future, reactor operators would be more alert to core alterations prior to reactor startup. The licensee has not provided sufficient information to warrant withdrawal of the violation. Therefore, the violation remains as proposed.

1.B Restatement of Violation 3

10 CFR Part 20.201(a) states, in part, that "As used in the regulations . . . 'Survey' means an evaluation of the radiation hazards incident to the . . . use, release, disposal, or presence of radioactive materials or other sources of radiation under a specific set of conditions. When appropriate, such evaluations include a physical survey of the locations of materials . . . and measurements of levels of radiation . . . present." Part 20.201(b) requires, in part, that "Each licensee shall make or cause to be made such surveys as (1) may be necessary for the licensee to comply with regulations . . . (2) are reasonable under the circumstances to evaluate the extent of radiation hazards that may be present."

Contrary to the above, the NRC inspectors determined by independent surveys on February 17, 1988, that a part of the TRIGA reactor pneumatic sample transfer system had gamma radiation levels at contact, near one end of the apparatus, of approximately 120 millirem per hour (mr/hr). Licensee documentation showed that the rabbit terminus was removed from the reactor core and surveyed on February 1, 1988. The licensee's results indicated that the rabbit terminus had gamma radiation levels of only 18 mr/hr on contact.

Summary of the Licensee's Response

The licensee considers their radiation survey techniques to be consistent with their ALARA policy, especially for the surveyor, and 10 CFR Part 20.201(b) does not require surface measurements. In the August 25, 1988, response, the licensee has committed to revise the Facility Operations Manual, by September 5, 1988, to include instructions for the performance of detailed contact dose rate measurements on components removed from the core that are not subsequently (immediately) placed in a shielded container.

NRC Evaluation of the Licensee's Response

Even though the licensee admits that a Senior Reactor Operator did obtain and document a surface dose rate measurement on the component, the licensee fails to explain why the surveyor was not knowledgeable as to where the highest dose rate on the component may exist. Since the licensee's surface dose rate measurement (documented in the maintenance log) was approximately one seventh of the highest accessible dose rate on the components, and the component was not specifically shielded or posted to indicate this "hot spot" of radiation, the licensee's survey cannot be considered adequate or consistent with good ALARA practices to protect

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Enclosure 1

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facility personnel from unnecessary exposure. Based on the licensee's ALARA philosophy regarding the conduct of radiation surveys, it would be appropriate to expect that if further work were required to be performed on the component that the radiological controls would be based on the documented survey results in lieu of obtaining a more comprehensive survey of the component. The licensee's reliance of a single posting of a radiation area cautionary sign at the entrance door, apparently in lieu of an adequate survey, cannot be construed as sufficient to properly inform the worker/public of radiological hazards in the reactor space (see NRC Inspection and Enforcement Notice No. 84-82 "Guidance for Posting Radiation Areas" which was sent to all research and test reactors). The licensee has not provided sufficient information to warrant withdrawal of the violation. Therefore, the violation remains as proposed. The licensee's corrective actions addressed in the August 25, 1988, letter appear to be satisfactory to prevent recurrence of the violation.

1.C Restatement of Violation 5

See Enclosure 2.

2. NRC Conclusion

The licensee's statements with respect to each violation have been fully considered. After careful consideration of the licensee's responses, the staff has concluded that the violations (excluding 5.c) did occur as set forth in the Notice of Violation and that the violations will not be withdrawn. Your response to Violation 5.c is still being reviewed and you will be appraised of our findings by separate correspondence at a later date.

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