

Official

JUL 18 1988

Georgia Institute of Technology
ATTN: Dr. J. P. Crecine, President
225 North Avenue
Atlanta, GA 30332

Gentlemen:

SUBJECT: RESPONSE TO QUESTIONS CONCERNING INSPECTION REPORT NO. 50-160/87-08

This is in reference to (1) the letter dated May 13, 1988, which responded to NRC concerns regarding progress toward renewed operation of the Georgia Institute of Technology (Georgia Tech) Research Reactor, and (2) the letter dated June 13, 1988, asking specific questions concerning recent NRC actions.

It appears from the May 13, 1988, letter that NNRC management may still be focusing their attention on specific issues and individuals involved with the August radioactivity contamination event rather than evaluating the program and management controls over the program that allowed the specific event to occur. The fact that the event had minor radiological consequences is fortuitous. The event, in and of itself, showed management and program weaknesses that are slowly being addressed by Georgia Tech. Further, the Order issued on January 20, 1988, requires an evaluation of the management controls that allowed this situation to exist.

The information received thus far indicates that many of the identified problems relate to issues that are "proximate" causes. We believe the "ultimate" or "root" cause is a weakness in management controls and programs at your facility. The information we have received from Georgia Tech to date does not recognize that this root cause exists which causes us to question the long-term effectiveness of any corrective actions. Thus, we find this submittal to be inadequate.

Surprisingly, the questions in the letter of June 13, 1988, and the content of the interim report both indicate that NNRC management's investigation into, and understanding of, the event were apparently somewhat superficial. The questions indicate a lack of full discussion with facility staff and also an inadequate assessment of the consequences of the contamination event. Enclosure 1 is a general response to the questions. Enclosure 2 is a response to the specific questions.

If you have any questions on the above, or the enclosures to this letter, I would appreciate it if you would contact me personally for resolution.

Sincerely,

Original signed By

J. Nelson Grace
Regional Administrator

Enclosures: (see page 2)

8808010314 880718
PDR ADOCK 05000160
Q PDC

1/1
IE01

Enclosures:

1. General Response to Questions
2. Response to Specific Questions

cc w/encls:

✓ Dr. T. E. Stelson, Senior Vice President
for Research
Dr. R. A. Karam, Director
✓ Neely Nuclear Research Center

bcc w/encls:

DRS, Technical Assistant
Document Control Desk
State of Georgia

bcc w/o encls:

✓ License Fee Management Branch

RII <i>smc</i> for GKuzo 6/30/88	RII <i>mc</i> CHosey 6/30/88	RII <i>mc</i> DCollins 6/30/88	RII <i>MC</i> JPStohr 6/15/88	RII <i>mc</i> PFredrickson 6/30/88	RII <i>mc</i> DVerrelli 6/30/88	RII <i>mc</i> LReyes 6/30/88
RII <i>GR</i> GJenkins 6/15/88	RII <i>GR</i> MErnst 6/18/88					

ENCLOSURE 1

General Response

The June 13, 1988, letter appears to question the conclusions concerning the degree of contamination of the reactor building in Inspection Report 50-160/87-08, since the August 19, 1987, survey result showed only minor contamination (100-200 cpm) in a small area of the reactor building floor. (The August 1987, survey document did not show contamination on the catwalk, the second floor, or on the first floor except for a 10 square foot area.) This apparent lack of understanding, at this time, of the circumstances associated with this event is quite surprising. It should be clearly understood that:

- (1) The referenced August 19, 1987, documented survey gave the initial indication of contamination above normal; it was not a documentation of all of the surveys of the reactor building associated with the radioactivity contamination event. Licensee personnel (operations and health physics) stated that after noting the widespread contamination, they began to survey and decontaminate areas without recording results.
- (2) Surveys for contamination were conducted throughout the NNRC. The contamination was indicated to be spread in discrete locations over approximately one-third of the building area.
- (3) Licensee personnel stated that the catwalk approximately 60 feet from the top of the reactor shield was contaminated.
- (4) Licensee personnel and the Director, NNRC, stated that the Director, NNRC, was directly responsible in overseeing the decontamination effort over large areas of the facility.
- (5) Licensee personnel stated that during decontamination efforts, the personal clothing (pants) of an operator involved were contaminated to levels exceeding release limits.
- (6) One additional record showed smearable contamination of 20 mrem/hr.
- (7) When records are incomplete, interviews of personnel must be utilized to provide missing information.

ENCLOSURE 2

Response to Specific Questions

1. Did the Manager of the Office of Radiation Safety (MORS) or other Office of Radiation Safety (ORS) personnel in fact inform the Radiation Specialist Inspector of the existence of the August 1987, survey document or its contents?

At no time during the inspection did licensee personnel provide a copy of the survey to the inspector and inform him that this survey documented the extent of contamination after the August event.

The August 19, 1987, survey document was not reviewed by the inspector until after the January 22, 1988, exit interview. Licensee personnel informed the NRC that this survey document recorded the routine surveys conducted up to and including the initial finding of contamination within the reactor building, but did not include the specific details regarding the subsequent surveys conducted during decontamination efforts. Licensee personnel, both operations and health physics (HP) staff members, stated that they conducted additional contamination surveys, including the top of the reactor shield, areas of the reactor building floors and equipment located there, and other building areas such as the corridors and access point leading into containment of the Neely Nuclear Research Center (NNRC). The inspector specifically asked for these survey results. The inspector was informed that when a contaminated area was found, the area was immediately decontaminated without recording the survey results. Initially, there may have been a misunderstanding between the inspector and MORS regarding the information requested, the information available, and the final records provided to the inspector for review. At no time during the inspection did the MORS appear to deliberately withhold information as noted by the availability of other pertinent data, for example, air sampling records and memoranda detailing the contamination event, which were provided to the inspector.

The failure to document the detailed survey results was attributed to both operations and HP licensee staff. The extent of surveys should have been known by the Director, NNRC, who was responsible for and observed the decontamination efforts in progress. Although the Director, NNRC, was responsible for the decontamination activities, at no time during the onsite NRC inspection did he present the August 19, 1987, survey results. Neither did he provide any additional information, either qualitative or quantitative, regarding other surveys conducted and which indicated the extent of (or absence of) contamination levels measured. It should also be noted that the person responsible for decontamination activity in the reactor building (Director, NNRC) limited access to the area for an extended period of time.

2. Did the inspector ask to see all pertinent records and if so were they provided to him for his inspection?

The inspector requested of all licensee personnel (operations, HP, and the Director, NNRC) to provide any information which would assist in properly evaluating the cadmium contamination incident. Data reviewed and discussed with HP personnel included the radiological analyses of air samples collected within the reactor building for August 1987, routine radiation survey levels in the reactor building, post-decontamination survey records, and memos relating to the building and personnel contamination surveys. The inspector was informed by HP and operations personnel that, although they did perform decontamination work, data indicating the measured radiation survey results were not recorded because personnel were involved in decontamination activities and failed to record the measured survey results as the work progressed.

In addition, on January 14, 1988, both the radiation specialist and the NRC Region II Section Chief discussed explicitly with the Director, NNRC, the importance of obtaining, either from himself or his staff, all data relating to the August incident. The Director stated that the NRC would be provided with all data. The rationale for detailing the NRC concerns to the Director, NNRC, and requesting his input in gathering all facts regarding the August event is outlined below.

The Director, NNRC, stated to NRC personnel that he previously had evaluated the August spill himself when it had occurred, had been responsible for decontamination activities, and had informed the campus radiation safety officer (RSO) of the incident. In addition, the inspector was informed by staff and the Director, NNRC, that the Director observed the decontamination activities. Given the above information, the inspector concluded that to complete the evaluation of the event, the Director had reviewed all pertinent survey documents. At no time during the inspection did the Director, NNRC, take exception to the inspector's comments regarding the spread of contamination nor did he volunteer the August 19, 1987, survey data.

Throughout the onsite inspection period (December 16, 1987 through January 22, 1988), the Director, NNRC, was aware of the NRC's concern regarding the extent of contamination and was requested to provide all data necessary to evaluate the August incident. At no time during the inspection, including the January 22, 1988, exit interview, did the Director, NNRC, provide the August 19, 1987, survey results. Thus, the NRC concluded that all pertinent records had been provided.

3. If the Radiation Specialist Inspector did not see the August 19, 1987, smear survey as claimed by the Deputy Regional Administrator and Section Chief responsible for GTRR, how could the description of the survey results (as described in Inspection Report (IR) 50-160/87-08) appear in the report? It is clear that the information could not have come from facts provided by NNRC at the related Enforcement Conference, since that conference was not referenced in the IR.

The August 19, 1987, survey results were presented to the local news media following the January 22, 1988, exit interview. Following the exit interview, the Region II Georgia Tech Research Reactor (GTRR) Section Chief telephoned the Director, NNRC, and requested the document for review. The documents were transmitted to NRC Region II (as an attachment to a letter dated January 22, 1988), by the Director, NNRC. Thus the surveys were made available to and reviewed by the radiation specialist prior to the February 23, 1988, Enforcement Conference, contrary to what is stated in the June 13, 1988, letter from the Director, NNRC. Furthermore, the presentation of these surveys to the media following the January 22, 1988, exit interview and their subsequent submittal to the NRC Region II Office resulted in their review and inclusion as part of IR 50-160/87-08, dated February 10, 1988.

4. What documents contained the above referenced 100-200 cpm above background levels on the containment (main) floor.

The forms provided by the licensee to the NRC following the January 22, 1988, exit interview. Specifically, Form RS-51, Daily Masslin Survey Report, August 1987, indicated that for Area 7 on August 19, 1987, count rates approximately 100 to 200 counts per minute (cpm) above background were measured. These quantitative results were for routine surveys conducted by a student HP technician.

The existence of elevated contamination levels was discussed by licensee staff prior to the inspector's review of the survey results. During interviews of the operations and HP staff, selected survey results were described as ranging from measurable to approximately 22 millirem per hour (mrem/hr). Both operations and HP staff stated that contaminated areas were located in the main reactor building which required more detailed surveys and decontamination activities which were not recorded. These contamination levels never were specifically quantified but were described as "measurable," that is, detectable above background.

5. Which documents contained the followup surveys?

Page 6, Paragraph 3, of IR 50-160/87-08 specifically states "Discussion with cognizant licensee health physics staff indicated that ... the reactor shield." The inspector interviewed all personnel involved in the decontamination activities including operations, HP, and the Director, NNRC, and all stated that because of the contamination event and subsequent decontamination activities, followup surveys of personnel and areas within the NNRC were conducted. Both operations and HP staff

discussed with and showed to the inspector during tours of the facility, those areas where they had performed surveys and subsequent decontamination activities. Several of the areas requiring followup surveys and decontamination efforts were corroborated between the operations and HP staff, including an operations staff member who stated that he had to decontaminate an area of the catwalk across from the top of the reactor shield.

6. Were any results conveyed verbally (without contemporaneous official documentation backup) to the Radiation Specialist Inspector?

See response to Question No. 5.

By whom?

See response to Question No 5.

What results?

NNRC staff stated that surveys indicating contamination ranged from measurable up to 20 mrem/hr. During discussion of the contamination levels, excluding the 20 mrem/hr reading, both operations and HP staff referred mainly to elevated or measurable contamination levels for areas within the reactor building where contamination was reported. Excluding several memoranda detailed in IR 50-160/87-08, both operations and HP staff were unable to provide written records of the contamination levels they measured. For example, operations personnel conducted decontamination activities on top of the reactor shield in the area designated by the licensee to be the location of the August spill and also to have the highest contamination levels. However, no detailed records of the survey results used to properly conduct decontamination activities were maintained.

Details corroborating licensee statements were provided in the August 19, 1987, survey record and subsequent memoranda from the HP staff to the Director, NNRC. For example, a survey indicating 20 mrem/hr was documented for a Masslin wipe survey conducted by a HP student technician which was recorded in a personal log book and also detailed in a memorandum (Boyd to Karam, August 20, 1987) reviewed by the radiation specialist inspector. Additional documented survey results were noted for contamination levels at the storage cask which remained elevated following decontamination efforts (memorandum, dated August 27, 1987, Sharpe to Karam).

7. Given the obvious conflict between the inspector's determination and the August 19, 1987, survey, how and based on what information did the inspector determine that approximately one-fourth to one-third of the reactor containment building had measurable contamination?

There is no obvious conflict between the inspector's determination and the August 19, 1987, survey. This referenced survey, because it was incomplete, was not used to estimate the area of contamination. As stated in the previous responses, the August 19, 1987, record only indicated results of the routine surveys conducted up to the point in time when definite contamination was observed. For example, survey data indicating the extent and levels of contamination on top of the reactor shield, an area that the Director, NNRC, HP, and operations staff knew to be contaminated (memorandum from Boyd to Karam, dated August 20, 1987) and which required extensive decontamination effort following the August incident were not recorded on the August 19, 1987, survey. Furthermore, the August 19, 1987, survey results would not be used to estimate the extent of contamination because these routine surveys only monitored a small area of the reactor building containment floor, each area surveyed was not drawn to scale on the data sheets, and the surveys appeared to be conducted for locations near the shield wall of the reactor. Results of surveys for floor areas near the outer reactor building wall and equipment located on the main floor were not listed on the survey. Thus, the inspector was required to use interviews of operations and HP staff to determine the extent of contamination as described.

As previously stated, the Director, NNRC, was responsible for decontamination efforts; however, he was unable to provide any qualitative or quantitative survey data. Furthermore, the Director never provided information regarding the inspector's concerns of the extent of contamination nor did he initially take exception to the NRC's comments during the inspection.

8. What amount of measurable contamination was found?

See response to Question No. 7.

By whom?

All personnel interviewed at the NNRC indicated that the contamination above background was measured in various locations of the reactor building.

9. Is the NRC aware of any supporting documents which indicate contrary to our best information, that the catwalk, the control room areas of the main floor or any other area of the main floor (other than area #7) required decontamination.

It is not at all clear as to what is meant by the phrase "contrary to our best information" given the full awareness of the NNRC staff and involvement of the Director in the decontamination efforts.

The inspector was informed by licensee representatives that results of surveys associated with decontamination efforts in the aforementioned areas following the August incident were not recorded. IR 50-160/87-08

noted an apparent violation for a failure to maintain appropriate records for surveys.

However, interviews with operations and HP staff members indicated that operations personnel physically decontaminated the reactor shield top, reactor building floor, and an areas of the catwalk across from the reactor shield top. In fact, the Director, NNRC, knew of this operator's involvement as it was discussed during the February 23, 1988, Enforcement Conference. In addition, both HP and operation staff stated to the inspector that locations in the reactor building other than Area 7 on the August 19, 1987, survey record, were determined to be contaminated with cadmium and were subsequently cleaned.

10. Are there any documents which support the numbers provided in the memorandum from the MORS?

The NRC has not reviewed documents which could support nor refute the numbers stated. Furthermore, comparison of the 400 cpm contamination results (memorandum, Boyd to Karam, dated August 20, 1987) should not be compared to the 100 cpm background results (letter from Karam to Grace, dated June 13, 1988). For example, the 400 cpm was for a qualitative wipe of a large area, whereas the referenced 100 cpm may represent a wipe collected over a 100 cm² area. Additional data of the area surveyed, instruments used and their associated efficiencies, and the actual sample locations would be necessary to properly evaluate the numbers presented.

11. Did RII or the Office of Investigations (OI) investigate the possibility of personnel of the ORS deliberately misleading NRC inspectors as to the impact of the August spill?

It would be inappropriate for NRC to comment on possible ongoing investigative activity, especially to confirm or deny the specific focus of such investigations. This standing policy ensures that investigations are pursued under the best possible conditions.

12. Did RII make any attempt to independently verify (for example, through the use of official records, required by the NRC to be maintained by the licensee) just how accurate or inaccurate the information provided by personnel of the ORS was?

The NRC did request that all written information pertaining to the August 1987 event be provided to the NRC, in order to better support the interviews of the operations and health physics personnel. The NRC has substantial reason to believe, based on the actions of the entire NNRC staff after the August, 1987, event, that oral information provided by the ORS staff regarding the contamination in the reactor building was correct. In fact, the information provided orally was consistent with the limited available documentation.

Enclosure 2

13. If such an investigation was performed, when was it done and what were its findings?

It would be inappropriate for NRC to comment on possible ongoing investigative activity, especially to confirm or deny the specific focus of such investigations. This position ensures that investigations are pursued under the best possible conditions.

14. The regulations in 10 CFR 2.201 and 2.202 appear to provide opportunity for the licensee to answer charges raised under any pretense and regardless of accuracy. What chain of reasoning caused RII and the NRC to issue an Order to Modify rather than an Order to Show Cause as is required by the regulations?

This question only addresses 10 CFR 2.201 and 10 CFR 2.202 and ignores or overlooks 10 CFR 2.204, "Order for Modification of License," which is the regulatory basis for the Order that was issued on January 20, 1988. Regarding the complaint that Georgia Tech was not afforded an opportunity to "answer charges," the January 20, 1988, Order specified that the licensee "may request a hearing on this Order within twenty days of its issuance." Also the licensee erroneously cited Section 2.201(c) as 2.202(c) and cited Section 2.202(b) as 2.202(a)(6).

Regarding the chain of reasoning, it was apparent to the NRC that the August contamination event occurred because of lack of management controls over the conduct of irradiations. Also, the event initially went undetected, and subsequent documented surveys of the scope of the event were sparse. This indicated a lack of management controls over the assessment of the consequences of the event, further exacerbated by lack of management corrective actions to improve future operations. It is true that the NRC's judgement is that the particular contamination event in August did not represent a significant threat to public health and safety. However, the purpose of the order was not punitive -- it was imposed only to avoid possible future misoperations of more consequences to public health and safety and to send a clear message to Georgia Tech that future irradiations would not be permitted unless suitable enhancements in management controls were implemented.

15. Is it policy and practice of the NRC to assume guilt or were these utterances unauthorized and mistaken impressions?

The policy of the NRC has always been to expect a licensee to meet the appropriate requirements of its license and operate the facility in a safe manner. Inspections are conducted to verify whether the facility is being operated safely and in accordance with its license. During this inspection process, if problems are identified, they are brought to the attention of the licensee. Thus, the inspection process has as its basis a presumed "innocent" philosophy; but, of necessity, information obtained is evaluated objectively to determine whether problems appear to exist. In the case of an enforcement conference, where the NRC does have information that shows that there is an apparent safety problem or

violation, the NRC expresses the concerns to be discussed. Among the issues to be discussed are the items of noncompliance; and there is a presumption of guilt at this stage to the extent that, unless new information is provided that alters our initial judgement on the issues, there will be a conclusion that the violations occurred. One of the purposes of an enforcement conference is to provide a licensee the opportunity to clarify any misunderstanding concerning the information associated with the apparent violation. Our conference summary dated March 14, 1988, clearly identified concerns with management control of health physics and operation programs.

It is difficult, based on the information you provide, to assess whether the alleged statements were made in the above context. If not, we would appreciate further information on this subject.