

17487

RELATED CORRESPONDENCE

UNITED STATES OF AMERICA  
NUCLEAR REGULATORY COMMISSION

ATOMIC SAFETY AND LICENSING BOARD

Before Administrative Judges:

Charles Bechhoefer, Chairman  
Dr. Jerry R. Kline  
Dr. Peter S. Lam

DOCKETED  
USNRC

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OFFICE OF SECRETARY  
DOCKETING & SERVICE  
BRANCH

In the Matter of

Docket No. 50-160-Ren

ASLEP No. 95-704-01-Ren

GEORGIA INSTITUTE OF TECHNOLOGY  
RESEARCH REACTOR  
Atlanta, Georgia  
Facility License No. R-97

GEORGIANS AGAINST NUCLEAR ENERGY PERFECTED RESPONSES TO  
NRC INTERROGATORIES AND REQUEST FOR PRODUCTION OF DOCUMENTS  
AND RESPONSES TO GEORGIA TECH'S DISCOVERY REQUESTS

Georgians Against Nuclear Energy (GANE) respectfully submits the following updated responses to NRC discovery requests on GANE's management contention. Following the updates to the NRC are updated answers to Georgia Tech's interrogatories and discovery requests.

GANE has an outstanding Motion to Compel filed with the NRC seeking to have access to files pertaining to Rebecca Long. We will add to our discovery answers any pertinent information contained therein when we have had the opportunity to review the files.

GANE has become aware of more communication from Dr. Brian Copcutt to the Director of the Neely Nuclear Research Center than we have thus far been able to obtain and which may be germane to our contention. We assume we must file a discovery request with Georgia Tech and if that fails, subpoena the documents from Dr. Copcutt.

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It has been a big week at the Georgia Tech Research Reactor! Friday, February 16, 1996, the site at 900 Atlantic Drive in downtown Atlanta was swarming with heavy equipment - trucks, cranes, casks, drills and police cars. As of Tuesday, February 20, NRC and Georgia Tech statements are that all fuel has been removed. To where - no comment. Georgia Tech has contacted GANE concerning our request to enter and inspect in the interest of arranging a time that works for everyone. GANE will be accompanied by NRC Inspector Rebecca Long and former reactor operator for the Georgia Tech Research Reactor, Dave Cox. Although our request dealt with other fuel sources than the 17 fuel rods most recently used in the reactor core, it appears that the timing of our discovery inspection will enable us to verify the fuel removal committed to by Georgia Tech during the appeal process last summer. This upcoming opportunity quiets our previously stated paranoia that Georgia Tech was playing semantic games with the fuel removal.

GANE makes a special request for consideration of the schedule of Georgia Tech students in establishing a time for the public hearing. In consultation with Dieter Vandenbusche, Chair of The Environmental Forum, a Georgia Tech student group, we concur that the weeks prior to and during exams are weeks when students would be hard-pressed to attend a public hearing. We further agree that the Georgia Tech population, student, faculty and staff, are the most affected population and should be given every consideration to facilitate their attendance at the hearing. The week of May 20-24 was identified as the last possible week prior to the Olympics in which it would be favorable to the Georgia Tech population to hold a hearing. GANE is open to the hearing's being held on Georgia Tech campus. We are enthusiastic supporters of limited public appearances, and feel that a session of at least two hours in length must be offered on one evening since so many people have jobs they must attend during business hours.

It was very interesting talking with many previous employees of the Neely Nuclear Research Center in an effort to fulfill our obligation to the NRC and Georgia Tech with complete discovery answers. We feel compelled to offer some of the anecdotal "evidence" that emerged from the exercise. It seems that hostile factions run through, at least, the history of the past 10 years. There was consensus that the cobalt-60 is much more dangerous than the reactor. Another comment that was made so often that it inspires this otherwise extraneous paragraph is

the perception that the only options lying before the Georgia Tech Research Reactor are either continued operation or a \$20 million price tag for decommissioning. GANE would like to state for the record that we are opposed to decommissioning on its face and would push to uncover other options. Although carving up the reactor building and sending it to Oak Ridge, Tennessee, or Savannah River Site in South Carolina, so-called national sacrifice zones, may seem innocuous given the relatively small scale of the GTRR - GANE is patently opposed to that approach for Georgia's other nuclear plants, Vogtle and Hatch. It is our position that the GTRR can provide useful research into guardianship and other nuclear waste options.

Herewith, GANE's new, improved discovery responses.

#### GANE RESPONSES TO NRC CONTENTION 9 DISCOVERY REQUESTS

21. Identify and describe all facts in your possession or within your knowledge that supports GANE's contention or assertion.

**Response:** GANE presently supports its contention that management problems at the Georgia Tech Research Reactor are so great that safety for the public cannot be assured by the following:

3/9/87 - NRC cites Georgia Tech for violations for failure to have operating procedures for sampling of the liquid waste tanks and failure to follow health physics and surveillance procedures. Methods being used would allow tritium and cobalt-60 to be released into Atlanta sewer system. (NRC Inspection Report 87-02)

5/4/87 - Georgia Tech Research Reactor Director has conference with NRC outlining actions being taken to improve management controls over operations and health physics at the facility to assure its safe operation.

6/10/87 - Dr. Melvin W. Carter, chair of the Radiation Protection Committee, an international radiation consultant and previous president of both the National Health Physics Society and the International Commission on Radiation Units resigns "as a matter of conscience and principle" finding changes in management structure "completely contrary to health physics practice." The Radiation Protection Committee was abolished leaving only the Nuclear Safeguards Committee. (Technique, 11/20/87) ATTACHMENT #1

7/1/87 - Director (Dr. Ratib Karam) of Georgia Tech Research Reactor is placed over Health Physics personnel at the facility. Previously the Office of Radiological Safety had supervised HP personnel and

had independent status, reporting directly to the Vice President for Research of Georgia Tech. This and the abolition of the Radiation Protection Committee contribute to the degradation of management control of the safety of the facility and its operations.

8/18/87 - Gemstone irradiation accident, the notorious cadmium-115 contamination incident in which a reactor operator (Bill Downs) rode a MARTA bus wearing contaminated clothing and may have contaminated his apartment. Discovery of the accident led to the reactor being shut-down for nearly one year. The accident happened as a result of operators ignoring unexpected high dose rates recorded in the initial experiment. Off-site contamination may have been prevented if exit monitoring for radiation contamination had been performed. Reactor Director delayed reporting the incident to the NRC. Operator failed to monitor area where accident occurred - "the breathing zone." Experiment conducted improperly in absence of health physics personnel. Further, the Health Physics department was not informed of the accident which was discovered the following day through elevated routine readings of background radiation. The NRC Investigation Report questions whether incomplete, inaccurate and incorrect records of the incident are from laziness, ignorance and incompetence or active deceit. Hostilities escalate between Operations and Health Physics personnel in the wake of the incident and management cover-up. HP personnel involved (Steve Millspaugh and Paul Sharpe) were fired, it was generally felt by other reactor personnel, as reprisal for going to the NRC. (Georgia Tech eventually reinstated Millspaugh and Sharpe in other departments at the University.) (NRC Investigation Report 87-08)

1/20/88 - NRC issues order for immediate suspension of all reactor operations.

2/16/88 - Nuclear Safeguards Committee minutes. In Item #6 a question was raised regarding the lack of any previous intimation of the Health Physics personnel's incompetence over the past many years of reactor operation. It was suggested that NRC slackness made incompetence hard to detect! Item #7 concerned the delay in reporting the cadmium incident to the NRC. Director "conceded possible mistakes on parts of all concerned." John Crecine, President of Georgia Tech forwarded a flow chart of the chain of command to attach to the minutes. The text of Dr. Crecine's letter is not consistent with the flow chart. The flow chart gives the Manager of the Office of Radiation Safety no direct access to anyone



except the Director of the Neely Nuclear Research Center or the Nuclear Safeguards Committee. The letter states: "For urgent, dangerous, or unresolved situations of importance, the Office of Radiation Safety has an obligation to report and inform their direct supervisor, the Director of the Neely Nuclear Research Center, and/or the Vice President for Research, and/or the President."

ATTACHMENT #2

- 3/1/88 - Georgia Tech completes decommissioning of the AGN-201 reactor by shipping U-235 fuel back to Oak Ridge. An element containing approximately 29 grams of U-235 is missing. Ed McAlpine, Region II NRC Nuclear Materials Chief, informed Glenn Carroll of GANE on 11/15/95 that the conclusion of the matter (of which GANE can find no official record) was the opinion that the material was never actually delivered to Georgia Tech in the first place.  
(Correspondence - Georgia Tech to NRC 3/1/88)
- 3/1/88 - Nuclear Safeguards Committee minutes. R.M. Boyd letter presents concerns about safety of hot cell/storage pool and frequent transfer of up to 600,000 curies of cobalt-60. Boyd recommends that operations should be terminated.
- 4/6/88 - Nuclear Safeguards Committee minutes. GANE notes the absence R.M. Boyd. Committee informed by Theragenics of spill of Pd-103.
- 4/22/88 - Nuclear Safeguards Committee minutes. GANE notes the absence R.M. Boyd.
- 5/88 - R.M. Boyd transfers to Georgia State University where he was Radiation Safety Officer until 9/1/95 when he stepped down as RSO. Mr. Boyd continues to consult part-time to the new RSO at Georgia State.
- 7/1/88 - 9/1/88 - NRC cites Georgia Tech for failing to provide adequate written procedures for radioactive contamination control of liquid waste. (NRC Notice of Violation 12/24/88)
- 9/30/88 - Nuclear Safeguards Committee minutes. H. Edwards and T. Thomas resign from Committee. Director invites anyone else who wants to resign to do so.
- 10/14/88 - Nuclear Safeguards Committee minutes. Committee discusses concerns about people eating, drinking, smoking in areas where radioisotopes are kept. Non-controlled access to radioisotope storage areas is a problem. The Committee asks the Director for recommendations. GANE notes that if the Committee followed up on this issue it was not recorded in the minutes.

11/15/88 - NRC cites Georgia Tech for violations related to cadmium-115 accident finding significant deficiencies in management control of operations at the facility. Failures included failure to follow approved procedures, failure to have adequate procedures for conduct and control of experiments and for radiological safety activities, failure to conduct adequate surveys, and failure to evaluate the extent of radiological hazards. The NRC Investigation found perceived harassment by management and retaliation for discussing safety concerns with the NRC but lacked evidence to issue a citation. Georgia Tech was strongly rebuked in the 11/15/88 letter from Malcolm L. Ernst, NRC Acting Regional Administrator, and assessed a penalty that was "escalated 100 percent because of your prior poor performance in adherence to procedures and radiological controls, and because of your failure to take prompt corrective action to deal with management control problems." (NRC Inspection Report 87-08)

11/20/88 - NRC orders Georgia Tech to cease irradiation experiments until further notice.

12/24/88 - NRC cites violations for improper calibration of the Kanne exhaust gas monitor and the GM gas monitor which measure the air emissions of the reactor to the environment. As a result of the incorrect calibration of the monitors, Georgia Tech failed to perform quantitative radioisotopic analyses required in order to know the amount of air-borne radiation to which the populations of Georgia Tech and Atlanta have been exposed. (Notice of Violation date 12/24/88)

1989 - NRC cites Georgia Tech Research Reactor for violations: failure to perform proper containment building leak tests and for operating shim blade insertion and withdrawal in a manner that could have led to a uncontrolled criticality. Georgia Tech did not perform the building leak test (essential to record the amount of radiation leaking to the environment and public) correctly because it had no instructions for analyzing data. Specific leak-rate criteria were missing as well and neither the Director nor the Manager of the Office of Radiation Safety were aware they needed them. NRC concluded after reviewing entries in the logbook concerning the shim blade problem that the operator had no understanding of what was happening with the shim blades. (NRC Inspection Report 89-02)

3/30/89 - Nuclear Safeguards Committee minutes. Director requests that the Health Physics Procedures Manual be eliminated.

4/28/89 - Nuclear Safeguards Committee minutes. Committee approves elimination of Health Physics Procedures Manual. Confuses Celsius and Fahrenheit.

6/30/89 - Nuclear Safeguards Committee minutes. Kahn asks to put on next agenda mechanism for revocation of unescorted access to the reactor security zone. GANE notes that if this was pursued in subsequent Committee meetings it was not recorded in the minutes.

10/26/89 - Memo from the Director to the Nuclear Safeguards Committee. Bismuth Block is leaking at a rate of 5 rem per hour. Requests to operate the reactor anyway to fulfill contracts with Savannah River Nuclear Weapons Plant. Also doesn't want to jeopardize negotiations with U.S. Department of Energy for \$300,000 contract. States, "This contract is essential for the Center's continued existence." A similar leak had occurred in 1983 and was repaired with epoxy. The epoxy was not effective this time.

10/27/89 - Nuclear Safeguards Committee minutes. Director reports leak that has developed in liquid waste tank. Committee asked Karam to weld a patch and if the NRC needs to be informed. GANE has not been able to locate any documentation of communication about the leak between the NRC and Georgia Tech.

12/6/89 - Letter from Director to Nuclear Safeguards Committee concerning continued tests of the Bismuth Block Leak. Not yet resolved. (GANE notes that it has not been resolved to this day.) Attached to this letter is a copy of the memo dated 10/26/89 with substantial material changes from the original (cited above) from page seven to the end of the letter.

1/26/90 - Cobalt-60 pool overflows into the lower levels of the reactor building. Subsequently an automatic shut-off device is added to the faucet. (NRC Inspection Report 90-02)

2/15/90 - Nuclear Safeguards Committee minutes. Item #5 - L. Petherick asked Committee to look into the availability of resources to handle removal of radioactive material from campus. Expressed concern over the safety of the site on campus where it is presently being stored [the Butler building]. His estimate of the cost of twice-a-year cleaning of the site was on the order of \$100,000/year. The Committee unanimously passed a motion to recommend to the administration that "the Institute have an adequate budget for shipment of radioactive waste."

- 3/22/90 - Nuclear Safeguards Committee minutes. Item #3 - Re: Waste  
"It is expected that the FY '91 budget will satisfactorily address the issue." Item #4 - Position of Manager, Office of Radiation Safety needs to be filled. Discussion over Associate Director of NNRC serving as acting manager [GANE notes that that concept smacks of the "fox guarding the henhouse"] until replacement found. Committee passes a motion to "expeditiously find a new Manager."
- 4/26/90 - Nuclear Safeguards Committee minutes. Item #4. Committee approves operation of reactor with leaking Bismuth Block per October 26 [which version?] submittal. NNRC staff "confident" that resolution of waste disposal issue will become effective after 7/1/90 (see 3/22/90 NSC minutes). GANE notes that if the Bismuth Block leak ever came up for discussion again with the Nuclear Safeguards Committee it was not noted in the minutes.
- 5/24/90 - Nuclear Safeguards Committee minutes. Item #2 - "Karam informed Committee that a U.S. Department of Energy team from EG&G (Idaho) had favorably reviewed NNRC operation and had recommended to DOE to fund the facility to the tune of about \$500,000/year to bring it up to speed. As a minimum, the cooling tower will be replaced. DOE has taken the recommendation under further advisement."
- 6/13/90 - Georgia Tech Research Reactor cited by NRC for failure to restrict access to high radiation level area where two graphite stringers had been stored for a week, delivering 200 millirem per hour. During the same inspection that the unprotected stringers were found, the NRC inspectors observed a maintenance worker finish mopping in a controlled area and then cross to the uncontrolled side of the monitoring station without performing a personal survey or having the mop surveyed. The worker proceeded to mop the floor in the uncontrolled area. The worker then came back into the controlled area and proceeded out through a door into the Reactor Control Zone and continued to work. The worker had not received special training to work in the Reactor Control Zone. The Director indicated that it was difficult to get maintenance people to work in the facility and that, although this individual made an occasional mistake, he was one of the few willing to work in the reactor building. The saga was not cited as a violation by the NRC! (NRC Inspection Report 90-02)
- 7/1/90 - Brian Copcutt takes position of Manager of Office of Radiation Safety. ATTACHMENT #3

- 7/19/90 - Nuclear Safeguards Committee minutes. Changed Committee structure such that the Radiation Safety Officer no longer serves as Chair. Item #5 - Director of Neely Nuclear Research Facility assures Nuclear Safeguards Committee members that they are not liable for decisions or recommendations they make as they are rendered based on information given to them by Neely Nuclear Research Center personnel. Two non-Institute Committee members request letter from the Institute guaranteeing them indemnity against any liability charges brought against them for decisions or recommendations made.
- 11/15/90 - Nuclear Safeguards Committee minutes. Item #2 - Brian Copcutt resigns as Manager of Office of Radiation Safety. In his resignation letter to the Director of Neely Nuclear Research Center (October 8, 1990), Dr. Copcutt states: "I believe that the Manager, Office of Radiation Safety lacks sufficient operational freedom to adequately conduct the radiation safety program. Specifically, health physics staff appear to be under the dual control of the MORS and the facility Associate Director [Dr. Betty Revsin]. . . . I also object to suggestions from yourself and Dr. Revsin that I should not, in the future, document observed regulatory violations or proposed program improvements." ATTACHMENT #4
- 1/31/91 - Nuclear Safeguards Committee minutes. The Committee discussed the status of security precautions during these times of international tension. It was recommended that a motion detector be installed at the main entrance to announce the arrival of a person. GANE notes that this apparently still has not been done judging by the recent adventures of FOX Network's "A Current Affair."
- 3/21/91 - Nuclear Safeguards Committee minutes. Item #6 - "The Committee was informed of Dr. Chapman's death. It was reported that his lab, which was temporarily shut off due to contamination problems, has now been unsealed and declared safe. It was learned that decision on cobalt source has not yet been made."
- 5/9/91 - Nuclear Safeguards Committee minutes. The committee approved the minutes of the previous meeting subject to rewriting item #6 into two separate items #6 and #7. #6 would remain the same with the removal of the last sentence. Item #7 will read as: "It was learned that no decision had been made concerning a move to decommission Crenshaw's Mountain." GANE notes that Crenshaw's Mountain has not been decommissioned to this day. It is a 10-foot pile of dirt near the practice football field and Alexander Memorial Coliseum. The



dirt is piled over an 8-foot culvert and accessed by an underground network. Crenshaw's Mountain contains a five-curie cobalt-60 source. Item #4 - The Committee discussed a request to allow setting of lower limits on secondary water flow rate in the GTRR. It was decided that more data were needed to perform detailed power calculations and that the request be denied. However, a 90-day trial approval was given with the proviso that the flow rate be adjusted back to 960 gpm at the end of the trial period. GANE notes that the Safety Analysis Report at 4.4.8.2. states that 1200 gpm are intended for the secondary water flow rate.

6/27/91 - Nuclear Safeguards Committee minutes. EG&G (Idaho) interested in making NNRC major Boron/Neutron Capture Therapy facility. Interest in support of research and activity of \$500,000 to \$1,000,000, provided Tech continues to support functioning of center. Some changes will be made in configuration of facility. Will take 6 months to 1 year to get NRC approval. "Eventually the facility will be used to treat patients also." GANE notes that the new cooling tower's great, but what are you going to do about that pesky bismuth block leak between the reactor and the biomedical irradiation chamber? Item #2.iii - The Manager of the Office of Radiation Safety is named the equivalent of Radiation Safety Officer.

8/1/91 - Nuclear Safeguards Committee minutes. Another 90-day extension on the secondary water flow is granted.

9/17-19/91 - NRC inspection finds Neely Nuclear Research Center Emergency Procedures do not require emergency notification to the State of Georgia (Department of Natural Resources) and Atlanta/Fulton County Emergency Management Agency as is required. Georgia Tech is told to amend procedures. (NRC Inspection Report 91-04)

9/26/91 - Nuclear Safeguards Committee minutes. Committee approves permanent reduction of secondary water flow from 960 gallons per minute to 900 gpm. This is not consistent with Section 4.4.8.2 in the Safety Analysis Report which asserts the flow to be 1200 gpm.

11/14/91 - Nuclear Safeguards Committee minutes. These minutes are missing.

1/29/92 - Nuclear Safeguards Committee minutes. Gamma Irradiation experiment for EG&G described in great detail. GANE has not been able to find any record of it ever receiving Committee approval.

- 1/92 - Director fails to get required approval of Nuclear Safeguards Committee for Facility Modification 92-001 Picoammeter Monitor. ATTACHMENT #5.
- 3/12/92 - Nuclear Safeguards Committee minutes. Jim O'Hara appointed Acting Radiation Safety Manager after Betty Revsin resigns suddenly for personal reasons.
- 4/30/92 - Nuclear Safeguards Committee minutes. Committee, failing to satisfy the question of how James Powers was able to obtain radioactive materials without going through channels, approves Form A allowing his experiment anyway!
- 6/25/92 - Nuclear Safeguards Committee minutes. Item #6 states that the previous concern regarding James Powers was resolved satisfactorily. No details. Item #7 - the Director requests to replace committee members Gordon, Barefield and Mahaffey with Braga, Tornabene, and Ghiassiaan. GANE notes that the three new members are listed present as committee members at the next meeting. GANE has not seen paperwork that the committee members were appointed by the President according to Georgia Tech's stated procedures.
- 10/29/92 - Nuclear Safeguards Committee minutes. Rodney Ice is new Manager of the Office of Radiation Safety. Item #4 - Roger Wartell request was tabled due to lack of clarity in the proposal. Item #5 - Director informs the committee that he has sent a report on the fuel element weld failure to the NRC. GANE has been unable to find a record of Georgia Tech reporting either the fuel element weld failure or, for that matter, the Bismuth Block leak, to the NRC.
- 12/10/92 - NRC cites Neely Nuclear Research Center for a violation for failure to require proper notification in Emergency Procedures. The State of Georgia (Department of Natural Resources) and Atlanta/Fulton County Emergency Management Agency are supposed to be notified in an emergency. Director had failed to understand discussion in exit interview during 9/91 inspection. (NRC Inspection Report 92-04)
- 12/17/92 - Nuclear Safeguards Committee minutes. Motion approved to change Item #4 (Roger Wartell proposal) in 10/29/92 NSC minutes to read "monitoring equipment to be provided on a regular basis (once a month) by Dr. B. Kahn" (instead of MORS). GANE notes that R. Wartell's request was approved although nothing is said about how his proposal had been clarified.

- 2/5/93 - Georgia Tech is cited with NRC violation for operating reactor without required safety system scrams. (NRC Violation 50-62/94-04-01)
- 2/25/93 - Nuclear Safeguards Committee minutes. Form A request by R. Wartell was approved subject to (i) clarification by the Principal Investigator on the radio chemical form, and (ii) a resubmission of the Form A request with the revision.
- 5/13/93 - Nuclear Safeguards Committee minutes. "The Committee granted Form A requests . . . (i) Robert Nerem: Conditions - (a) monitoring must include the incubator (b) comment: Item 11. A 'Geiger counter' is inappropriate to use with tritium. Must use wipe tests using liquid scintillation counter, not Geiger counter."
- 9/93 - NRC cites violations for Nuclear Safeguards Committee failure to conduct required audits. Also, Georgia Tech was cited for failure to perform biweekly contamination surveys and neutron radiation surveys. Yet another violation was cited for wrong descriptions of material, inadequate emergency notification information and the omission of survey data for the Radioactive Materials Shipments showing radiation levels of the packages. NRC Inspection Report 93-02 notes that the procedure for reactor start-up contains "unclear" guidance for monitoring period meters or recorder during approach to criticality. Also, an unnamed individual received a dose of 150 millirem in 1992. Another individual that was mopping up the Bismuth Block leak had an intake of 1.8 microcuries of tritium. After the exposure the management assigned .3 MPC hours to the individual. MPC hours, however, are not tracked. The indicator needle for primary cooling water pressure needs repair. It was bent - apparently from over ranging and was untagged for repair work. Flooded mess in emergency lighting generator room. Director says the leak will be repaired after approval of a plan to modify the Bismuth Shield (is facility management still looking for a new, improved brand of glue?). Firehoses in sections laying in the water, old leaking batteries sitting in water. A thermoluminescent dosimeter (one of 30 surrounding the facility) near the nuclear waste barn had registered significantly higher than background in 1992. Georgia Tech had concluded the high levels recorded by the TLD to be attributable to environmental damage; i.e. rain and excess heat. The NRC establishes the high readings were coming from the extremely active Radium-226 sources stored in the building. (NRC Inspection Report 93-02)

- 9/23/93 - Nuclear Safeguards Committee minutes. "R. Karam presented for the Committee's general information a memo from Dr. Ice explaining the Bismuth Block cooling water leak accident. He pointed out that the memo did not need Committee's approval."
- 11/1/93 - Georgia Tech's methodology to determine Shim Safety Blade reactivity worth still a safety concern with NRC. (Cover letter to Notice of Violation for NRC Inspection Report 93-02)
- 12/27/93) - Newspaper reports concerning Rebecca Long, NRC Inspector suing NRC for sex discrimination because her superiors ignored and changed her reports on the Georgia Tech Research Reactor. The sex discrimination related also to disparity in pay-scale between her and her male counterparts. She cited the good-old boy network as protecting Georgia Tech from an honest assessment and blocking her from raising and addressing the real issues. ATTACHMENT #6
- 2/10/94 - Nuclear Safeguards Committee minutes. Item #4 - "R. Ice reported to the committee an event leading to the contamination of Robert Nerem's laboratory. He informed further that the hallway to the lab has since been decontaminated." (By an untrained custodian and a mop?) Item #5 - "R. Ice reported to the Committee the chronology of events prior to and since leaking of Ni-63 sealed source that apparently occurred during shipment to Antarctica. The PI involved was F. Eisele. The source was in the Antarctica [sic] on an approved NRC reciprocity agreement. The report was accepted."
- 2/15/94 - Jumpers left in place while reactor taken to criticality. Operators failed to turn on TR-2 recorder prior to start-up. When the recorder is off the following scrams are inoperative: Shield Coolant High Temperature Scram, Bismuth Coolant High Temperature Scram. If the temperature had become excessive, the automatic scram signal would have failed. (NRC Notice of Violation 8/20/94)
- 1994 - Labels on the D<sub>2</sub>O outlet valve and the D<sub>2</sub>O inlet valve (D<sub>2</sub>O is heavy [radioactive] water) are transposed. Discrepancy in pressure gauge range found, and the fire extinguisher is expired. No violations were noted! (NRC Inspection Report 94-05)
- 3/17/94 - Nuclear Safeguards Committee minutes. Item #7 - "The Committee was informed about R. Nerem's letter to R. Karam. R. Karam reported an occurrence (without safety implications) (see 2/15/94) involving a violation of procedure for reactor operation. The operator [Bill Downs] in question has since been restricted to a limited access." (Bill Downs is the same operator that caused the

notorious cadmium-115 accident 6 weeks after the pivotal management change at Neely Nuclear Research Center.)

4/1/94 - NRC violation cited for failing to retrain operators for proper procedures to empty pond. (Violation 50-62/I.R.94-04-01)

4/15/94 - Downs resigns.

5/19/94 - Nuclear Safeguards Committee minutes. Item #6: "Dr. Karam felt that a sufficient number were present [to make a quorum at the 3/17/94 NSC meeting], therefore, all members not present will be contacted to see if they were left off the attendance lists of the minutes of 3/17/94."

5/24/94 - Letter from E.F. Cobb, Chair of the Nuclear Safeguards Committee, to the NSC informing that no quorum was reached at the 3/17/94 meeting. ATTACHMENT #7

8/11/94 - Nuclear Safeguards Committee minutes. Item #2 - "Minutes of the meeting of March 17, 1994, were distributed, but it was decided that a quorum did not exist at that meeting. All items addressed at that meeting were brought up for consideration and approval." GANE notes that Item #7 concerning R. Nerem's letter about an occurrence was not addressed.

8/94 - Georgia Tech commits math error on neutron radiation survey causing them to be off in their calculations by a factor of 100 times - they divided when they should have multiplied. In addition, certain thermoluminescent dosimeters register extremely high levels. Georgia Tech and NRC conclude the high readings are caused by exposure to sunshine and rain in the environment. No violation cited. GANE does not understand why a monitoring system which is not regarded as reliable by Georgia Tech and the NRC is used to document the amount of radiation released to the environment and surrounding populations. (NRC Inspection Report 94-02)

10/27/94 - Nuclear Safeguards Committee minutes. Item #6 - "In another inspection, NRC cited a violation which has resulted in a slight change in the forms. There was a reported spill in Dr. Kahn's lab (an ampule containing a small amount of tritium used as a standard broke in the liquid scintillation counter). It has been cleaned out."

12/8/94 - Nuclear Safeguards Committee minutes. Item #4 - "R. Karam discussed the failure of an older x-ray diffraction equipment where the shutter malfunctioned and a student may have been exposed on December 6, 1994. . . . Although the dosage was well below permissible limit, (GANE asks, how is the dose known if it isn't



certain if the student was exposed?) R. Ice and S. Stock asked (GANE asks why R. Ice has to ask) and received an authorization to research the issue further. . . . an interim subcommittee was appointed consisting of S. Ewald, B. Livesay, and B. Kahn to keep up further developments." ATTACHMENT #8

2/9/95 - Nuclear Safeguards Committee minutes. V. Incident reports -

S. Stock: "The Committee discussed the report by S. Stock on the causes of the accident (see minutes 12/9/94 [concerning the radiation exposure of a student by faulty x-ray equipment]) and means taken to prevent its recurrence. This was followed by a discussion of Form A request by S. Stock . . . The Committee imposed the Form A request with the following conditions for a continued operation, and appointed a subcommittee to oversee the same and issue an interim approval.

1. A detailed review of all procedures before any continued operation.
2. An investigation for a long-term solution to the problem; i.e. it may include alternatives such as retrofitting.
3. A satisfactory assessment of the unit by the Manager of the Office of Radiation Safety after all safety modifications have been installed.
4. Obtaining of a circuit diagram that specifies the operation of the shutter, with such modification as necessary to assure shutter safety.

J. Choi: . . . The Committee imposed the following conditions for a continued operation of Dr. Choi's research.

1. A ~~prominate~~ [sic] sign shall be posted by the door indicating that all persons leaving the room must monitor themselves for contamination before leaving the room. A logbook of monitoring is to be maintained.
2. Specific safety procedures for the use of radioisotopes are to be posted. In addition, the posting is required to contain the warning that no procedural variance is allowed without the P.I.'s specific approval."

Item VI. "Dr. Karam discussed the NRC hearing on complaints by two citizens regarding safe operation of the NNRC. He pointed out that the NRC is satisfied with the safety of the entire reactor operation." GANE notes that the license renewal is still under question by the Atomic Safety & Licensing Board of the NRC one year

later implying that the NRC is NOT satisfied with the safety of the entire reactor operation. Further, if the NRC intervention is discussed in subsequent NSC meetings it is not included in the minutes. Neither do the minutes of the NSC meetings reflect any Committee discussion of the shutdown of the reactor during the Olympics and the removal of the fuel from downtown Atlanta.

3/23/95 - Nuclear Safeguards Committee minutes. Item I - Revision of last meeting's minutes. Item V.1 (S. Stock) strike conditions 3 & 4. GANE asks, WHY? Item V.2 (Dr. Choi) remove the word "prominate" [sic]. (GANE asks, does Georgia Tech specifically prefer an obscure sign?) "R. Karam discussed and walked the committee through the final report from Dr. Choi on the contamination incident [the student radiation exposure from faulty x-ray equipment]. The Committee was of the opinion that Dr. Choi has fulfilled the conditions (see revised minutes 2/9/95) for a continued operation [of the x-ray equipment]. It is expected that there will be at least one additional audit visit by Dr. Ice to Dr. Choi's lab before 6/1/95." Item IV - Form A approvals: "J.M. Wampler: the x-ray unit is old and of outdated design in the context of safety issues. However, the way it is being operated by the P.I. and his associates under his supervision is deemed safe, provided that no undergraduates [!] are allowed to operate it. The Committee gave its approval."

3/95 - Accidental release of water from the cobalt-60 shielding pool due to a valve that was improperly left open. Not only was the technical error committed, but the accident was improperly reported to the NRC instead of the State of Georgia, regulatory authority for the cobalt-60. GANE found no record of any discussion with the Nuclear Safeguards Committee in the minutes.

6/21/95 - NRC cites violation for wrong and missing data of environmental emissions of radioactivity from Georgia Tech Research Reactor for the years 1983, 1986, and 1988-1993. The data errors appear to arise out of calculation mistakes, not an effort to falsify environmental data. Management was also cited for making a material false statement in the 1994 Safety Analysis Report submitted as part of its relicensing application where it stated falsely that equipment for continuous, automatic measurement and recording of wind speed and direction was installed. In the absence of actual data Georgia Tech had submitted the same windrose diagram year after year! NRC cites Nuclear Safeguards Committee for failure

- (since 1993) to provide oversight for operation and calibration of a low background alpha/beta proportional counter used for contamination control and effluent measurements. Comments are recorded about continued extremely high readings from the TLD on the fence by the nuclear waste hut. (NRC Inspection Report 95-01)
- 7/95 - Georgia Tech response to Notice of Violation cites human error and that the Director takes it for granted that the Manager of the Office of Radiation Safety does not need supervision.
- 9/21/95 - Nuclear Safeguards Committee minutes. Item #3. Change in management structure approved over opposition of a committee member.
- 10/13/95 - Memo from E.F. Cobb, Chair of the Nuclear Safeguards Committee strongly recommending that out-dated, unsafe x-ray units be removed from service. A student has narrowly missed a significant radiation burn. The accident would not have occurred if the unit met current x-ray equipment safety requirements. The Committee recommends these units be replaced with new units before they cause more harmful radiation exposure. ATTACHMENT #9
- 11/95 - Glenn Carroll from GANE sees classified documents at two separate times contained in the same file while reviewing documents at the Neely Nuclear Facility. The second time was after the file had been sent back to the Director with the assumption that the file would be purged of any sensitive documents before returning it for further review.
- 11/15/95 - Fox Network airs "A Current Affair" program which documents the intrusion of a TV-crew into the building, over the barbed-wire fence and onto the roof over the fresh (weapons-grade uranium) fuel storage vault.
- 11/16/95 - Nuclear Safeguards Committee minutes. Item #4.4.1 - Dixon Parker takes over for Taylor as PI on Co-60 irradiation sources. (Taylor retired). Item #5.2 - Karam informed the Committee that security at the NNRC has been increased since the "Current Affairs" [sic] incident. GANE notes that the front door is now locked. Can we get some surveillance equipment and armed guards until you get all the radioactive material removed?
- 11/29/95 - NRC issues inspection report in which the NRC minimizes the problem of the TV crew security breach by concluding that since the TV crew didn't pick any locks to any secure areas or pack any bombs or grenades into the facility, that all is well and safe. (NRC Inspection Report 95-04)

12/1/95 - Georgia Tech Response to GANE's Discovery Request,

Interrogatory #14: "Where is the spent fuel?" Response: "GTRR has no spent fuel. All fuel is used in the reactor." #15: "Is there a load of fresh fuel on the premises, and if so, where is it?" Response: "GTRR does not have a load of fresh fuel on the premises."

1/5/96 - Georgia Tech does not produce shipping documents of the spent and fresh (weapons grade uranium) fuel in response to a specific request from GANE. GANE can find no NRC records containing documentation of shipment of nuclear fuel, irradiated or otherwise, away from Atlanta.

22. *Identify all persons with knowledge of the facts underlying GANE's contention or assertion.*

Dr. Melvin Carter, Rebecca Long, R.M. Boyd, Dr. Brian Copcutt, Glenn Carroll, Pamela Blockey-O'Erien, John Galloway, Rob Johnson, Joan O. King.

23. *Identify any person GANE presently intends to call as a witness in this proceeding to testify regarding the contention or assertion. If GANE expects to call any such person as an expert witness, state the subject matter on which the person is expected to testify, state the substance of the facts and opinions as to which the person is expected to testify, and provide a summary of the grounds for each opinion.*

Dr. Melvin Carter was Chair of the abolished oversight committee and is expected to reiterate the concerns he stated publicly when he resigned - that the management changes consolidating responsibility under the Director were detrimental to health physics principles and fostered an unhealthy and unsafe working environment. (See attachment #1). Dr. Carter is out of the country until the first part of March 1996 and GANE has not yet been able to establish contact with him. Until we are able to speak with Dr. Carter, we will not know if he will testify.

Rebecca Long is an NRC Inspector who brought a sex discrimination suit against the Region II NRC for chilling her investigation of the Georgia Tech Research Reactor, complaining of a good old boy network that was covering up Georgia Tech's mistakes. (See attachment #6). GANE has established contact with Ms. Long who is currently an inspector with the NRC Region II office and has ascertained that she still has some questions about oversight of Georgia Tech. She is a hostile witness, i.e., she will not testify unless served with a

subpoena. GANE has an outstanding Motion to Compel against the NRC to provide documents pertaining to Ms. Long. When these documents are produced we expect to be able to embellish the information concerning the expected substance of Ms. Long's testimony.

R.M. Boyd is the former Radiation Safety Officer for Georgia Tech and Georgia State University. He left Georgia Tech in 1988 because of his concerns that restructuring of the management and putting the safety office under the director of the Neely Nuclear Research Center amounted to the fox guarding the henhouse. GANE expects him to testify not only to his first-hand experience with the facility, but to the climate and attitude of Georgia Tech surrounding radiation safety and public health. Since Mr. Boyd was Radiation Safety Officer and Manager of the Office of Radiation Safety at Georgia Tech for many years, GANE believes he is qualified to provide expert opinions on safety management. Mr. Boyd will only testify as a hostile witness, i.e., following being called through subpoena.

Dr. Brian Copcutt is currently a Radiation Safety Officer with a Los Angeles Hospital. Prior to his short time in the position of Manager, Office of Radiation Safety with Georgia Tech, he had served as Radiation Safety Officer for University of Virginia. As he has had a career managing radiation programs, GANE believes he qualifies as an expert witness. His concerns about safety with Georgia Tech's radiation program are strongly stated in attachment #4. We have established contact with Dr. Copcutt, and he is still concerned about the situation at Georgia Tech, however, he will only testify under subpoena. GANE will have to decide whether we can afford to bring Dr. Copcutt from California to testify, but we name him as an individual whose testimony would be pertinent and vital to the case and who we would desire to provide testimony if possible. Dr. Copcutt indicated that there were many more letters than the one we obtained, written by him to, GANE understands, Director of the Neely Nuclear Research Center. GANE intends to obtain these letters and may be able to embellish the information concerning the expected testimony of Dr. Copcutt.

Glenn Carroll is an environmentalist who has worked on nuclear issues since the Chernobyl accident in April 1986. This document contains the substance of the facts and opinions to which she is expected to testify.



Pamela Blockey-O'Brien is an environmentalist who has been studying and gathering information on the Georgia Tech Research Reactor for 15 years. The substance of her expected testimony is contained within the 2.206 petition to shut the Georgia Tech Research Reactor which she has filed and added to since 1994. It may be obtained from the Public Document Room. Her investigation is ongoing and may be expected to be added to continuously up until the public hearing. John Galloway, Rob Johnson and Joan O. King helped GANE research the Nuclear Safeguards Committee Minutes. If there is any cross-examination concerning them, they will need to take the stand. They are volunteer activists and GANE members.

*24. With respect to any person listed in response to the interrogatory, state the details of that person's education, employment history and asserted area of expertise.*

Dr. Melvin Carter is currently an international radiation consultant.

Dr. Carter was Chair of the Radiation Protection Committee for Georgia Tech. He has served as president of both the National Health Physics Society and International Commission on Radiation Units. Dr. Carter held the Neely Professorship in the Nuclear Engineering and Health Physics Department. Dr. Carter is currently in Africa conducting international radiation business and we will have to wait until his return to gather more complete information concerning his education and professional credentials.

Rebecca Long is an inspector with Region II NRC. She has a masters degree in nuclear engineering and has been employed with the NRC for over 10 years. She previously inspected the Georgia Tech Research Reactor (see attachment #6).

R.M. Boyd held the position of Radiation Safety Officer at Georgia State University from 1988 through 1995. He retired from the RSO position in September 1995 and currently works there part-time assisting the new RSO. Mr. Boyd has a bachelors degree in mathematics and 40 hours towards a masters degree in meteorology (see attachment #10). He was employed at Georgia Tech in the radiation protection program from 1964 through 1988, 1974 through 1987 as Radiation Safety Officer and from 1987 to 1988 was downgraded to Manager, Office of Radiation Safety. In these positions he was responsible for radiation safety programs at both Georgia Tech and Georgia State University.

Dr. Brian Copcutt has a bachelors degree in Bioengineering and masters degree in Biomedical Engineering from the University of Virginia. Dr. Copcutt's Ph.D. is in Bioengineering and Biomedical Engineering from Texas A&M. Prior to working at Georgia Tech in the position of Manager, Office of Radiation Safety he was Radiation Safety Officer at University of Virginia for a number of years. Currently he is Radiation Safety Officer at a hospital in Los Angeles, California.

Glenn Carroll holds a Bachelor of Visual Arts from Georgia State University (cum laude). She has her own business Glenn Carroll Graphics which is so successful that she has time to devote to strenuous volunteer activities such as this one. She has produced two solo exhibits of paintings about nuclear issues, "Show for the End of Time" in 1993 and "Time Distance Shielding in 1994 (at Georgia Tech!). She has work in many collections throughout the U.S. and looks forward to resolving these safety issues stated herein as she is newly inspired to begin work on another exhibition -- "DEMOCRACY - Respectfully Submitted, Glenn Carroll."

Pamela Blockey-O'Brien is an advocate of the truth and brings a particular breadth of perspective to the issues of management and public safety surrounding the Neely Nuclear Research Center. She feels her participation as a non-governmental organization delegate to the United Nations 2nd Special Session on Disarmament in 1982, representing over one million people from across the south, is a notable high-light of her interesting life.

John Galloway is a student at Georgia Tech and an active member of The Environmental Forum, a Georgia Tech student group, and GANE. He has been involved with GANE's intervention on the relicensing of the Georgia Tech Research Reactor since the beginning. He read a large portion of the minutes of the Nuclear Safeguards Committee.

Rob Johnson is an active GANE member and recently served as Director of the Atlanta Greenpeace canvas office. He is currently Canvas Director for the Atlanta office of Public Citizen. He has a bachelor's degree and has been involved with GANE's intervention since the beginning. He has read a large portion of the minutes of the Nuclear Safeguards Committee.

Joan O. King is Georgia Chair of 20/20 Vision and serves on the national board of directors for 20/20 Vision. She is president of the White County League of Women Voters. She has been a volunteer activist with emphasis on nuclear issues for many years. She has read minutes of the Nuclear Safeguards Committee.

25. *Identify any persons who have knowledge of the relevancy of the contention or assertion to the security plan and the safeguards used and in place at the Georgia Institute of Technology Research Reactor (GTRR).*

Mike Salort and Wendy Sax from Fox Network's "A Current Affair" have the most intimate knowledge of anyone we know with the lack of security at the Neely Nuclear Research Center. The second time Glenn Carroll from GANE was shown a classified document at Neely Nuclear Research Center (see 11/95) she gave herself permission to read it. It described the location of surveillance cameras and the practice of campus police concerning the facility. The document was dated 1994 as near as she can remember and was consistent with what R.M. Boyd has recalled to GANE about security measures in place when he was last employed there in 1988.

26. *Identify all documents GANE intends to rely upon in support of its contention or assertion, or which are otherwise relevant to the contention or assertion.*

All Minutes from Nuclear Safeguards Committee (Attachments #8 and #11 produce an assortment of notes and copies but are not a complete set)

Documents relating to criteria for Nuclear Safeguards Committee

Resumes of Nuclear Safeguards Committee members

Authorizations for Nuclear Safeguards Committee members

List of all persons who formerly served on the Nuclear Safeguards Committee, including, for each person listed, the dates of service, last known telephone number and address

NRC Inspection Report 87-02

5/4/87 Conference Report with Georgia Tech

Technique, 11/20/87 (Attachment #1)

NRC Investigation Report 87-08

NRC Investigation Report 2-88-003

Chain of Command for Nuclear Safety - Georgia Tech (Attachment #2)

2/18/88 Memo from President Crecine (Attachment #2)

Correspondence - Georgia Tech to NRC 3/1/88

NRC Notice of Violation 12/24/88

NRC Order dated 11/20/88

Notice of Violation dated 12/24/88

NRC Inspection Report 89-02

Memo from Dr. Karam to Nuclear Safeguards Committee dated 10/26/89  
Letter from Karam to Nuclear Safeguards Committee dated 12/6/89

w/attachment

- \* Brian Copcutt correspondence (some provided as Attachment #3)
- Brian Copcutt resignation (Attachment #4)
- NRC Inspection Report 90-02
- NRC Inspection Report 91-04
- Facility Modification 92-001 Picoammeter Monitor (Attachment #5)
- NRC Inspection Report 92-04
- NRC Violation 50-62/94-04-01
- NRC Inspection Report 93-02
- NRC Notice of Violation 8/20/94
- NRC Inspection Report 94-05
- NRC Violation 50-62/Inspection Report 94-04-01
- Letter from E.F. Cobb to Nuclear Safeguards Committee dated 5/24/94

(Attachment #7)

- NRC Inspection Report 94-02
- Letter from Karam to State of Georgia dated 4/24/95
- NRC Inspection Report 95-01
- Georgia Tech Response to NRC Notice of Violation dated 7/95
- Memo from E.F. Cobb to G. Wayne Clough, et al. dated 10/13/95

(Attachment #9)

- State of Georgia Criteria for a Broad License (Attachment #10)
- "Nuclear Nightmare in Atlanta" - A Current Affair 11/15/95 (previously submitted)

- NRC Inspection Report 95-04
- Georgia Tech Response to GANE Discovery particularly Interrogatory #14 and Interrogatory #15

Correspondence concerning JC O'Hara resignation

- \*\* Documents related to Rebecca Long

- 12/27/93 Atlanta Journal/Constitution concerning Rebecca Long

(Attachment #6)

- 12/26/93 Houston Chronicle concerning Rebecca Long (Attachment #6)

- PNO-II-83-009 on 1/31/83 re cobalt-60 shielding pool leak

- Pamela Blockey-O'Brien 2.206 Petition Docket #50-160

- \* Documents to be discovered from Georgia Tech

- \*\* Documents to be compelled from the NRC

27. Provide copies of the documents you have identified in response to the interrogatory.

GANE does not possess copies of many of these documents for financial reasons. We believe that the other parties have the resources and connections to easily obtain the documents which GANE has identified. We have attached newspaper reports, certain correspondence and notes taken by GANE volunteers relating to the Nuclear Safeguards Committee minutes.

28. As to each document identified in response to the interrogatory, state whether or not GANE intends to seek to move each such document into the record as evidence in this proceeding.

Yes.

29. As to each document identified in response to the interrogatory, state what fact or opinion GANE intends to establish if the document is entered into evidence.

See answer to #21. Also, the Minutes are notable for what they do not contain: rare discussion of NRC Violations, no discussion of State regulations, no discussion of environmental contamination, rare challenges to the Director - the quorum question and dissent on a management change, no references to communication up the chain of command to the Vice President and President, no meaningful discussion of the interventions conducted by GANE and Pamela Blockey-O'Brien and in particular no mention of shutting the reactor for the Olympics or shipping fuel out of Atlanta. Certain of the most recent minutes were not available, perhaps the Nuclear Safeguards Committee discussed those issues in those meetings.

30. Identify the specific NRC regulation which would be violated if the contention or assertion were shown to be true. Explain your answer.

GANE's Assertions (Contention #9):

- a) "Management problems at the GTRR are so great that safety for the public cannot be assured."
- b) "Safety concerns at the Georgia Tech reactor are the sole responsibility of Dr. R.A. Karam."
- c) "Dr. Karam is the director who withheld information about a serious accident from the NRC (1987 cadmium-115 accident)."



d) "The NRC was advised of the 1987 cadmium-115 accident by the safety officer at that time, who was later demoted, and left the GTRR operation claiming harassment."

3) "Since the incident, management has been restructured giving the director (Dr. Karam) increased authority, including increased authority over the Manager of the Office of Radiation Safety."

(f) "Although the safety officer has a line to higher-ups than the director, since he/she works for the director on a day-to-day basis, the threat of reprisal would be a huge disincentive to defying the director."

(g) "The Nuclear Safeguards Committee which has theoretical oversight of the GTRR operations has a distinct flaw in having no concern with health issues."

(h) "The Office of Radiation Safety Manager is sought for its knowledge of law more than its knowledge of health physics."

10 CFR Subpart B. §1.11 (b) states: "These responsibilities include protecting the public health and safety, protecting the environment, protecting and safeguarding nuclear materials and nuclear power plants in the interest of national security, and assuring conformity with antitrust laws."

31. Provide any and all information, produce copies of all documents in your possession, and respond fully as requested in Interrogatories 21-30 above, regarding any incidents or problems involving the GTRR which have occurred from 1988 to the present, which GANE contends demonstrate significant, serious or continuing management problems at GTRR.

See #21, #26 and #27.

32. State whether GANE contends that the corrective actions taken by the Licensee following the events in 1987 failed to adequately resolve any management problems which may have existed at the GTRR prior to the taking of such actions. Explain your answer in detail, and provide any and all bases for this contention. Provide all information, identify all persons, and provide copies of all documents which relate to this contention, as requested in Interrogatories 21-30 above.

See #21, #23, #26 and #27. GANE has noted that prior to Dr. Karam becoming director there were only two Radiation Safety Officers (Bob

Zimmerman and R.M. Boyd) over a 22 year period. Zimmerman retired to start his own consulting firm. R.M. Boyd transferred to Georgia State to get away from the situation at Georgia Tech. Since Karam's entry into the position of Director 12 years ago, there have been at least six safety managers in two positions Radiation Safety Officer and Manager, Office of Radiation Safety (Bernd Kahn, John Puckett, Betty Revsin, Brian Copcutt, J.C. O'Hara, Rodney Ice).

33. State whether GANE contends that the enforcement actions taken by the NRC following the events in 1987 failed to adequately resolve any management problems which may have existed at the GTRR prior to the taking of such actions. Explain your answer in detail, and provide any and all bases for this contention. Provide all information, identify all persons, and provide copies of all documents which relate to this contention, as requested in Interrogatories 21-30 above.

See #21, #23, #26 and #27. In particular GANE makes note of the apparent failure of management to report the fuel element weld failure and the bismuth block leak to the NRC.

34. State whether GANE contends that any employees or personnel associated with the GTRR (a) have been intimidated from raising safety concerns by the facility's Director, or (b) have feared reprisals by the facility's Director, at any time from 1988 to the present. Explain your answer in detail, and provide any and all bases for this contention. Provide all information, identify all persons and provide copies of all documents which relate to this contention, as requested in Interrogatories 21-30 above.

(a) Yes. See Brian Copcutt's resignation letter. (b) Yes. R.M. Boyd will not cooperate with us for fear of reprisal still.

35. State whether GANE contends (a) that any employees or personnel associated with the GTRR have failed to properly raise safety concerns at the GTRR, or (b) that safety problems have not been reported at the GTRR, at any time from 1988 to the present. Explain your answer in detail, and provide any and all bases for this contention. Provide all information, identify all persons, and provide copies of all documents which relate to this contention, as requested in Interrogatories 21-30 above.

(a) Karam has not to GANE's knowledge fixed the fuel element weld failure or the bismuth block leak and has apparently exposed students

to possible irradiation by faulty x-ray equipment. (b) Karam has not to GANE's knowledge reported the fuel element weld failure or the bismuth block leak to the NRC. In addition, see #21. Brian Copcutt's resignation letter stating that Betty Revsin discouraged him from documenting regulatory violations implies that Dr. Revsin may not have documented safety concerns during her tenure as Manager, Office of Radiation Safety. It further implies to GANE that any Manager, Office of Radiation Safety that co-exists with the current Director may subscribe to that practice.

36. State whether GANE contends that the Nuclear Safeguards Committee (NSC), the Office of Radiation Safety (ORS), or the Manager of ORS have failed to properly perform their respective roles, at any time from 1988 to the present. Explain your answer in detail, and provide any and all bases for this contention. Provide all information, identify all persons, and provide copies of all documents which relate to this contention, as requested in Interrogatories 21-30 above. GANE believes the NSC is unable to truly oversee the Director and pretty much takes his word for everything (see July 19, 1990, NSC minutes). A notable exception is their slow in coming, but eventual, pressure to take the faulty x-ray equipment out of service. See #21. The NSC minutes show meaty issues being raised but not followed up on: The issue of unrestricted access to areas where radioisotopes are stored, smoking and eating in areas where radioisotopes are stored, the leak in the waste tank, the fuel element weld failure. It really stood out to GANE in the case of the x-ray irradiation of a student when the Manager of ORS had to ask permission to investigate further. Brian Copcutt's complaint about being discouraged by the Director and Associate Director (who later became Manager, Office of Radiation Safety) from documenting regulatory violations implicates both the Director and the person who was MORS from 1991-1993. See #27.

37. State whether GANE contends that the structure and/or allocation of responsibilities of the NSC or the ORS provide a basis for finding that continued operation of the GTRR fails to provide reasonable assurance that the public health and safety will be adequately protected. Identify each and every such regulation, requirement or guidance document. Explain your answer in detail, and provide any and all bases for this contention. Provide all information, identify all

persons, and provide copies of all documents which relate to this contention, as requested in Interrogatories 21-30 above.

Previously the Office of Radiological Safety had supervised Health Physics personnel and had independent status, reporting directly to the Vice President for Research of Georgia Tech. This and the abolition of the Radiation Protection Committee contribute to the degradation of management control of the safety of the facility and its operations. A sad example of how disempowered the health physics side of the management equation has become is illustrated by Rodney Ice, current Manager of the Office of Radiation Safety, asking for permission to investigate the student's radiation exposure from faulty, out-dated x-ray equipment. See #30 for the regulation. See #21, #26, and #27.

38. State whether GANE contends that the structure and/or allocation of responsibilities of the NSC or the ORS fails to comply with any applicable NRC guidance document. Identify each and every such regulation, requirement or guidance document. Explain your answer in detail, and provide any and all bases for this contention. Provide all information, identify all persons, and provide copies of all documents which relate to this contention, as requested in Interrogatories 21-30 above.

Please see the answer to your interrogatory #30, as well as, #21, #23 and #27.

39. State whether GANE contends that the events in 1987-88 demonstrate a reason to believe that current or future operation of the GTRR fails or will fail to provide adequate protection of the public health and safety. Explain your answer in detail, and provide any and all bases for this contention. Provide all information, identify all persons, and provide copies of all documents which relate to this contention, as requested in Interrogatories 21-30 above.

See #21, #23 and #27. GANE finds the change to a one-committee safety program and consolidation of responsibility under Dr. Karam incongruous with the gravity of the situation as the NRC responded in its citations and reports to Georgia Tech following the 1987 incidents and violations. In the time following NRC oversight has grown weaker in GANE's opinion (see Rebecca Long documents). GANE believes the Nuclear Safeguards Committee is unable to conduct independent inspections (see minutes July 19, 1990). The minutes describe guided

tours where Committee members are shown what they are told is worth seeing. The minutes that GANE has seen do not show where the NSC has been told about the shut-down of the reactor and the removal of the fuel. The TV crew broke into the reactor facility the first week of October. GANE has developed the impression that the NRC and Georgia Tech believe the walk-in occurred the day Bob Lang, head of security at Georgia Tech was shown the tape. They did not know about the excursion onto the roof until they saw it along with the rest of America on national television. GANE concludes they have little actual investigative power. GANE concludes from various references in NRC inspection reports that the system of radiation monitoring which is being used outside the facility by grown-up scientists is a sham. If they don't like the readings, the data is blamed on the weather! There's no meteorological monitoring device. GANE wants to know, doesn't an NRC inspector climb the stack once a decade to see if everything is in order up there? The impression GANE and the public is getting is that no one's in charge, and that the technology, even on a small scale as at Georgia Tech, is too complicated to handle. The Inspection Reports are rife with the NRC educating Georgia Tech as to the math that has to be done to calculate the emissions. GANE knows this is an educational institution, but we really hoped that the professors were knowledgeable teachers, not students of the NRC. In our answer to #21 GANE cites numerous examples of GTRR management failure to have, understand, and follow procedures. GANE believes management continues to conceal problems from the NRC, oversight committee and the President of Georgia Tech.

40. *State whether GANE contends that the current management of the GTRR fails or [sic] [will fail?] to provide adequate protection of the public health and safety. Explain your answer in detail, and provide any and all bases for this contention. Provide all information, identify all persons, and provide copies of all documents which relate to this contention, as requested in Interrogatories 21-30 above.*

NRC Inspection Report 95-01 describes a <sup>1</sup>/<sub>2</sub> many of calculation errors concerning the emissions from the reactor. There has been no monitoring of wind direction and speed for many years, and management made material false statements about that. Neutron radiation surveys and contamination surveys were not performed and they don't believe the readings on the TLDs (NRC Inspection Report 93-02). They let the



maintenance workers who are foolhardy enough to work for them without special training possibly harm themselves (NRC Inspection Report 90-02). Students used faulty x-ray equipment for almost one year at the risk of being hurt (see the Nuclear Safeguards Committee Minutes 12/8/94 - E.F. Cobb's memo 10/13/95). They mailed a leaking package to Antarctica (NSC Minutes 2/10/94) and packages that are falsely labeled as to their contents with incorrect emergency contact information (NRC Inspection Report 93-02). They failed their building leak rate test (NRC Inspection Report 89-02), they lost (or diverted) U-235 (Correspondence 3/1/88). #21, #22 and #27.

GEORGIA INSTITUTE OF TECHNOLOGY'S INTERROGATORIES REQUEST  
REQUEST FOR PRODUCTION OF DOCUMENTS TO GANE

1. Please identify each aspect of the management organization or structure, operations, supervision, budgetary functions, or otherwise which you contend serves as a basis for the denial of renewal by the NRC of Georgia Tech's license.

The organization is basically under the control of one man, the Director, who GANE believes is not being meaningfully supervised by any entity. GANE believes the Committee is weak and made up of largely by representatives of customers of the reactor. GANE believes the Vice-President and President are uninvolved. GANE believes the NRC is sometimes teacher, sometimes apologist, and sometimes gives a \$1,000 fine which doesn't mean much to a business with an annual budget of \$700,000.

2. Please identify and describe all facts in your possession or control or within your knowledge which supports each of the aspects of management listed in response to Interrogatory no. 1.

Please see the answer to #21 in the NRC interrogatories.

3. Please identify and describe all documents in your possession or control or within your knowledge which supports each of the aspects of management listed in response to Interrogatory no. 1.

Please see the list provided to answer #26 of the NRC interrogatories.

4. Please identify, giving name, address, and business and home telephone numbers, each person having knowledge of the aspects of management identified by you in response to Interrogatory no. 1 above.

Dr. Melvin Carter

4621 Ellisburg Drive NE, Atlanta, GA 30338, 770-458-9474

Rebecca Long

NRC Region II, 101 Marietta Tower, Atlanta, GA, 404-331-4503

R.M. Boyd

Safety Dept., Georgia State University, 158 Edgewood Avenue,  
Atlanta, GA 30303, 404-651-2282

Dr. Brian Copcutt

8720 W. Knoll Drive, Los Angeles, CA 90069-4118, (w)213-977-2920,  
(h)310-657-8442

Glenn Carroll

139 Kings Highway, Decatur, GA 30030, 404-378-9542

Pamela Blockey-O'Brien

D23 Golden Valley, Douglasville, GA 30134, 770-949-9342

John Galloway

25865 Georgia Tech Station, Atlanta, GA 30332, 404-206-9678

Rob Johnson

125 Estoria Street, Atlanta, GA 30316, 404-223-5605

Joan O. King

Route 1, Box 1037, Sautee, GA 30571, 706-878-3459

5. Identify any person GANE presently intends to call as a witness in this proceeding to testify regarding this contention. For each such person, please state:

- a. name, address, business and home telephone number
- b. place of employment, title; and education
- c. whether such individual was at any time an employee of Georgia Tech

See information listed in your #4 and in NRC Interrogatory #23.

6. If GANE expects to call an expert witness to testify on its behalf, please provide the following information:

- a. name, address, business and home telephone number
- b. place of employment, title, and education
- c. professional experience
- d. the subject matter on which the expert will testify
- e. the substance of the facts and opinions as to which the expert is expected to testify
- f. a summary of the grounds for each opinion

R.M. Boyd, Safety Dept., Georgia State University, 158 Edgewood Avenue, Atlanta, GA 30303, 404-651-2282. Mr. Boyd is Radiation Safety Officer at Georgia State University. He worked at Georgia Tech for several years with the current Director, and ended up leaving voluntarily as a result of the management changes implemented prior to the notorious cadmium-115 incident of 1987. His standing in the Georgia radiation community is good and he has kept up with affairs at Georgia Tech even after leaving in 1988 because of friends and colleagues who have been involved with or employed at Georgia Tech and have come to share his sense that management problems at GTRR are profoundly grave. Because of his fear of reprisal from Georgia Tech he is not a friendly witness to us and GANE believes the full story will only come out on the witness stand where he is forced to honor the court.

Dr. Brian Copcutt, 8720 W. Knoll Drive, Los Angeles, CA 90069-4118, (w)213-977-2920, (h)310-657-8442. Dr. Copcutt has had a career of managing radiation safety in a variety of situations. That and his experience working with the current management structure and Director of the GTRR qualify his opinion as expert.

7. Identify all documents which GANE intends to admit into evidence at the hearing of this case.

Please see item #26 of the NRC Interrogatories.

8. Identify the specific NRC regulation which you contend has been violated or is currently being violated by Georgia Tech.

Please see #30 of the NRC Interrogatories.

9. Provide all information and produce copies of all documents in your possession which document or describe in any manner any incidents or problems involving the GTRR which have occurred from 1998 [sic] to the present, which GANE contends demonstrate significant, serious, or continuing management problems at Georgia Tech.

Please see the answer to #21 of the NRC Interrogatories.

10. State whether GANE contends that the corrective actions taken by the Licensee following the events in 1987 failed to adequately resolve any management problems which might have existed at the GTRR prior to the taking of such actions. If the answer to this interrogatory is

yes, please explain fully why such corrective actions did not resolve any such problems.

Please refer to the answers to #36 and #37 in the NRC Interrogatories. GANE believes the "corrective" actions of consolidating all authority in the Director has made things worse.

11. State whether GANE contends that the Nuclear Safeguards Committee (NSC), the Office of Radiation Safety (ORS), or the Manager of ORS have failed to properly perform their respective roles, at any time from 1988 to the present. If the answer to this interrogatory is yes, please explain fully all examples of improper or inadequate performance of these entities since 1988.

Please refer to #36, #21 of the NRC Interrogatories.

12. Does GANE have a management plan that it contends should be instituted at GTRR? If the answer to this interrogatory is yes, please state the following:

- a. the identity of the person(s) who developed such plan
- b. describe such plan, giving specific details as to organization, safety assurance, and operation
- c. describe all differences between the organizational structure and management currently in place at GTRR and the plan suggested by GANE

Yes. We would be delighted to iterate GANE's vision for the GTRR. The 30-year license has expired for the Georgia Tech Research Reactor. The current management has not kept accurate record of the environmental damage it has caused because it cannot perform its math calculations correctly and does not trust the readings from the TLD system of radiological monitoring. The Bismuth Block Shield is leaking and the basement is contaminated by a constant flood of water from that leak coupled with the radioactive metal grindings of the shutter which fall every time the shutter is used and are carried down with the water. There is or was spent and fresh fuel stashed all over the building (although as of midnight February 20, 1996, we hear it is all gone) and 250,000 curies of cobalt-60 to contend with. If the facility were in better shape it might be a worthwhile activity to devise a management plan that would work safely. With honest, hard-working, talented management, and a robust, empowered health physics program, a concern about safety of workers, the public and environment, there might be a mix that would be reasonable. At this point, given the



degradation of the facility, the damage to the environment and the unsafe culture which has become endemic, GANE suggests it's time to change the question. The management structure that is needed now is one to perform closure and clean-up of the facility. We've been reluctant to come right out and say this, but given the material false statements about the air monitoring equipment and possible material false statement concerning the presence of fuel, apparent failure to report serious safety concerns (fuel weld failure and bismuth block leak), inability to perform too many procedures correctly and too many errors in calculations, too many analyses of environmental contamination not performed - in short, the current Director is not up to the task. To perform the clean-up, GANE recommends that you use outside contractors for fuel removal and to assess the contamination of the buildings and lend expertise on available methods for clean-up, or more precisely stated, containment. GANE believes the nuclear program would be wise (and on the leading edge of a new market) to reorient its goals to a nuclear waste mission. The Health Physics program needs to be reinstated to equal power with operations. Make-up of the oversight committee needs to be half health physics people and half technical people. Another worthy goal for the nuclear program is to gather more knowledge of the health effects of radiation exposure. This is a discipline that, alongside nuclear waste, has received a short supply of energy in the 50 years of the nuclear industry. GANE would like to see Rebecca Long reinstated to the GTRR project as NRC investigator since we have gotten the impression that she is an earnest and intelligent NRC investigator. If she took her job too seriously to please the good-old-boy network, GANE puts that on the plus side of her resume.

The differences between our vision and the current morass are, different director, different mission, use outside expertise, maybe the same radiation safety officer, let's empower him and see how he does. Emphasis on health and safety instead of production. Restructure management at the facility to equally empower health and safety personnel with operations. Restructure committee to have balanced talents. Give the committee a key to the door, so to speak, the power to fire one of the managers if need be. Let's get some people that are strong in math in there. Maybe Arjun Makhijani would like the job of helping Georgia Tech back out of the nuclear corner - a physicist and environmentalist tackles a real-life nuclear waste and contamination



problem. Give one of those big-mouth environmentalists a chance to put their money where their mouth is, eh?

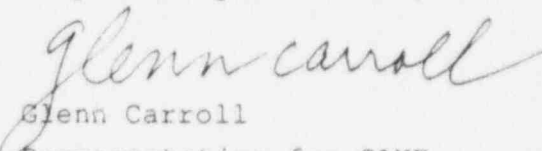
13. Does GANE contend that management at the GTRR should be changed in any respect? If so, please describe all such proposed changes and the purpose of all such changes.

Please see the previous answer.

14. Does GANE contend that the GTRR cannot be managed appropriately and safely under any management plan? If the answer to this interrogatory is yes, please provide the factual basis of such contention.

Yes. The fact, to GANE, is that GTRR's license is expired and it's an old, rundown, leaking piece of equipment which has ended its service life. The fact according to Dr. John Gofman, Dr. Rosalie Bertel, Dr. K.Z. Morgan, Dr. Alice Stewart and many others, is that there is no safe level of radiation. The fact is there is plenty, and years' worth, of work to do to shut the Georgia Tech Research Reactor down properly and to deal with the building and contamination legacy. GANE hears humanity crying for options to deal with nuclear waste and spent radioactive buildings. The fact is, if we don't learn how to deal with a small operation like the Georgia Tech Research Reactor, how will we ever manage to face the legacy of the large facilities like Nuclear Power Plant Vogtle? GANE believes there is a lot of risk in the clean-up and containment activity but that it is a more worthy goal than to push our luck by operating the Georgia Tech Research Reactor further. She gave a good service life. Let's dignify her service by giving the students at Georgia Tech an education opportunity to lead us to a wisdom for which humanity has been waiting 50 years.

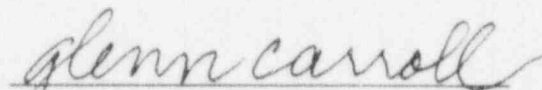
Respectfully submitted,

  
Glenn Carroll  
Representative for GANE

Dated and signed February 22, 1996  
in Decatur, Georgia

VERIFICATION

Personally appeared before the undersigned attesting officer, Glenn Carroll, who, after being first duly sworn, deposes and states on oath that the facts set forth within and foregoing are true and correct to the best of her knowledge and belief.



Glenn Carroll

Representative for GANE

Sworn to and subscribed before me this  
22nd day of February, 1996.



NOTARY PUBLIC

My commission expires:

VICTORIA R. ADAMS  
Notary Public, Gwinnett County, Georgia  
My Commission Expires January 4, 1997

ATTACHMENT #1  
Melvin Carter Story  
Technique  
November 20, 1987

1 page

people to un-  
leopardize  
This  
won't get  
baseball, but  
worth is much  
he will not  
American teams  
times that he  
attended.  
part about  
Riccardo met  
on a forum with  
athletes on  
giving problems  
rules. If there  
rum, Riccardo  
never met the  
talking and  
the early signings

ing we can do about it, but we're try-  
ing very hard to make our guys un-  
derstand what happened to Ric-  
cardo. (We want them to realize)  
how much money this is costing him  
in the long run. Hopefully, by edu-  
cating others about the rules, they  
will understand that it will hurt  
them in the future, they will not do  
it.

**Ross:** As far as our program goes,  
we're not changing what we've done  
in the past at all. I think, in fact, that  
we've made a every effort to pre-  
vent this kind of thing from happen-  
ing. First of all, we have a Total Per-  
son program and that's not just a  
program—that's not just lip serv-  
ice. We have seminars on things of  
this nature that are conducted  
yearly, and we have video tapes for  
those who can't see the seminars,

able with our program.  
There are some private things in  
Riccardo's life that made him a candi-  
date for this kind of thing. I knew  
that long before even some of these  
things came up. Whenever you've got  
people like Mr. Abernathy and Mr.  
Wilson out there, however, you can't  
protect your players for the rest of  
their lives. They're people, and they  
have to become responsible people.  
You hope that they learn during

**RICCARDO**  
Tech because he accepted \$4000 from two agents.

the time they're in your program,  
and you also hope that you develop  
a bond of trust, so that they can  
come to you in a time like this.  
These things don't get established  
right away, and even then, there will  
always be people who do the wrong  
things.

I'm not at all comfortable with

the fact that it did happen, but there  
are people out there who are going  
after people like Riccardo and there  
is nothing you can do to prevent it.

**Rice:** Above all, we have an ongo-  
ing program in several areas: drug  
education, alcohol abuse, gambling,  
and of course agents for those quali-

continued on page 7

## Radiation expert resigns to protest changes at the Neely Nuclear Research Center

By ROBERT LINZ  
News Staff

In response to the organizational  
changes made at the Neely Reactor  
on Tech's campus, Melvin W.  
Carter, former chairman of the Ra-  
diation Protection Committee, has  
resigned. Carter said he vigorously  
opposes the changes, and that they  
"fly in the face of all generally recog-  
nized and established principles of  
radiological safety."

Carter has had over thirty-five  
years of experience in health and  
safety programs, and has been con-  
cerned specifically with radiologi-  
cal programs. Carter said he finds  
the changes "discouraging" be-  
cause they are "completely con-  
trary to health physics practice."  
Furthermore, he said he believes  
the changes reflect poorly on Geor-  
gia Tech, which houses "one of the  
largest and best Health Physics  
programs."

When Carter, upon hearing of the  
changes from Ratib Karam, direc-  
tor of the Nuclear Research Center,  
wrote a letter on March 23, 1987, to  
the then acting president, Henry C.  
Bourne, expressing his dissatisfac-

tion and unalterable opposition to  
the proposed changes.

On June 10, Carter "resigned as a  
matter of conscience and principle"  
from the chairmanship of the Ra-  
diation Protection Committee, which

has since been abolished as part of  
the organizational changes at Neely.

Carter said that by resigning, he  
has "done what (I) thought was ap-  
propriate with the framework and  
structure (given me)."



ROY BOONE/Staff

**MELVIN CARTER** resigned as chairman of the Radiation Pro-  
tection Committee to protest changes at the campus reactor.

**IDE:**

November 20, 1987

Page 3 — The SGA Credit Union Committee  
to apply once again for a charter for the Georgia  
Student Credit Union.

Page 13 — It's a slow week for news at  
from Picayune. Now those guys know how we  
the Technique.

Page 15 — Tech gets a bowl bid, al-  
though in this case it is only for the College Bowl, and  
Football bowl.

Page 32 — Tech didn't lose last week, but  
again, they didn't play, either. They take on Wake  
on Saturday at Grant Field.

Technique

Nov 20, 1987

ATTACHMENT #2  
Management Flow Chart Before and After  
Crecine Memo + Flow Chart

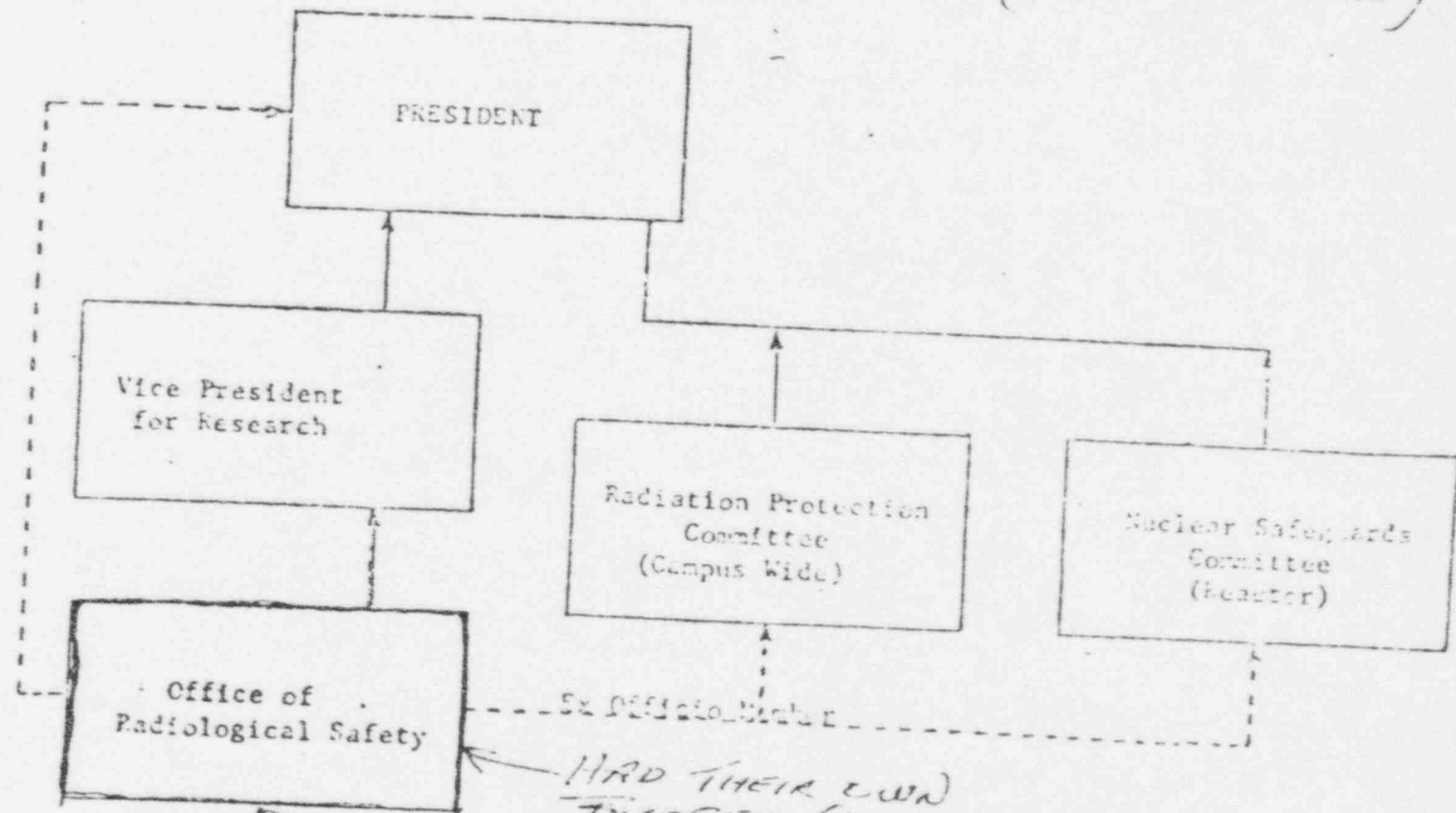
4 pages



ORGANIZATIONAL CHART

(Ga. Tech)

BEFORE 7/1/87  
(2 Comm. Hees)



HAD THEIR OWN  
BUDGET (CONTROL  
\$1 MILL SEC. SUPPORT)

ALL OF GA TECH'S DAY TO DAY  
OPS FUNCTIONS

Note: ~ 56 MAN YEARS (2 BS DEGREES)

GA TECH AFTER 7/1/87  
(1 Committee)

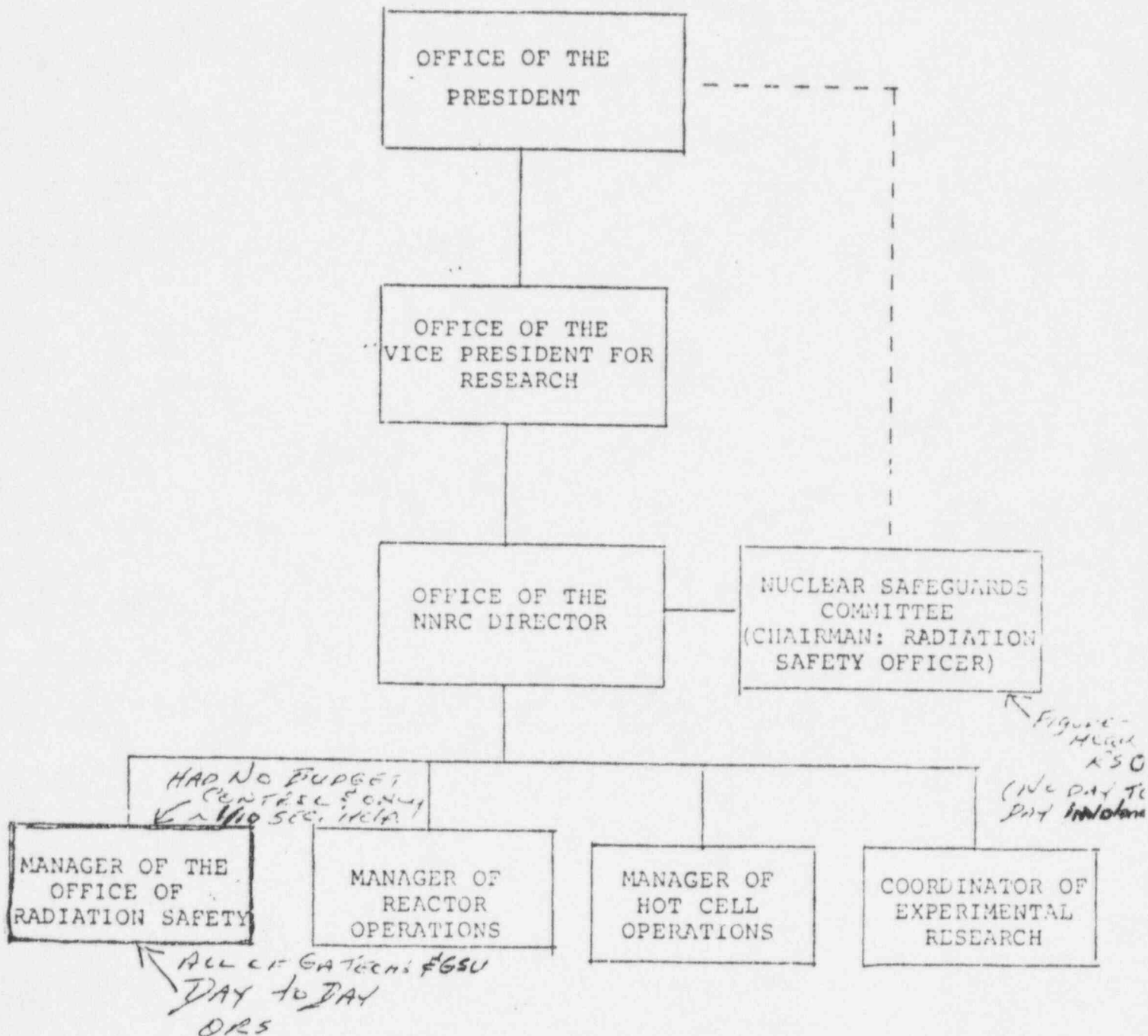


FIGURE 1 NEELY NUCLEAR RESEARCH CENTER ORGANIZATION CHART

February 19, 1988

To: Interested Parties  
Nuclear Safeguards Committee

From: John P. Crechin  
President

Subject: Organizational Arrangements/ Radiation Safety

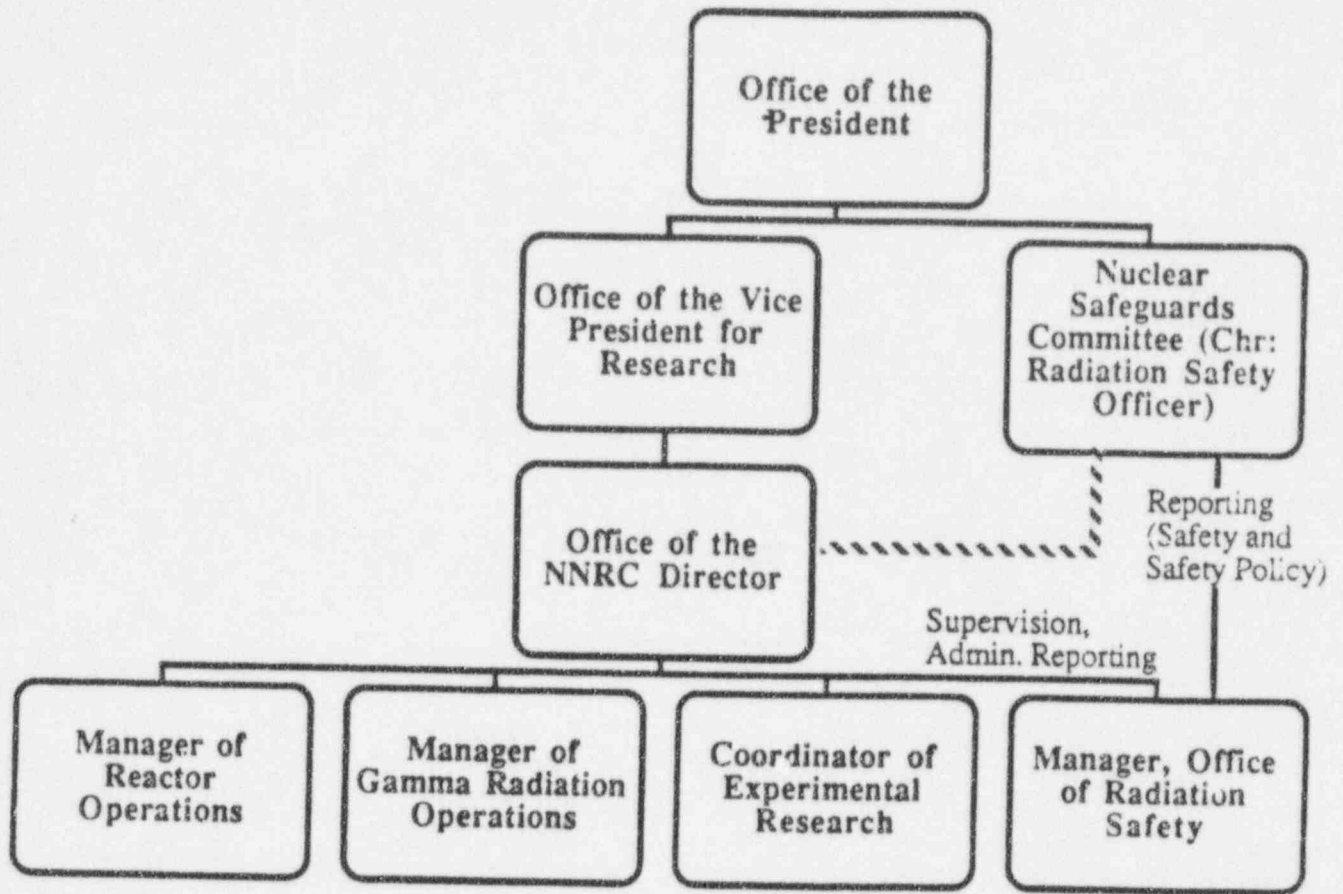
cc: H. Bourne, T. Stelson

In reviewing the organizational aspects of the recent controversy surrounding safety at the Neely Nuclear Research Center, it is apparent that some misunderstandings exist regarding responsibilities, supervisory, and reporting relationships surrounding the Radiation Safety group and the Nuclear Safeguards Committee. This memo is intended to clarify two aspects of these organizational arrangements, the relationship of the Nuclear Safeguard Committee to the President of Georgia Tech, and the reporting and supervisory arrangements for the Radiation Safety Office.

The Nuclear Safeguards Committee reports to the President of Georgia Tech. The Director of the Neely Nuclear Research Center is an ex-officio member of the Nuclear Safeguards Committee. The Chairman of the Nuclear Safeguards Committee is Georgia Tech's Radiation Safety Officer. [Stelson to Bourne, 5/27/87 "The Radiation Safety Officer would have the authority to report independently to you (as President of Georgia Tech) on any matter of urgent need completely bypassing all organizational structure. This is the same as current practice."] In addition to immediate reporting of emergencies to the Office of the President, a monthly summary of safety related incidents should be forwarded. The Director of the Neely Nuclear Research Center, like all line managers dealing with radioactive materials, reports to the Nuclear Safeguards Committee in the area of safety.

A distinction exists between the supervisory and reporting relationships of the Office of Radiation Safety. For day-to-day supervision, the Manager of the Office of Radiation Safety reports to the Director of the Neely Nuclear Research Center. Supervision encompasses both financial and administrative matters and broad program direction. In terms of reporting responsibilities, an obligation exists for the reporting of all safety violations, dangerous conditions, and potential problems to the Nuclear Safeguards Committee as well as to the appropriate line manager, regardless of location in the Georgia Tech organizational structure. The Nuclear Safeguards Committee has a direct reporting relationship to the Office of President of Georgia Tech. For urgent, dangerous, or unresolved situations of importance, the Office of Radiation Safety has an obligation to report and inform their direct supervisor, the Director of the Neely Nuclear Research Center, and/or the Vice President for Research, and/or the President.

The attached organization chart is intended to represent these points.



ATTACHMENT #3  
Dr. Brian G. Copcutt  
Georgia Tech Offers  
Senior Research Scientist Position

4 pages





# Georgia Institute of Technology

NEELY NUCLEAR RESEARCH CENTER

900 ATLANTIC DRIVE

ATLANTA, GEORGIA 30332-0425

(404) 894-3600

March 31, 1989

Dr. Brian G. Copcutt  
P. O. Box 3425  
Charlottesville, VA 22903

Dear Brian:

We are pleased to offer you a position as Senior Research Scientist at the Neely Nuclear Research Center effective May 8, 1989, at an annual salary of \$50,000 on a twelve month basis. Georgia Tech staff appointments are subject to confirmation by the Board of Regents; however, full approval is anticipated.

Your assignment will be in the Office of Radiation Safety, helping in the development of adequate health physics procedures and taking the initiative to develop research proposals in the area of health and safety.

NNRC is primarily dependent on sponsored research. All employment and assignments are ultimately contingent upon outside funding. Because of this funding situation, all NNRC staff members should remain constantly aware of the need for developing and conducting sponsored research.

NNRC staff members participate in the Federal Social Security Program and in the Teacher's Retirement System of Georgia. The latter presently requires a contribution of 6 percent of gross salary checks. The present State contribution is 13.63 percent. Your 6 percent contribution to TRS will not be subject to federal income taxes. Your salary for purposes of federal income taxes, will be reduced by the amount of your 6 percent contribution. Upon completion of 10 years of creditable service in the System and the attainment of age 60, members have a vested right to benefit. The Institute has several attractive group insurance programs which are optional.

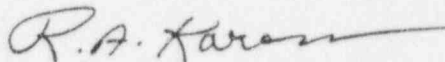
You will be required to complete a health questionnaire and, depending on the circumstances, may be required to pass a physical examination with the expense to be borne by you. Other requirements are the signing of a loyalty oath, patent agreement, and completion of a State Security Questionnaire.

Dr. Brian G. Copcutt  
March 31, 1989  
Page 2

As required by the Immigration Reform and Control Act of 1986, during the first 3 years of your employment, you will need to complete the upper portion of a Federal Form I-9 and, in the presence of an authorized deputy of the Georgia Tech Personnel Division, present proof of your identify and proof of your eligibility to work in the United States. A sample Form I-9 is enclosed. This sample shows the document(s) you should have available during your first 3 working days. Our Personnel Division will be happy to answer any questions you have regarding this.

We sincerely hope you will join us. We feel you will have a great opportunity for professional development here and that you will be an asset to the NNRC and Georgia Tech.

Sincerely,



R. A. Karam, Director  
Neely Nuclear Research Center

RAK:dwa

pc: Dr. John P. Crecine, President  
Dr. T.E. Stelson  
Dr. A.P. Sheppard



# Georgia Institute of Technology

NEELY NUCLEAR RESEARCH CENTER  
900 ATLANTIC DRIVE  
ATLANTA, GEORGIA 30332-0425

(404) 894-3600

March 15, 1990

Dr. Brian G. Copcutt  
P. O. Box 3425  
Charlottesville, VA 22903

Dear Dr. Copcutt:

We are pleased to offer you a position as Senior Research Scientist at the Neely Nuclear Research Center effective July 2, 1990 at an annual salary of \$65,000 on a twelve month basis. Georgia Tech staff appointments are subject to confirmation by the Board of Regents; however, full approval is anticipated.

Your assignment will be Manager, Office of Radiation Safety (MORS). The MORS is responsible for the radiation protection program for the Georgia Tech campus.

As you know, Georgia Tech is fast becoming a major graduate research institution. As such, research scientists are encouraged to develop research areas with outside sponsors. Such activities help faculty members not only stay current in their knowledge of their chosen field but also make them and their graduate students contributors to that field.

NNRC staff members participate in the Federal Social Security Program and in the Teacher's Retirement System of Georgia. The latter presently requires a contribution of 6 percent of gross salary checks. The present State contribution is 13.63 percent. Your 6 percent contribution to TRS will not be subject to federal income taxes. Your salary for purposes of federal income taxes, will be reduced by the amount of your 6 percent contribution. Upon completion of 10 years of creditable service in the System and the attainment of age 60, members have a vested right to benefit. The Institute has several attractive group insurance programs which are optional.

The Georgia Tech Research Corporation (GTRC) arranges and pays for actual costs of packing and moving household goods and books of new research faculty, excluding firewood, outbuildings, chain link fencing and other fencing, and building materials and the shipment of automobiles and boats. GTRC will reimburse for the actual cost of storage and special handling charges not to exceed \$1,000. Insurance at the rate of \$1.25 per pound will be reimbursed for allowed weight. Mileage allowance at the rate of 21 cents per mile will be reimbursed based on the standard road

Dr. Brian G. Copcutt  
March 15, 1990  
Page 2

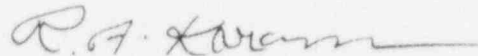
distance from Charlottesville, Virginia to Atlanta to move a personal automobile. Personal travel expenses at the rate of \$50 for each 700 miles of travel distance, prorates for distances in partial increments of 700 miles and based on the standard road distance from Charlottesville, will be reimbursed; or, in lieu of the personal car allowance and personal expense allowance, GTRC will provide reimbursement for the actual one-way economy airfare for you and your immediate family. Upon notification of your acceptance of this offer, GTRC will advise their contract household goods mover who in turn will contact you directly to make all the necessary arrangements for your move to Atlanta.

You will be required to complete a health questionnaire and, depending on the circumstances, may be required to pass a physical examination with the expense to be borne by you. Other requirements are the signing of a loyalty oath, patent agreement, and completion of a State Security Questionnaire.

As required by the Immigration Reform and Control Act of 1986, during the first 3 years of your employment, you will need to complete the upper portion of a Federal Form I-9 and, in the presence of an authorized deputy of the Georgia Tech Personnel Division, present proof of your identify and proof of your eligibility to work in the United States. A sample Form I-9 is enclosed. This sample shows the document(s) you should have available during your first 3 working days. Our Personnel Division will be happy to answer any questions you have regarding this.

We sincerely hope you will join us. We feel you will have a great opportunity for professional development here and that you will be an asset to the NNRC and Georgia Tech.

Sincerely,



R. A. Karam, Director  
Neely Nuclear Research Center

RAK:ccg

pc: Dr. John P. Crecine, President  
Dr. Michael Thomas  
Dr. Gary Poehlein

ATTACHMENT #4  
Dr. Brian Copcutt  
Resignation Letter  
10/8/90

1 page





# Georgia Institute of Technology

NEELY NUCLEAR RESEARCH CENTER  
900 ATLANTIC DRIVE  
ATLANTA, GEORGIA 30332-0425

(404) 894-3120

October 8, 1990

Dr. R. A. Karam, Director  
Neely Nuclear Research Center  
Georgia Institute of Technology

Dear Dr. Karam:

I regret that I must offer my resignation from the position of Manager, Office of Radiation Safety and Senior Research Scientist effective November 2, 1990.

After careful consideration I feel that it is impossible for me to work effectively within the structure of the radiation safety program at Georgia Tech. I believe that the Manager, Office of Radiation Safety (M.O.R.S.) lacks sufficient operational freedom to adequately conduct the radiation safety program. Specifically, health physics staff appear to be under the dual control of the M.O.R.S. and the facility Associate Director. On a personal basis, I have been discouraged from making even minor decisions without first consulting you and Dr. Revsin. I also object to suggestions from yourself and Dr. Revsin that I should not, in the future, document observed regulatory violations or proposed program improvements.

I cannot, in good conscience, take responsibility for a program whose priorities I cannot set and in which I must compromise my professional judgments.

Sincerely,

Brian Copcutt, Ph.D.

cc: Dr. B.K. Revsin  
Dr. Gary Poehlein  
Members, Nuclear Safeguards Committee

ATTACHMENT #5  
Picoammeter Monitor  
Procedure 4200 Form  
1/92

1 page

Minor Change  
Number:  
By:  
Date: / /

NEELY NUCLEAR RESEARCH CENTER

CHANGES IN GTRR DESIGN

Procedure 4200  
Revision 00  
Approved 04/28/89  
Page 3 of 4

APPENDIX A

10 CFR 50.59 SAFETY EVALUATION QUESTIONNAIRE

FACILITY MODIFICATION NO: 92-001

TITLE: PICO AMMETER MONITOR

1. Will the probability of the occurrence or the consequences of an accident or malfunction of equipment important to safety previously evaluated in the safety analysis report be increased? [yes/no] NO
2. Will the possibility for an accident or malfunction of a different type than evaluated previously in the safety analysis report be created? [yes/no] NO
3. Will the margin of safety as defined in the basis for any technical specification be reduced? [yes/no] NO
4. Is the proposed change an unreviewed safety question? [yes/no] NO

**NOTE:** If additional space is needed to justify conclusion(s) please attach extra sheet(s).

PREPARED BY:

Neely Statham

DATE:

1-24-92

APPROVALS:

Director NNRC:

C. A. Koren

1/27/92

Nuclear Safeguards Committee:

\_\_\_\_\_

\_\_\_\_\_

ATTACHMENT #6

Rebecca Long Story

Atlanta *Journal/Constitution*

12/27/93

Houston *Chronicle*

12/26/93

7 pages

# Inspector: NRC bias put public in danger

Atlanta woman cites  
report on Tech reactor

ASSOCIATED PRESS

A Nuclear Regulatory Commission inspector in Atlanta who has sued the agency for sex discrimination and harassment says her work was compromised at potential risk to the public and nuclear industry workers.

Rebecca Long, 40, said male managers in the Atlanta regional office undermined some of her safety related findings out of spite.

She said the handling of her safety report on a nuclear reactor at Georgia Tech was an example of what she considers questionable NRC conduct.

"I'm not anti-NRC," she told the Houston Chronicle in Sunday's editions. "Some of the finest people I've ever worked with are here, and they do a hell of a job. It's just that there are pockets of problems that need to be cleaned out."

Long works in the NRC's Region II office in Atlanta, which oversees 33 nuclear reactors in 10 Southeastern states, Puerto Rico and the Virgin Islands.

She said four men in the office have tampered with her work, badgered her with derogatory comments and improperly denied her promotions and bonuses since 1987.

Although Long's allegations involve one of the agency's five regional offices, reports have previously indicated a growing mistrust of the NRC among whistleblowers at nuclear power plants.

Long said some NRC managers delete or "water down" serious safety problems documented by inspectors. She added that it is an agency dominated by "good old boys" who reward "team players."

The NRC hired Long in February 1986 at an entry-level salary, earning about \$20,000 less than male inspectors with comparable backgrounds. She holds a master's degree in nuclear engineering.

She said her trouble began after she complained about her pay to Region II managers. Named in her lawsuit are managers Frank Jape, Ken Barr and Bruce Wilson. Another manager, Bill Little, was the subject of a grievance Long filed with her union.

Jape, Barr and Little still work in the Region II office. Wilson left the NRC last year.

Little, reached at his home by the Chronicle last week, said "I don't know of any retaliation" against Long. Jape declined comment. Neither Barr nor Wilson returned telephone calls.

The Georgia Tech incident, which resulted in a worker's radiation exposure, was one of several examples Long offered of what she considers questionable NRC conduct.

In 1987, she inspected a research reactor operated by Georgia Tech. Based on her inspection, the NRC cited the university for several violations, including failure to properly control experiments.

A few months later, she said, Jape retracted the citations without her knowledge, contrary to NRC procedures.

Georgia Tech continued operating the reactor until January 1988, when the NRC ordered it to cease all experiments because of a "breakdown in management controls" — the same problem Long had previously identified.

"They put something in [the reactor] that got much more radiation than they thought it would and the sample exploded," contaminating a worker, Long said.

Long's discrimination and harassment allegations against Jape were rejected in 1990 by a federal magistrate.

But a federal judge who reviewed the ruling decided to retry the case, which now includes additional allegations.

NRC Chairman Ivan Selin refused to comment on the lawsuit. In the past he has vowed to protect nuclear industry whistleblowers and weed out harassment and discrimination within the agency.

Atlanta  
Journal/  
Constitution

12/27/93



02/06/96

020696\_8958 [procdm@epro501]

/tmp/PROCDM035301.1769.PRINT

1

LOG: 020696-8958 ADVISED: program TIME: 02/06/96 15:58 PAGE: EDITION:  
SECTION: PUB: DATE:  
KEYWORDS: byline=jim morris and nrc and re NOTES: OUTPUT: 02/06/96 15:58

STORY 1

NEWSPAPER HOUSTON CHRONICLE

EDITION 3 STAR

PUBLICATION DATE 12/26/93

DAY SUN

SECTION A

PAGE 1

LENGTH 49 INCHES

HEADLINE "Clamp down/The Silencing of Nuclear Industry  
Workers/NRC's ability questioned with worker's claims/Charges

by female inspector cite lax safety, harassment

BYLINE JIM MORRIS

CREDIT Staff

DATELINE ATLANTA

PHOTOS, GRAPHICS Photo: Rebecca Long looks through documents she has  
accumulated in a sexual harassment and discrimination

case against the agency (p. 30)

ART CREDIT W. Harewood/Special to the Chronicle

NOTES Copyright, 1993 Houston Chronicle

ATLANTA -- Inspector Rebecca Long says she's seen the dirty side of the  
Nuclear Regulatory Commission: male managers who crudely harassed and  
discriminated against her because of her sex and undermined some of her  
of spite.

Ms. Long says she's seen enough good -- sympathetic NRC managers, dedicated  
inspectors -- to make her want to stay on, despite the loathsome things she  
says have been done to her since she joined the agency nearly eight years  
ago."

"I'm not anti-NRC," said Long, 40, who has filed a voluminous sex  
discrimination and sexual harassment lawsuit against the agency in federal  
court. "Some of the finest people I've ever worked with are here, and they do  
a hell of a job. It's just that there are pockets of problems that need to be  
cleaned out."

In her first media interview, Long told the Houston Chronicle last week that  
she has been harassed since 1987 by four male managers in the NRC's Region II  
office in Atlanta, which oversees 33 reactors in 10 southeastern states.

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Puerto Rico and the Virgin Islands. She said their acts included:

Tampering with her work, at potential risk to the public and reactor workers.

Badgering her with derogatory and sometimes-profane comments.

Bad-mouthing her in front of other NRC employees and licensees -- utilities and universities that operate reactors and are regulated by the agency.

Improperly denying her promotions, overtime and bonuses.

Relieving her of her technical duties as punishment for pursuing safety issues.

Warning other employees not to associate with her.

The significance of Long's story goes beyond the loutish behavior she claims the Atlanta men displayed. It casts new doubt on the objectivity and effectiveness of the NRC, formed in 1975 to protect workers and the public from the hazards of nuclear power.

Although Long's allegations involve one of the NRC's five regional offices, the Chronicle previously has reported a growing mistrust of the agency as a whole among whistle-blowers at nuclear power plants, including the South Texas plant near Bay City. Many of these workers believe the NRC has not taken their safety-related allegations seriously or done enough to protect them from retaliation. A congressional hearing was held on the subject last July.

In her interview with the Chronicle, Long offered a rare behind-the-scenes look at a close-knit organization. The NRC she describes is an agency in which some managers, for petty reasons, delete or "water down" serious safety problems documented in inspection reports. It is an agency dominated by "good old boys," many of them veterans of the Navy's nuclear submarine program, who reward "team players" and lash out against workers -- especially women -- who show too much independence.

"I'm often told I can't amount to anything because I'm not a 'Navy nuke,'" Long said.

Long said she knew something was amiss when she was hired by the NRC at an entry-level salary -- about \$20,000 less than what male inspectors with comparable backgrounds were getting -- even though she had 10 years' experience as a nuclear engineer in the private sector. Once she made pay an issue, she said, Region II managers began retaliating against her.

"I've raised safety issues and had a performance appraisal lowered as a result," Long said. "Because I've filed EEO (Equal Employment Opportunity) complaints, they brand me as a traitor and not a team player. I'm an unwanted female."

Three of the men identified by Long -- Frank Jape, Ken Barr and Bill Little -- are still with Region II, Jape and Barr in management positions. The fourth, Bruce Wilson, left the NRC last year and is working in private industry. Jape, Barr and Wilson are named in Long's federal suit. Little was the subject of a union grievance she filed.

Reached at his home last week, Little said: "I don't know of any retaliation" against Long. Jape declined comment. Barr did not return a telephone call to his office and Wilson did not return a call to his home.

Long holds a master's degree in nuclear engineering and spent a decade with Babcock & Wilcox, a Virginia-based engineering firm, before joining the NRC in February 1986. When she was hired by the agency, she said, she was considered an expert in reactor physics. "I had to give up working in my area of

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Expertise to escape the harassment," she said.

"Being an NRC inspector is an enormous responsibility, and I love the job," Long said. "You can imagine how rewarding it is to find a safety issue and know that, through my efforts, a plant has been made safer. It's an opportunity to do an enormous service to the public. I should be allowed to do it because I'm good at it."

Long has inspected most of the nuclear power plants in Region II, including three of the nation's most problem-plagued -- the federal Tennessee Valley Authority's Watts Bar and Sequoyah plants in Tennessee and its Browns Ferry plant in Alabama. She used to send out documentation related to alleged TVA retaliation against whistle-blowers and think: "Well, they've done worse to me right here in my own agency."

Long's 70-year-old father, Frank Long, spent 23 years with the NRC and its predecessor, the Atomic Energy Commission, before retiring in 1986. He is bothered, but not particularly surprised, by what his daughter says has happened to her.

"The management of the NRC, as long as I can remember, has protected wrongdoers" within the agency, Frank Long said. He said he can recall only two or three employees who were fired from the NRC or the AEC during all his years of government service.

Some of the worst offenders, he said, were transferred to other offices or sent away to college on paid sabbatical.

The NRC is "supposed to look for safety problems, find them, get them resolved and take enforcement action if necessary," Frank Long said. "They've made it more like a country club for management. They're not seriously looking for safety problems, period."

Said Rebecca Long's attorney, Jon Zimring: "Becky's struggle has been to be permitted to do her job. There should be a place for her in this agency because of her competence, and they've tried to drive her out. There should be no place for (managers') labeling someone a troublemaker and belittling that person's work product when doing so has safety manifestations."

Long tells a chilling tale about a research reactor operated by Georgia Tech University in Atlanta. She inspected the reactor in early 1987, and based on her inspection the NRC cited the university for several violations, including failure to properly control experiments.

"They were sticking samples in the reactor without doing safety analyses," Long said.

A few months later, she said, Frank Jape retracted the citations without her knowledge. Contrary to NRC procedures, Georgia Tech was allowed to continue operating the reactor until January 1988, when the NRC ordered it to cease all experiments because of a "breakdown in management controls" -- the same issue Long had identified the year before.

"They put something in (the reactor) that got much more radiation than they thought it would and the sample exploded," contaminating a worker, Long said.

Georgia Tech shut down the reactor in February 1988 and was not given NRC permission to restart it for nine months. It also paid a \$5,000 fine. "That's a significant amount for a research reactor," Long said.

Long said that while she was inspecting the reactor, someone in Region II told Georgia Tech officials that two university employees had made safety allegations to the NRC. The employees were fired, Long said, but she was never able to learn who in Region II was responsible for breaching their

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confidentiality

Long has other examples of questionable NRC conduct.

In late 1988, she said, she raised two safety concerns about the TVA's Browns Ferry plant: that plant operators weren't properly tracking the positions of valves and other safety-related components, and that plant officials were moving nuclear fuel without monitoring radiation levels.

Her boss at the time, Bill Little, disagreed with her findings and told her she was "not technically competent," she said.

"I was grounded from inspecting," Long said. "My technical duties were restricted. I was kept from necessary training."

Long said Little retaliated against her for "pursuing safety issues" at Browns Ferry by giving her a bad performance appraisal in 1989, rendering her ineligible for a promotion and awards. Long filed a union grievance and the appraisal was declared null and void, she said, but the decision came too late to benefit her.

A few months before Little gave her the appraisal, Long received a letter of commendation from James Snizek, a deputy executive director for operations at NRC headquarters, for her Browns Ferry inspection.

In 1990, Long was working for Ken Barr, who gave her another poor appraisal. "He said I needed to take a hit" for filing union grievances and EEO complaints, Long said. "He said he was receiving pressure from his management to lower the appraisal."

Long said Barr "tried to suppress and undermine" findings she made during a 1990 inspection of the TVA's Watts Bar plant, which is still under construction, and "unnecessarily delayed" the issuance of her inspection report.

Barr also "pressured me to close (worker) allegations without investigating them," Long said.

As it happened, Long's Watts Bar inspection findings were a major factor in a yearlong suspension of construction at the plant and won her praise from Region II Administrator Stewart Ebnetter.

During a meeting, Ebnetter "called it the best inspection he had ever seen," Long said. "One of my findings at Watts Bar resulted in a criminal prosecution."

Long said she also had trouble with Barr's boss at the time, Bruce Wilson. Wilson repeatedly called her an "idiot" for making minor spelling errors in reports and mistreated her in other ways, she said.

Long said she asked Ebnetter for help on several occasions but "he said he'd been told by NRC attorneys to stay out of it." Region II spokesman Ken Clark said Ebnetter had no comment on Long's case because of the litigation.

Long's discrimination and harassment allegations against Frank Jane -- who, Long said, once characterized her with a sexual epithet in front of other NRC employees -- were heard by a federal magistrate in 1990. The following year the magistrate held that Long had failed to show she had been a victim of "disparate treatment" or sexual harassment and rejected her claims.

But a federal judge who reviewed the magistrate's ruling decided to retry the case, which now includes additional allegations. Zimring expects the trial to take place next year.



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Zimring said the NRC has responded to Long's now-lengthy list of allegations by "protecting itself rather than acting in recognition of its public functions and its responsibility to protect employees from harassment and retaliation."

Long said she would not have sued the NRC if it had firmly disciplined Vape in 1987, when the harassment and discrimination began. Instead, she said, the NRC has defended him and other Region II managers who engaged in inappropriate or illegal behavior.

"Once I spoke out against management, I basically became an enemy of the team," she said. "They began circling the wagons."

The NRC's position, spelled out in letters to Zimring from the U.S. attorney's office in Atlanta, is that it will not consider settling Long's lawsuit or agree to mediation unless she resigns.

That, Long says, is something she won't do. "It's a matter of principle."

NRC Chairman Ivan Selin has publicly vowed to protect nuclear industry workers from retaliation for raising safety concerns. And soon after he took the post in July 1991, he distributed to NRC employees a videotape in which he outlined his policy regarding sexual harassment and discrimination.

The inference Long drew was that Selin at least would listen to her problems and might even intervene on her behalf.

So, in April 1992, she sent Selin a letter summarizing her case and requesting his "immediate intervention." Selin never responded to the letter or subsequent telephone messages, Long said.

Selin said in a telephone interview last week that he could not comment on Long's case because of the lawsuit.

However, he said, "The NRC, like other federal agencies, has become increasingly sensitive to sexual harassment and the many different forms it can take. We have recently issued a new brochure specifically on this topic, which broadens the range of remedies and opportunities available to the person who thinks she has been harassed and to her supervisors."

Selin maintained that the NRC is no worse than other agencies but said: "We have had a couple of cases in the past of sexual harassment. It's been fairly subtle harassment, but when we looked into it the complainants were right. We're certainly not immune to this problem."

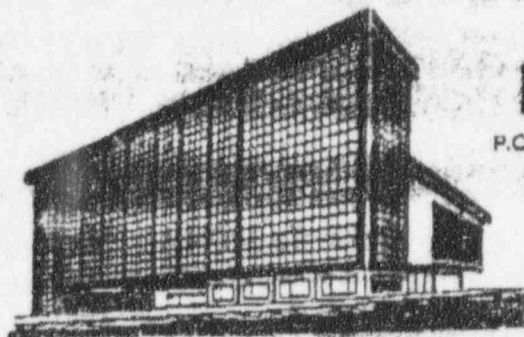
Selin said he believes sexual discrimination is "strongly covered" by existing NRC policy. Long rails at such statements.

"They don't seem to care about discrimination," she said, "and they haven't done anything about the harassment I've endured."

Long's battle against the Region II men, she said, has run up more than \$100,000 in legal expenses and "ruined seven years of my life."

"So many days I would come home from work and just shake and go to bed, just from the stress of what they'd done to me that day," she said. "If it weren't for my friends and the moral support of inspectors who weren't afraid to do the right thing, I never would have survived this."



**Houston Chronicle**

P.O. Box 4250 Houston, Texas 77210 (713) 220-7171

**CITY DESK**  
**FAX NO. (713) 220 6806****FAX TRANSMISSION COVER SHEET**DATE: 2/6/96 TIME: 4pm CSTTO: Irene Hill, CNN Interview

ATTN: \_\_\_\_\_

DEPT: \_\_\_\_\_

FAX NO. 404-827-4295FROM: Don Mason  
713-220-6186

I am sending pages (including this page)

6

SPECIAL INSTRUCTIONS: \_\_\_\_\_

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ATTACHMENT #7

E.F. Cobb Memo

Nuclear Safeguards Committee Quorum

5/24/94

1 page



Southern Nuclear Operating Company  
*the southern electric system*

May 24, 1994

Nuclear Safeguards Committee

Re: March 17, 1994 Meeting

Draft minutes of the March 17, 1994 Nuclear Safeguards Committee Meeting show that six members were present. Six were absent. Those present were: R. Braga, P. Desai, S. Ewald (Alternate Chair), S. Ghiassian, B. Kahn and J. Vickery.

The charter for the Nuclear Safeguards Committee specifies that, "The quorum shall consist of not less than a majority of the Committee membership and shall include the Chairman or his designated alternate. The operating staff may not constitute a majority of those present." The operating staff are not members of the Committee and the designated (Alternate Chair) was Steve Ewald.

With regard to a quorum, six members do not make a majority, seven are required. Consequently, the meeting conducted without a quorum of members did not conform to the charter, and therefore, may not be considered a formal Nuclear Safeguards Committee Meeting. The documents reviewed on March 17, 1994 will have to be reviewed and approved again in a Nuclear Safeguards Committee Meeting that has a quorum of members present.

We will review the documents from the March 17, 1994 meeting at the beginning of our next meeting scheduled for 1:00 p.m., July 14, 1994. To facilitate the review, all material from the March 17, 1994 meeting and a copy of the draft minutes of the meeting are being distributed by attachment to this letter to the members who were not present during the March 17, 1994 meeting. Members receiving this material are requested to review the documents prior to attending the July 14, 1994 meeting in order to expedite the review and approval of the documents during the meeting.

Please call me at 205-868-5161, if you have any questions.

Sincerely,

E. F. Cobb, Chairman

EFC/esg

Attachments

cc: See attached distribution

ATTACHMENT #8

Nuclear Safeguards Committee Minutes  
Student Irradiation

12/8/94

2 pages

MINUTES OF THE NUCLEAR SAFEGUARDS COMMITTEE MEETING OF  
December 8, 1994

Approved at  
2-9-95 mt  
One correct  
in item for

Members Present: E.F. Cobb (Chair), R.A. Braga, P.V. Desai, S. Ewald, S.M. Ghiaasiaan, P. Girard, B. Livesay, L. T. Gucwa

Others Present: R.A. Karam, R. Ice, S. Stock (MSE), B. Statham

The Chair called the meeting to order at 1:00 PM.

1. Minutes of the Committee meeting of October 27, 1994 were approved.

2. Procedure Modification

Minor modifications to procedures 0001, 3500, 4501 and 7246 were approved after discussions.

3. Procedure Deletion

It was agreed to delete Procedure 7276.

4. New and Old Business

R. Karam informed the Committee that the NNRC is currently discussing with NRC the conversion of the GTRR to a lower enrichment fuel, as well as a 20 year extension of operations license. The NRC has approved the amendment request to convert to low enrichment fuel. The request to renew the license is being evaluated.

The DOE lacks funds currently to furnish the lower enrichment fuel.

R. Karam also informed the Committee about a hearing held by the NRC in Washington, D.C., in consideration of Ms. Glenn Carroll's request to deny the NNRC a license to continue operation. Ms. Carroll has until the end of December, 1994 to come up with supporting documentation. Another request by Ms. Pamela Blockey-O'Brien suggests that there is an unsafe soil under the NNRC. In actuality, the soil under the reactor consists of weathered rocks. The NRC has asked the NNRC to inspect the sewer facility at the NNRC.

deletion  
correct

R. Karam discussed the failure of an older X-ray diffraction equipment where the shutter malfunctioned and a student may have been exposed on December 6, 1994. The student has been satisfactorily checked out. Further determinations are in progress. Although the dosage was well below permissible limit, R. Ice and S. Stock asked and received an authorization to research the issue further. The machine in question has



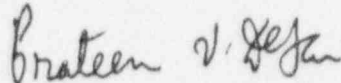
Minutes Nuclear Safeguards Committee  
December 8, 1994  
Page Two

been tagged out. At the suggestion of E. Cobb, the Form A approval of the PI was temporarily suspended until a final report is made to the Committee by R. Ice. R. Ice was asked to keep the Committee informed on the progress of the student. It was also suggested that the student be kept informed on the progress of the findings and the monitoring of his health. An interim subcommittee was appointed consisting of S. Ewald, B. Livesay and B. Kahn to keep up with further developments.

The next meeting of the Committee was scheduled for 19th January, 1995 at 1:00 P.M.

The meeting adjourned at 2:25 P.M.

Respectfully submitted,



Prateen V. Desai, Secretary

ATTACHMENT #9

E.F. COBB Memo to Wayne Clough

Old X-Ray Producing Devices

10/13/95

1 page



# Georgia Institute of Technology

NEELY NUCLEAR RESEARCH CENTER

900 ATLANTIC DRIVE

ATLANTA, GEORGIA 30332-0425

USA

(404) 894-3600

October 13, 1995

## MEMORANDUM

TO: G. Wayne Clough, President  
Prashant Desai, Textile Engineering  
Ahmet Erbil, Physics  
Henry Paris, GTRI/EOEML  
Byungwoo Park, MSE  
Stuart Stock, MSE  
Donald Vanderveer, Chemistry  
Jesse Wampler, E&AS  
Roger Wartell, Biology  
Angus Wilkinson, Chemistry  
Loren Williams, Chemistry

FROM: Emsley F. Cobb, Chairman, Nuclear Safeguards Committee

SUBJECT: "Old" X-Ray Producing Devices

The Nuclear Safeguards Committee is comprised of twelve technical experts in various fields of science and engineering. This Committee is appointed by the President of Georgia Tech and is charged with the responsibility for maintaining the health and safety standards associated with the use of radioactive materials and x-ray producing devices. Radiological safety and radiation protection are central issues which the Committee carefully evaluates. Instrumentation-control systems play a vital role in radiation protection. "Old" x-ray producing devices often lack the appropriate interlocks for high probability of safe operation.

Recently, a student inadvertently placed a hand in an x-ray diffraction beam. A review of the incident indicated that the potential exposure received was just within legal limits. The student narrowly missed a significant radiation burn. This beam, while small, is an extremely intense source of x-rays. The accident would not have occurred if the unit had met current x-ray equipment safety requirements.

The Committee recommends strongly that all unshielded, non-interlocked x-ray diffraction units be removed from service. Currently, there are several of these units in service under administrative controls. Administrative controls or controls by procedures are adequate provided users of the x-ray units follow the procedures verbatim. Unintentional deviation from the procedures could cause harmful radiation exposure. The Committee recommends that these units be replaced with units that have interlocks for safer operation.

*Emsley F. Cobb*

ATTACHMENT #10  
State of Georgia Criteria  
for a Broad License (Health Physics)  
1983

2 pages

State of Georgia  
Criteria  
for a  
Board  
License  
1983

-4-

CRITERIA:

FORMAL EDUCATION AND CERTIFICATION	EXPERIENCE
A. Bachelor's degree in health physics	A. Three years of applied health physics experience in a program with radiation safety problems, similar to those in the program to be managed.
B. Bachelor's degree in radiological health	B. (Same as above)
C. Bachelor's degree in a physical science with one year of graduate work in health physics	C. (Same as above)
D. Comprehensive certification by the American Board of Health Physics	D. (Same as above)

In cases where the license applicant believes that a person not satisfying the above criteria is qualified to act as the radiation safety officer in its program, it may submit a description of the training and experience qualifications of the person in question with supporting justification for utilizing the individual as the radiation safety officer and relating the specific qualifications of the individual to the demands of the position. In doing so, the applicant should consider each of the criteria listed below and specifically state the qualifications of the candidate radiation safety officer that meet these criteria. In addition, should the applicant feel that any of the below criteria are not applicable to its program, the basis for its position regarding each such criterion should be explained.

RADIATION SAFETY OFFICER CRITERIA

1. Ability to communicate clearly, both verbally and in writing.
2. Knowledge of mathematics, physics, chemistry, and biology sufficient to understand health protection standards, theories, and practices.
3. Knowledge of current standards, guides, and reports published by organizations such as the International Commission on Radiological Protection, the National Council on Radiation Protection and Measurements, the United Nations Scientific Committee on the Effects of Atomic Radiation, the National Academy of Sciences, etc. and the ability to understand, interpret, and apply them effectively.
4. Knowledge of and ability to operate and interpret the results from radiation measuring devices associated with the use of the radioactive materials.
5. Knowledge of and the ability to understand and apply the applicable Georgia,

Bob Boyt  
HAS ALL  
THESE  
SKILLS



NRC, or other Agreement or Licensing State regulations, guides, etc.

6. Knowledge and ability to evaluate the need for shielding and the types and amounts of shielding required.
7. Knowledge and ability to calculate radioactive decay, build-up, and secular and transient equilibrium.
8. Knowledge and ability to calculate internal and external radiation doses.
9. Knowledge of personnel monitoring devices and ability to select the proper device for a specific application.
10. Knowledge and ability to manage or conduct a radiation protection training program for facility personnel, including both radiation workers and non-radiation workers.
11. The knowledge and ability to recognize and anticipate existing and potential problems and to take appropriate and timely actions with respect to them.
12. Knowledge and ability to select appropriate radiation and radioactive materials measuring devices consistent with their proposed use.
13. Knowledge and ability to apply effectively current radioactive effluent treatment methods, equipment, and procedures.
14. Knowledge and ability to recognize potential contamination associated with the use of radioactive materials, control such contamination and decontaminate equipment, facilities, and personnel as necessary.
15. Knowledge and ability to prepare a facility emergency plan and conduct or manage operations in accordance with the plan.
16. Knowledge of and ability to evaluate, select, maintain, use effectively and supervise the use of protective clothing and equipment (respiratory protective equipment if required).
17. Knowledge and ability to evaluate, design, test, maintain, and supervise the maintenance of process control and confinement system such as gloveboxes, hoods, etc.
18. Knowledge and ability to evaluate, select, design, maintain, and test sealed sources of radiation and devices in which the sources are to be used.
19. Knowledge and ability to evaluate, select, design, use effectively, maintain, and supervise the use and maintenance of waste collection, treatment, packaging and disposal equipment, and the facilities with related radiation safety procedures.
20. Knowledge, ability and authority to manage effectively the license applicant's radiation safety program.

5 APPENDIX  
Note

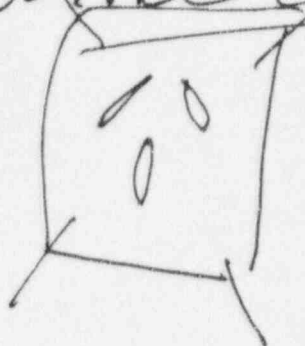
ATTACHMENT #11  
Notes of GANE Volunteers  
Nuclear Safeguards Committee Minutes  
Inspection Reports

47 pages

Cobalt-60

NRC Inspection Report  
94-04

Emergency drill involving cobalt-60 —  
Why does NRC care?



95 Inspection Reports

V10 50-62/94-04-01 retraining  
for proper procedures  
to empty pond

2/5/93 operating reactor w/o  
reg. safety system  
scrams

7/28/95 GT's Response to Not. of Vio.

human error

taken for granted that Mgr ORS  
did not need supervision

(7) calibration  
monitoring violation  
Beckman → Tennessee

saw no response to monitoring  
equipment violations

---

8/20/94 Not. of Vio.  
IR 94-02 math problem Aug. 11 1994  
off by 100 x  
neutron radiation survey

discussion of air monitoring — NRC  
doesn't seem to know that  
GT doesn't have any

badges had high levels registered —  
determined that heat + rain in the  
environment caused it — Why  
are we using this system?

2/11/94 - jumpers left in place  
2/15/94 → failed to replace fuse in  
TR-2 recorder during  
operation  
(temp. of thermal shield +  
bismuth block)  
scram signal if high temperature

---

I.R.  
94-05 D<sub>2</sub>O outlet valve + ~~2~~ D<sub>2</sub>O inlet valve

unsecured CO<sub>2</sub> bottle

pressure gauge range discrepancy

fire extinguisher expired

---

I.R. 93-02 (Not. of Vio.)  
NSC not functioning - not  
conducting required ~~and~~ audits

biweekly contamination surveys not  
being performed



Saw security document twice  
2nd x after an alert

I.R. 93-03

I.R. 93.02 indicator needle for primary  
cooling water pressure — needed  
repair ✓

mess in emergency lighting generator  
room — firehoses in water, old  
leaking batteries

→ ~~XXXX~~ Suggest to the judge

9/30/88 Minutes

H. Edwards + T. Thomas resigned  
from Committee - Karam invited  
anyone else who wished resign

10/14/88 Minutes

people eating drinking smoking in  
areas where radioisotopes —  
non-controlled access to radioisotopes  
storage areas — asks for  
recommendations

October 26 1989 Memo to NSC

Bismuth Block problem — was it ever  
resolved

Greenhorn leak — want to continue  
to operate anyway to fulfill

~~DOE documents~~ contracts + San. River  
had fixed w/ epoxy in 1983  
fix didn't work in 1989

December 6 1989 continue to test  
bismuth block leak — not resolved yet

Take to the State

1. Pamela on the phone w/ NRC  
contaminated lab contaminated by  
NRC

2. Walt under Crenshaw

3. Bismuth - leak  
leak in waste tank  
weld failure } meant to have  
been taken

will inquire @ student irradiation



I.R. 7/31 - 8/3/  
8/9-10 / 1989

Amead. 7 - Adeq. of Op. Proc. Problems  
Building Leak Rate Test  
no analysis

~~Adequacy of Op. P.~~

Shim Blades ~~XXXX~~

1994 prob.  
again w/  
primary SCRAM  
channels

1990 ~~(S?)~~ - graphite stringers  
how do you get exhaust grab samples

1990 how do you analyse tritium during waste compaction?

young people [max permissible concentration hours are not being tracked formally]

shipping procedures →

May 1995 failure to submit materials status report

600 → (particulate filter  
gaseous effluent  
liquid effluent)

1990/ cobalt in coolant →

1995/ liquid waste tank in tritium argon  
flat out state sources  
fission + activation by-products

1991 graphite stringers high radiation area

unsaid thing lack of understanding  
or concern for health effects

89 I.R. no instruction for analysing  
data taken to calculate  
bdg leak rate test

no acceptance criteria

neither management or SRO were  
aware of SAR commitment  
or familiar ~~to~~ NAF code 70.60

how licensee computed leak-rate test  
could lead to size immaculate  
leak-rate results

---

storing spent fuel under the  
floor ~~pool~~ in an  
uncirculated pool



Bill Downs Design  
Betty Revsun Design  
JC O'Hara

inside containment

17 in core (hot)

around core are ports ~~to~~ for spent fuel  
on main floor in containment

control room looking @  
reactor top

45° to left + down to  
main floor plug  
storage area  
5/88 → in water 14

5/88

→ fuel in storage vault according to  
Bob Boyd

need to see documents

Jan 3 - Page 1

1987 problem - when people were fired or quite  
N. safety comm. is checked. - but was not used  
properly during this period.

At N. Safety Reactor Jan 3 '86

Dr. Karam photo copied my driver's license  
I looked at minutes of the N. Safeguards Comm. Meeting  
March 1 '88 - minutes

# 8 concern about CS-137 source in Emerson Bldg.  
(H. Neumann) letter to Dr. Ericine

Karam to report about removal & disposal

R. M. Boyd - concerned about safety of hot cell/Storage  
Pool - frequent transfers of up to 600,000 Curie's of Tc-60  
Recommended operations should be terminated.

What happened to this?

April 6 '88 Agenda & Minutes

R. M. Boyd not present. Why?

#10 Committee was informed by Theragenics of a spill of  
Pd-102. Incident report is attached.

#11 R. K. distributed list of incidents involving GTRR  
the years past.

April 22 - minutes

R. M. Boyd not present.

Minutes N.S.C. Nov 2 '88

~~At this time the reactor was temporarily closed~~  
~~To be restarted 2/15/88~~ At this time the reactor had been  
closed since 2/15/88 - K. hopes restart will occur in  
week or two

Details of R.M. Boyd's letter  
to N. Safeguards Comm.

Subject: Hot Cell - Storage Pool Operation

Expresses extreme concern re safe use of the Hot Cell/  
Storage Pool complex. <sup>It's</sup> Serious operation involving frequent  
transfer of up to 600,000 Curie's of Co-60 from one  
place to another. <sup>There</sup> Is ~~some~~ confusion & hostility  
surrounding the ORS.

Recommend the Hot cell operations be ~~stopped~~ terminated.

Should stay in force until ORS has had time to  
regroup ~~and~~ <sup>under</sup> other regulatory responsibilities.

If this is not acceptable R.M. Boyd wants to be  
present to monitor with Health Physics replacement personnel  
any time hot cell is used. Want this in force until  
R.M. Boyd is satisfied.

Ques: Was he satisfied?

What is ORS? Office of Radiation Safety

Jan 3 page 2.

Minutes NSC Dec 30 '88

Restant emement.

1989 Minutes & Additional Items

Memorandum from Karam to NSC re Bismuth Block heat

Oct 26 '89 - Dr. Kahn kept informed about leak of coolant, light water used to remove heat from gammas - etc -  
# 2 in recommended solutions (tempary)

( $\approx 5 R/hr$  - dose rates - level that limits time a person can be in vicinity)

# 6 The Center is negotiating with DOE for a short duration contract with large amounts of dollars ( $\approx \$300K$ ).

This contract is essential for the Center's continued existence.

Ques: Are there any chemical reactions between water & bismuth or water & magnesium.

Dec 8 '89

Bob Boyd

Dr. Chapman → metallurgist  
geologist

D.O. ceramic nose cones - NASA research  
dealt w/ radiation

pilot . killed in an accident in NC  
plane accident

lab was contaminated R.S.O.  
frequently — more contaminated  
than thought  
sealed off

Crenshaw's Mountain 10 ft pile of dirt  
over 8 ft culvert  
5 curie cobalt source  
near practice football field  
encased in lead

underground network  
leads to —

named for Dr. Crenshaw



## Committee Minutes

2-16-88 item #5 "It was suggested that boroscopic examination of the control blades be carried out." Carried out per 3-30-89

2-19-88 letter not consistent w/ chart MOKS not shown able to bypass Director + NSC

3-1-88 Committee decides not to close down hot cell per Boyd request

10-27-89 #2. R. Karam briefed the Committee on the leak developed in the liquid waste tanks.

\* 7-19-90 #1 GA Dept of Human Resources letter concerned that roles of RSO + MOKS in conflict. ... RSO no longer chair of NSC.

#5 NSC member renders their decisions based on information given them by NNKC personnel w/ no liability for decisions or recommendations made by the committee members.

6-27-91 #2 iii MOKS is equivalent to RSO

lookup

\* 10-21-92 NRC sent ~~exp~~ report on fuel weld failure?

3.17.94 no quorum present 1 Form A's approved

check 12/8/94 in document against minutes

Oct 23 ... Eating, drinking, smoking in area of radioscopes  
Haram resigning

1989  
Sep 29 [Karam] "DID call + brief committee in general about the  
NRC inspection with regard to security."

Oct 19 Fix for Bismuth block 5 R/hour  $\rightarrow$  would give employee  
The reasons for suggesting this temporary fix were several  
1) attempts at repair by app of epoxy to block had not been totally successful even though a diminution in flow had been achieved; 2) dose rates at leaking block were approx. 5 R/hour at surface of inner block which significantly limited personnel time in the area, 3) leaking system does not appear to pose a safety? + since there are numerous commitments already made for reactor times shutting down the reactor for major repairs would impose a great hardship + 4) the Center is in the process of negotiating contracts with several clients which req. reactor to be operational. This bus. is essent. for Center's contin. existence.

Even if it leaking, "several of the group viewed the bismuth block"

Oct 27 1.) How can calculations be revised to reflect only 20% of full power?

never followed up on  
not apparently fixed  
Permanent solution ... being investigated  $\rightarrow$  when was it?

Should temp. in block reach 80°C, termination of test. Table suggest over 8

Last page: leak developed in liquid waste tank  
Asked Karam to weld patch  $\rightarrow$  does NRC need to be involved?

Jan. 26  
1990

Principal Investigator

3 "Recommended that a 3rd letter be sent to PIs indicating that any further unresponsiveness to Office of Radiation Safety requests for annual inventory may jeopardize their PI authorization. Annual inventory is REQUIRED by Procedure 9501."

See draft procedure 4950 concerning tagging out eqpt. needing repair... was withdrawn from consideration after "lively discussion"

→ Listed in agenda outline #4: PIs' non-response to audit of source  
#4 minutes) Deadline for completion of audit in Mar. 31, 1990.

Agenda #7 "Savannah River Site Experiment"  
not mentioned in minutes, but 2 from Westinghouse  
Sav. Riv. Co. were present

#6 on Mar. 22 Kalin + Karam remind NSC members to  
complete audit of NRC operations.

→ Feb 15 #4) Karam informs that offer for contract w/ Westinghouse  
Sav. Riv. was received by OCA

→ #3 Devan informed Committee that almost all the PIs had  
satisfactorily responded to her re. annual inventory of  
rad. sources

#5 L. Petherick (Committee memb.) asked Committee to look  
into the availability of resources to handle removal  
of radioactive material from campus. Expressed concern  
over the safety of the site on campus where it  
is presently being stored. His estimate of the cost  
of twice-a-year cleaning of the site was of the  
order of \$100,000/yr. The committee unanimously  
passed a motion to recommend to the admin. that  
"the Institute have an adequate budget for shipment of  
radioactive waste." → OTCOR?



LOOK FOR: '91 FY budget re: waste, Outcome of waste rec.  
& admin.

DOCTOR CHAPMAN - cause of death, contam. of lab

Crenshaw's Mountain (Dawsonville, Sav. River)

Mar 22 #3 Re: Note "It is expected that the  
FY '91 budget will satisfactorily address the issue."  
Dr. Boehlein, Martinson, & Paris informed & conferred  
with, no vote of said recomm. to administrator

#4 position of Manager Office of Radiation Safety needs  
to be filled. Discussion over Associate Director of  
NNRC serving as acting mgr. [conflict of  
interest?] until replent. found. Committee passes  
motion to expeditiously find a new Manager  
[position filled by Brian Copcutt begin 7-1-90]

April 26

#3 Kahn asked for an expeditious completion  
of the remaining audits

#4 Mitsubishi Corp. possibly sponsoring work at NNRC -  
Bismuth block tests complete, committee approves  
operation w/ modification per Oct. 26 submittal  
Approval UNTIL conversion to LEU is achieved →  
[THIS STILL HASN'T BEEN DONE]

→ NNRC staff "conflict" that resolution of waste  
disposal issue will become effective after 7-1-90  
[THERE WAS NO RESOLUTION!] <sup>previously reported (see 3-22-90 minutes)</sup>

never  
mentioned  
again



...  
"MAY 22 #5" Srv. Div. exper. approved

\* "MAY 24 #2" Karon informed Committee that a DOE team from EG+G (Idaho) had favorably reviewed NNRC operation + had recom'd to DOE to fund the facility to the tune of about \$500K/yr. to bring it up to speed. As a minimum, the cooling tower will be replaced. DOE has taken the recommendation under further advisement."

#5 "The lone missing audit was promised to be turned in before June 18, 1990."

June 28 #4) "Revin briefed the Comm. on the response by the NNRC to the NSC audits. Comm. was satisfied with the response."

1990 Nov. 15 #2) Resignation of Brian Copcutt as Mgr., ORS

| #3A Repair + upgrade of cooling tower was discussed + approved.

#4 Proced. 2020 Reactor Restart After Exam approved

1991 Nov. 14 Minutes Missing

June 27 EG+G (Idaho) interested in making NNRC major Boron/Neutron Capture Therapy facility. Interest in support of research + activities of \$50K - \$1m., providing Tech continues to support functioning of center. Some changes will be made in config. of facility. Will take 6 mos - 1 yr to get NRC approval  
[WHAT ABOUT COOLING TOWER? PART OF PROPOSED CHANGES?]

"Eventually facility will be used to treat patients also."

1991 (June 27) "Committee urged Liveness + Gordon to complete their audits."

#4 tech. data requested on secondary water flow rate vs.  $\Delta T$  at various power levels before approving a change in the trip set point (what is this? Co 60?)

Sept. 26 EG+G experiment approved

Procedure Mods:

6090 Personnel monitoring after bldg. evac. in emerg. situation

6100 Emerg. notification

4501 Control + accountability of radioactive sources

"Review of Emerg. Plan" on Agenda

Dec. 19 Plan approved w/ no comments from members

Re: 5(i)

"Funds for the Breeder Neutron Capture Therapy project appropriated by the U.S. Congress have not been released by the DOE pending further negotiations."

1992 Mgr. ORS unfilled until Oct. '92 → Rodney Ice  
Oct. 29

#4) Loren Williams - Form A approval given w/o submitting detailed procedure to perform exper. (all he has to do is SUBMIT it to get final approval)

#5) Karan informed Comm. he had sent a report on fuel element weld failure to NRC.

ACTION

Library - Chapman's death, Budget (later), Crenshaw's Mtn.

where are attachments To Feb 4, 1988 minutes for meeting  
Especially advisory board meeting of January 29<sup>th</sup>

Why the change To item 5 from Feb 4<sup>th</sup>, change made on Feb 1

2/16/88  
item 5

"A Question regarding inspection for possible cracks, oxidation, etc. of  
The control blades was raised. The committee was informed that no such  
inspection was being currently carried out."

Was it ever carried out? Yes

2/16/88  
item 5

~~"It was suggested that <sup>comprehensive</sup> examination of the control  
blades be carried out."~~

Did it ever happen? Yes

reference To "cryptically kept records" in item 6 of 2/16/88

2/16/88  
#6

"A question was raised regarding the lack of any previous  
intimation of the H.P. personnel's incompetence over the past many  
years of reactor operation." <sup>It was</sup> Suggested that NRC slackness <sup>made incompetence</sup> hard to detect

2/16/88  
#7

"In response to a question on the tendency of the operation in not  
immediately reporting the cadmium incident, A. Karam conceded  
possible mistakes on parts of all concerned."

letter ~~to~~ from John Creine, President of Nuclear <sup>Safeguards</sup> Committee  
re: This is the way you're supposed to deal w/ accidents:  
If you can't read so good, here's a chart to show  
you chain of command like it's <sup>supposed</sup> to work

2/1/89  
#2

"radioactive" means "as it comes into the possession of the PI and not after it has passed Ten half-lives"

3/30/89  
#3

Karam requested that the HP Procedures manual be eliminated  
Agreed 4/28/89

5/30/89

Kahn asked to put on next agenda mechanism for revocation of unescorted access to the reactor security zone

8/8/89

Neely Research Center pays for all waste shipments

Karam promised to provide data about financial solvency

of Health Physics — NRC inspectors found "one violation of the GTAA covering the leakage rate of the containment building"  
Why are some procedure numbers circled?

Termination  
of the

4/28/89 Amusing mistake between Celsius and Fahrenheit



7/19/90

Did away with Title of Radiation Safety officer  
for chair of NSC

7/19/90 #5

"No liability for decisions or recommendations made  
by committee members" re Nuclear Safety Committee  
who are Institute faculty and staff  
are insured by Board of Regents Insurance

"The Two non-Institute Committee members recommended  
that they be furnished a letter from The Institute guaranteeing  
them indemnity against any liability charges brought against  
them for service on the Committee they render free of  
charge to Georgia Tech, with the exception of their  
knowingly giving false or misleading information."

✓  
"one violation in which The NRC inspectors discovered a  
graphite stringer with an excess of 100 millirems of  
radiation per hour that was not locked in a physical space.  
"This violation was abated immediately"

8/30/90

#2

"a second inspection of the site (rm 128 Cherry Emerson  
Building) showed it to be radiologically safer & satisfactory."

"impending waste shipment on the following Tuesday, and  
that he expected to have another shipment out before  
the end of the year."

compacted waste → \$300 / 55 gallon drum  
liquid waste more expensive  
Total cost? 25K per shipment

#5

"Committee approved facility modifications concerning fence building and gates for high radiation areas in the containment building."

9/27/90

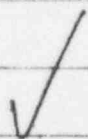
Rule 292 - 05.02(10) (b)

Type A of broad scope  
"license will be approved if,...."

- ... 3. The applicant has established administrative controls and provisions relating to organization and management, procedures, record keeping, material control and accounting, and management review that are necessary to assure safe operations, including
- (i) the establishment of a radiation safety committee composed of such persons as a radiation safety officer, a rep of mgmt, and persons experienced in the safe use of radioactive material;
  - (ii) the appointment of a RSO who is qualified by training and experience in radiation protection, and who is available for advice and assistance on radiation safety matters; and
  - (iii) the establishment of appropriate administrative procedures to assure:
    - (I) control of procurement and ~~use~~ radioactive material
    - (II) completion of safety evaluation of proposed uses of rad material which take into consideration matters ~~such as~~ the adequacy of facilities and equipment, training and experience of the user, and the operating or handling procedures; and

(III) review, approval, and recording by the radiation safety committee of safety evaluations of proposed uses prepared in accordance w/ (10) (b) 3. (iii) (II) of this rule prior to use of the radioactive material

1/31/91 #4



- (i) The committee discussed the status of security precautions at NNRC during these times of international tension. IT was recommended that a motion detector be installed at the main entrance to announce the arrival of a person
- (ii) The cooling tower is being renovated using DOE funds
- (iii) NNRC has conducted a security audit of the facility
- (iv) SRP project has been successfully completed.

3/21/91 #1

"committee member J. Vickery was actively involved with the security aspects of the NNRC."

#2

EG+G and Emory express interest in doing work at Neely

#6



"The committee was informed of Dr. Chapman's death. IT was reported that his lab, which was temporarily shut off due to contamination problems, has now been unsealed and declared safe. IT was learned that decision on Cobalt source has not yet been made."

5/1/91

- ✓
1. The committee approved the minutes subject to rewriting Item (6) into two separate items as (6) and (7). The new Item (6) will remain the same as the old item (6), with the removal of last sentence concerning cobalt source. The new item (7) will read as: IT was learned that no decision had been made concerning a move to decommission Crenshaw's Mountain.

4. The Committee discussed a request to allow setting of lower limits on secondary water flow rate in the GTAR. ... a 90-day trial approval was given with the proviso that the flow rate be adjusted back to 960 gpm at the end of the trial period,

8/1/91

Another 90-day

extension

7/26/91

committee

approves

100 GPM

✓ 1/30/92 Procedure 4200 Revision 00 concerning changes in GTAR design was NEVER APPROVED by the NSC!

1/29/92 Gamma Irradiation experiment for EG+G described in great detail (SR-100 Lith Gamma Irradiation Experiment) Was it approved by NSC? No mention if so,

3/12/92

✓ Jim O'Hara appointed Acting Radiation Safety Manager after Betty Kersh resigns for "personal reasons"



4/1/92

"There was some question as to how James Powers was able to obtain radioactive materials without going through channels. There may be a procedures violation here, so this will be investigated and reported on at the next meeting."

Form A approved anyway for James Powers!

5/25/92  
scheduled for  
6/18/92

2. "Karam reminded those members who had not yet completed their audits to do so expeditiously"  
Due March 30<sup>th</sup>!

6. "A previous concern regarding James Powers Form A approval at the April 30<sup>th</sup>, 1992 meeting of the committee was resolved satisfactorily."

HOW?

7. Karam requests to approve replacement of Gordon, Garfield, and Mahaffey w/ Braga, Tornabene, and Ghicassian.

10/29/92  
scheduled for  
10/15/92

Rodney Ice new Manager of The Office of Rad Safety

4. Roger Wartell → Request was tabled due to lack of clarity in the proposal

5. R. Karam informed the committee that he had sent a report on the fuel element weld failure to the NRC.

12/17/92

change item 4 10/29/92 to read as "monitoring equipment to be provided on a regular basis (once a month) by Dr. B. Kahn" (instead of INORS)

R. Wartell approved - did he clarify his proposal? <sup>In</sup> what way?



2/25/93

7. Form A request by R. Wantell approved subject to (i) a clarification by the PI on the radio chemical form, and (ii) a resubmission of the Form A request w/ the revision.

5/13/93

"The Committee granted Form A requests...

(i) Robert Nerem: Conditions-(a) Monitoring must include the incubator (b) Comment: Item II.

A "Geiger counter" is inappropriate to use w/ Tritium. Must use wipe tests using liquid scintillation counter, not Geiger counter."

4/93

5. "R. Ice provided the Committee w/ updates on the activities at the ORS as regards the incidents concerning nuclear safety on campus. The Committee asked R. Ice to report subsequent developments to the Committee. It was noted that none of the incidents crossed the imposed thresholds of safety. The Committee asked R. Ice to investigate further on the BNCT filter issue and about the projected changeover to LEU at the NNRIC."

MEMO

PI's listed include Hubbard (retired), Sparrow (Cagle actually looks after this one), and Hill (not a PI, should be Freeman's responsibility - same for Hubbard)

9/3/93

4. "R. Karam presented for the Committee's general information a memo from Dr. Ice explaining the Bismuth block cooling water leak accident. He pointed out that the memo did not need Committee's approval."

10/28/93

2. Emergency Plan Review

"The committee reviewed and approved the existing plan (Bi-annual approval)"

5. "The Committee asked Dr. Ice to notify the state that they inadvertently gave us two extra sources in connection w/ J.M. Nicovich's research."

6. "Dr. Karam informed the Committee that the NNRC has implemented corrective actions following violation citations by the state inspectors and the NRC inspectors."

LOOK FOR SCRAMS!

Bill Downs

Indicator needle

11/13/94

3. The Committee discussed modified draft procedure 2002. The modification was suggested by the NRC site inspector during the most recent site visit (see item 5 12/16/93)
6. A. A letter from Dr. Kelly, chair IRB, approving human subjects was acknowledged fulfilling a previous conditional approval given Dr. Spaulding.

1/13/94 #4 Vicki Ainslie Form A approved "subject to receipt of an acceptable documentation of Training and qualifications of the PI suitable to the MoAs"

2/10/94 #1 Vicki Ainslie's Form A still pending "since the specified conditions had not been met."

#4 "R. Ice reported to the committee an event leading to the contamination of Robert Neren's laboratory. He informed further that the hallway to the lab has since been decontaminated."

#5 "R. Ice reported to the Committee the chronology of events prior to and since leaking of Ni-63 sealed source that apparently occurred during shipment to Antarctica. The PI involved was F. Eisele. The source was in the Antarctica (sic) on an approved NRC reciprocity agreement. The report was accepted."

3/17/94 #4 "He (R. Ice) asked for an approval of a change whereby no explicit reference to termination date (of a project) would be made on Form A requests." "He (R. Ice) informed the committee that the issue of estimated termination date on Form A requests has been interpreted by regulators/inspectors as a firm date for terminating the project."

#7 "The Committee was informed about R. Karam's letter to R. Karam. R. Karam reported an occurrence (without safety implications) involving a violation of the procedure for reactor operation. The operator in question has since been restricted to a limited access."

Memo dated 5/24/94 (on Southern Nuclear Operating Company Stationary) from E. F. Cobb stating that March 17 meeting failed to achieve a quorum and "may not be considered a formal 'Nuclear Safeguards Committee meeting'".

5/19/94 #6 "Dr. Karam felt that a sufficient number were present, therefore, all members not present will be contacted to see if they were left off the attendance lists of the minutes of 3/17/94."

8/11/94  
scheduled  
for 7/14/94

#2 "minutes of the meeting of March 17, 1994 were distributed, but it was decided that a quorum did not exist at that meeting. All items addressed at that meeting were brought up for consideration and approval."

- a. Revisions of Rad Safety Manual approved
- b. Revisions of EPP approved
- c. Revisions of 9501 approved (Termination date)
- d. Revisions of 9510 approved
- e. Facility modification 93-005 approved
- f. Form A's approved.

Nothing about item #7!!



17/94  
scheduled  
or 10/6/94

#6 "In another inspection, NRC cited a violation which has resulted in a slight change in the forms. There was a reported spill in Dr. Kahn's lab (An ampule containing a small amount of Tritium used as a standard broke in the liquid scintillation counter). IT has been cleaned out."

2/8/94

#4 "R. Karam informed the committee that the NNRC is currently discussing w/ NRC the conversion of the GTRR to LEU, as well as a 20 year extension of operations license. The NRC has approved the amendment request to LEU."

much  
discussion  
of license  
renewal;  
R. Karam  
mentioned

convert  
to

"The DOE lacks funds currently to furnish the LEU."

"R. Karam discussed the failure of an older X-ray diffraction equipment where the shutter malfunctioned and a student may have been exposed on December 6, 1994. ... Although the dosage was well below permissible limit, R. Ice and S. Stock asked and received an authorization to research the issue further. ... An interim subcommittee was appointed consisting of S. Ewald, B. Livesay, and B. Kahn to keep up w/ further developments."



5505 Valmont #18  
Boulder, CO. 80301  
303-440-6069

12/16/93 Item #5

"R. Karam informed The Committee regarding site visits by STATE and NRC inspections, as well as the responses by the NNRK to these inspections"

2/9/95

#### V. Incident reports

S. Stock: "The Committee discussed the report by S. Stock on the causes of the accident (See minutes 12/16/94) and means taken to prevent its recurrence, this was followed by a discussion of Form A request by S. Stock (see item IV.6 in the preceding). The Committee imposed the Form A request with the following conditions for a continued operation, and appointed a subcommittee to oversee the same and issue an interim approval.

1. A detailed review of all procedures before any continued operation.
2. An investigation for a long term solution to the problem; i.e. it may include alternatives such as retrofitting.
3. A satisfactory assessment of the unit by MOAS after all safety modifications have been installed.

4. obtaining of a circuit diagram that specifies the operation of the shutter, with such modification as necessary to assure shutter safety,

---

J. Choi ... The Committee imposed the following conditions for a continued operation of Dr. Choi's research

1. A ~~prominate~~ (sic) sign shall be posted by the door indicating that all persons leaving the room must monitor themselves for contamination before leaving the room. A logbook of monitoring is to be maintained.
2. Specific safety procedures for the use of radioisotopes are to be posted. In addition, the posting is required to contain the warning that no procedural variance is allowed without the P.I.'s specific approval."

VI. "Dr. Karam discussed the NRC hearing on complaints by two citizens regarding safe operation of the NNRC. He pointed out that the NRC is satisfied with the safety of the entire reactor operation."

3/23/95

- I. Revisions of last meeting's minutes.  
Item V.1 → Strike conditions 3+4.  
Item V.2 → Remove the word "prominate"

"R. Karam discussed and walked the committee through the final report from Dr. Choi on the contamination incident. The Committee was of the opinion that Dr. Choi has fulfilled the conditions (see revised minutes 2/9/95) for a continued operation. It is expected that there will be at least one additional audit visit by Dr. Ice to Dr. Choi's lab before 6/1/95."

IV. Form A approvals

"J. M. Wampler: The X-ray unit is old and of outdated design in the context of safety issues. However, the way it is being operated by the P.I. and his associates under his supervision, is deemed safe, provided that no undergraduates are allowed to operate it. The Committee gave its approval."

5/18/95

3. Form A request (S. Stock):

"This was basically a progress report made by S.R. Stock in response to the requirements imposed by the NSC in a previous meeting. It was noted that the sub-committee overseeing the progress had already approved a continued operation under fairly restrictive specific conditions."

... The committee approved the subcommittee's recommendations and the Form A request."

7/20/95

5. "T. Dichristina: Correspondence between R. Ice and  
" regarding apparent violations of GT  
radiation policy was discussed by R. Ice"

One audit still not in (due in June)

9/21/95

3. "Amendment To The Reactors license,  
... In brief, The amendment was to change The Admin  
structure from The OIP To The Office of The Dean  
of Engineering. All members responding ~~by~~ via Telephone  
approved The change with only one exception. Due To The  
necessity To adjust To The reorganized structure of Tech,  
The recommendation for The change was forwarded  
and approved."
4. Form A: Roger Wartell  
"Request was for ~~some~~ interim approval for Transfer  
of radioactive material from Room 214 To Room 210  
in The Cherry Emerson Building. APPROVED."
5. "Reviewed letter from Dr. T.J. DiChristina concerning  
corrective measure To be taken in The handling of  
isotopes in his laboratory. The corrective procedures  
were judged acceptable."

11/16/95

4. Form A reviews
  - 4.1 Dixon Parker Takes over for Taylor as  
PI on Co-60 irradiation sources.  
(Taylor retired)
- 5.2 "Current Affairs (sic) Video:  
A. Karam informed The Committee That security  
at The NNRC has been increased since The incident.  
He confirmed further That no security zone  
was violated."
- 5.3 "Emerson Source Removal.  
IT was announced That The Cesium source will  
be moved from Emerson Building shortly."

6/16/95 12/14/95  
~~6/16/95~~ ~~12/14/95~~ outgoing waste shipment  
paperwork is started

12/14/95 paperwork is finally hand-dated 12/18/95

6/16/95 paperwork is finally stamped 8/9/95

6/16/95 <sup>safety checks</sup> Performed by Edgar Jawdel  
Reviewed by Rodney Ice 8/9/95?

12/14/95 safety checks performed by  
Johannes Strydom

12/18/95 Reviewed by Edgar Jawdel

10/2/95 To: Brian Kirk  
From: Fritz Strydom

"In regards To The waste shipment #95950,  
'This waste contains no EPA listed or  
characteristic ~~waste~~ hazardous waste'"

That shipment's paperwork initiated 9/29/95



## OCTOBER 19, 1989 MEETING

The Chairman and several members of the Nuclear Safeguards Committee (NSC) met on October 19, 1989 to consider the problem of the leak associated with the bismuth block. Members present were B. Kahn, P. Desai and J. Mahaffey. Non-members present were R. Karam and B. Revsin.

The group was informed of the status of the repair of the block and was presented with the plans for a temporary solution to the leaking problem, i. e., to install a catch system which would collect the leaking water, circulated through a 5 $\mu$  filter and a deionizer column, ultimately returning to the tank of the bismuth circulation system. The reasons for suggesting this temporary fix were several: 1) attempts at repair by application of epoxy to the block had not been totally successful even though a diminution in flow had been achieved; 2) dose rates at the leaking block were approximately 5 R/hour at the surface of the inner block which significantly limited personnel time in the area; 3) the leaking system does not appear to pose a safety question and since there are numerous commitments already made for reactor time, shutting down the reactor for major repairs would impose a great hardship; and 4) the Center is in the process of negotiating contracts with several clients which require the reactor to be operational. This business is essential for the Center's continued existence.

The deliberation of the group resulted in the enumeration of areas that need to be addressed. These are enumerated below.

1. Radioactivity content of bismuth block cooling water.
2. Water-Bismuth Interaction Needs Review
  - a. Has shielding of the gamma rays been affected.
  - b. What is the chemical reaction if any?
  - c. Epoxy coating over the bismuth.
3. Water-Magnesium Interaction
4. Heat Removal with Reduced Flow (15,000 BTUs at 5 MW).
  - a. What if remaining water does not cool block?
  - b. Estimate temperature rise
    - i. without cooling
    - ii. with 3/4 normal flow
5. Test Run (approximately 1 hour)

6. Permanent Correction to Problem

- a. Cost
- b. Dose Estimate for personnel doing work.

Several of the group viewed the bismuth block at the termination of the meeting. It was agreed that Dr. Desai would perform the BTU calculations at various coolant flow rates by Monday, October 23, 1989. Karam and Revsin will address the remainder of the items. It is anticipated that the entire package will be ready for presentation the NSC which meets on Friday, October 27, 1989

MINUTES OF THE NUCLEAR SAFEGUARDS COMMITTEE MEETING OF  
July 19, 1990

Members Present: E. Cobb, P.V. Desai, N. Gordon, L. Gucwa, B. Kahn (Chair), L. Petherick, J. Vickery

Others Present: B. Copcutt, R. A. Karam, G. Poehlein

Distributions: (i) Agenda for the current meeting  
(ii) Copy of Letter from the Georgia Dept. of Human Relations to B. Revsin  
(iii) Form A approval draft from R. A. Braga

Chairman B. Kahn called the meeting to order at 1:07 P.M. The minutes of the previous committee meeting of June 28th were not ready, and will be available at the next Committee meeting on August 30th.

OK

1. In response to the letter from the Georgia Department of Human Resources concerning conflicting roles of the Radiation Safety Officer (RSO) and the manager of the Office of Radiation Safety (MORS), the Committee decided to do away with the title of RSO for the chair of the NSC. It was recommended to ask the MORS to keep the NSC informed on issues related to radiation safety. The Committee asked R. Karam to send a copy of his response to the Georgia DNR to the members of the NSC.
2. The Committee heard from Dr. Poehlein regarding the advisability to limit the period of service on the Committee to three consecutive years. It was agreed to divide the members into those serving for three years, those for two years and those for one year. Each year, one-third of the membership will be appointed for three year terms. B. Kahn encouraged the members to suggest possible candidates to serve on the Committee.
3. The Committee gave Form A approval to Dr. R. A. Braga.
4. The Committee approved a minor change in previously approved Procedure 9155.

The Secretary of the Committee had to leave the meeting at this time (3:05 P.M.). L. Petherick prepared the remaining minutes which follow.

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5. Dr. Karam briefed the Committee on the responsibility and liability to Committee members. He stated that the Nuclear Safeguards Committee Members rendered their decisions based on the information given them by the Neely Nuclear Research Center personnel with no liability for decisions or recommendations made by the Committee members. However, Institute faculty and staff who are members of the Committee are afforded protection through Board of Regents' insurance policies. Non-Institute members of the Committee, of which there are two, may not be protected as Institute members are. The two non-Institute Committee members recommended that they be furnished a letter from the Institute guaranteeing them indemnity against any liability charges brought against them for service on the Committee they render free of charge to Georgia Tech, with the exception of their knowingly giving false or misleading information.

The two non-Institute members stated that they would send to Dr. Karam a suggested or recommended wording for a letter of indemnification.

Dr. Karam also briefed the Committee on present reactor operations: Mitsubishi contract; Department of Energy considering the reactor as a back up for research and development; and the Savannah River Project is still on go awaiting approval from the NRC.

Dr. Karam briefed the Committee on hot cell operations: They have a contract with TVA for radiation qualification testing of cables and circuits. They would be irradiating this material with 80 to 100 mega-rads of radiation.

There were two NRC inspections held at the Neely Nuclear Research Center. One inspection resulted in 0 violations. The other inspection resulted in one violation in which the NRC inspectors discovered a graphite stringer with an excess of 100 milli-rems of radiation per hour that was not locked in a physical space. This violation was abated immediately upon being found and response to the NRC is being prepared.

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Reactor has been in operation up to a power output of 4.5 megawatts. The reactor has been operating mainly during the night time hours because of the high daytime temperatures. Everything appears satisfactory in all reactor operations.

6. The meeting was adjourned at 3:15 P.M.

Respectfully submitted,

*Prateen V. Desai*  
Prateen Desai





Georgia Institute of Technology

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October 13, 1989

Dr. Willie A. Kerna  
Neely Nuclear Research Center  
Campus

Dear Ratib:

For several months we have discussed my desire to leave the Nuclear Research Center. After due consideration, I have decided that I should leave at the end of this month.

As you know, I have been looking for another position at Georgia Tech, however, a transfer has been held up by lack of funds. There is a possibility that funds will become available before October 31, and if so, I shall transfer to a new position on November 1.

Even if funds are not available, it is not in my interest or Georgia Tech's interest to prolong this period of uncertainty in my status. Should a transfer not occur, I will resign from Georgia Tech at the end of workday October 31, 1989.

Thank you for your understanding.

Sincerely,

*Robert M. Macdonald*

Robert M. Macdonald

CERTIFICATE OF SERVICE - Docket No.(s) 50-160-REN

DOCKETED  
USNRC

Secretary  
U.S. Nuclear Regulatory Commission  
Docketing and Service Branch  
Washington, DC 20555

'96 FEB 23 P2:06

Office of Commission Appellate Adjudication  
U.S. Nuclear Regulatory Commission  
Washington, DC 20555

OFFICE OF SECRETARY  
DOCKETING & SERVICE  
BRANCH

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Charles Bechhoefer, Chairman  
Atomic Safety and Licensing Board  
U.S. Nuclear Regulatory Commission  
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Administrative Judge  
Peter S. Lam  
Atomic Safety and Licensing Board  
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Administrative Judge  
Jerry R. Kline  
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