SCLEAR REQULATO	UNITED STATES I-GANE-23 NUCLEAR REGULATORY COMMISSION
	RE NUCLEAR REGULATORY COMMISSION   101 MARIE1 Docket No. 50-665-66 N EXHIBIT NO. 23   ATLANTA. In the matter of 42. July DOCKETEU   AUG Staff Applicant Intervenor Other USNRC   AUG Staff Applicant Intervenor Other USNRC   Date 5/2/91 Witness % 10 A10:13
Docket No. 50-160	

License No. K-9/

OFFICE OF SECRETARY DOCKETING & SERVICE BRANCH

Georgia Institute of Technology ATTN: Dr. Ratib A. Karam, Director Neely Nuclear Research Center 900 Atlantic Drive, N.W. Atlanta, GA 30332

Gentlemen:

SUBJECT: NRC INSPECTION REPORT 50-160/87-01

This refers to your letters dated May 25, 1987 and July 15, 1987, in response to the Notice of Violation (NOV) sent to you by our letter dated April 14, 1987. Our letter and NOV described six violations identified during an NRC inspection at your facility on February 9 - 23, 1987.

With regard to violations admitted, we have evaluated your response and found that it meets the requirements of 10 CFR 2.201. We will examine the implementation of your corrective actions during further inspections.

We have completed our review of the violations you deny and our position on these items is presented in the enclosure to this letter.

In accordance with Section 2.790 of the NRC's "Rule of Practice," Part 2, Title 10, Code of Federal Regulations, a copy of this letter and the enclosure will be placed in the NRC's Public Document Room.

We appreciate your cooperation in this matter.

Sincerely,

J. Nelson Grace Regional Administrator

Enclosure: Evaluations and Conclusions

cc w/encl: Dr. T. E. Stelson, Vice President for Research

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## ENCLOSURE

# EVALUATIONS AND CONCLUSIONS

## Item A.2.B

We concur with your position, provided the handwritten notes were limited to comments rather than procedural changes. This matter will be examined in greater detail during future inspections.

Our records will be adjusted to delete this item as a violation.

# Item B.1

We concur with your use of the Minor Experiment Appraisal Form and therefore will delete the violation from our records. However, a clarification on usage and purpose of the form is needed. We understand that a review of forms is currently underway and should be completed by October 1, 1987.

## Item D

In your discussion regarding the use of helium in Technical Specification 3.6.e, you state that helium is incidental to the requirement. We believe that a better view is that use of helium or nitrogen is of low safety significance and that the change to nitrogen gas may be an improvement. However, licensees are not permitted to implement changes to Technical Specifications without prior NRC approval; therefore, the violation stands as written.

We note that you submitted a request to change Technical Specification 3.6.e by letter and August 6, 1987. The change request will be processed separately, and we consider the request letter as an adequate response to questions (3) (4) and (5) in our NOV dated April 14, 1987. Thus, no additional response is requested.

# Item E.

We concur with your position in that records are available on control manipulations and performance can be inferred from these records. Our records will be adjusted to delete this item.

# Item F.

We agree with your view on the role and function of the Nuclear Safety Committee (NSC). Compliance with the NSC charter is a subjective matter. Followup on the NSC's role and function will be the subject of future inspections. We will adjust our records accordingly.

We note that a revised charter has been submitted to the NRC by letter dated August 6, 1987. Therefore, no additional response is required for this matter.



# Georgia Institute of Technology

NEELY NUCLEAR RESEARCH CENTER 900 ATLANTIC DRIVE ATLANTA GEORGA 30332-0225

(404) 894-3600

July 12, 193.

Mr. Luis A. Royes, Director Division of Realion Projects J.S. Nuclear Reputatory Commission Region II 101 Mariatta Street Atlanta, Georgia 30,03

Dear "ir. Rejes:

Subject: Inspection Report No. 50-100/8/-01

This is a resided response to the reserved inspection conducted by Ma. A.B. Long on February 9-22, 1957. The revision was requested by Mr. David Verreis of NRS Region II. The organization of the response follows the same order of items as listed in the Inspection Report Enclosure 1.

Itel.

- A. Lechnical Specification 6.4.b(1) requires that written procedures shall be provided and utilized for normal startup, operation, and shutdown of the reactor and of all systems and components involving the nuclear safety of the system.
  - Contrary to the above, the Licensee had not provided procedures to aduress the following Technical Specification Limiting Conditions for Operation, which were therefore not being verified:
    - reactivity of the core to be limited to 11.9 percent delta K/k
    - b. Tichnical Specification 3.6.e, which requires that the core shall not be made critical unless the deuterium concentration in the helium sweep is less than 22 by volume.
    - c. Technical Specification 3.5.b.6, which requires that containment isolation valve closure time shall not exceed five seconds.

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- Contrary to the above, the Licensee failed to provide adequate procedures in the following instances:
  - a. Procedure 2550, procedure 2400, and other procedures concerning control of the cover gas had not been updated as of February 23, 1987, to reflect the conversion of the cover gas from helium to nitrogen in mid-1986.
  - c. Certain handwritten changes were made to procedures 2002 and 2003 for over a year and a half without these changes being incorporated into a permanent revision. On a number of occasions these handwritten changes were inadvertently omitted, causing a failure to follow the procedure as written.
- 5. Contrary to the above, the Licensee failed to follow their procedures in the following instances:
  - c. Procedure 2000 requires that initial critical condition data and equilibrium condition data be entered in the console log for each reactor startup. This licensee did not log initial critical condition data for startups on May 19, May 21, May 23, and on other occasions during 1900. Further, the licensee failed to log equilibrium condition data for numerous startups conducted during 1985, and numerous other required entries in console logs were missing.
  - t. Procedure 2210 requires that water be run through the cooling towers for at least an hour per week during periods when the reactor is not operating. The licensee failed to run water through the cooling towers during the periods of reactor shutdown between March 31, 1966 and April 14, 1986, and between July 24, 1900 and August 19, 1966.

This is a severity Level IV violation (Supplement I).

#### Response

We admit violations A.1.a-c. The reasons for the violations are not known. As for as 1 can tell m, predecessors at the NNRC never performed any measurements or conducted any tests to ascertain that the requirements of A.1.a-c were met. These violations were discovered internally by a study I commissioned for the purpose of having a definite evaluation of whether or not we are meeting our commitments under the requirements of Technical Specifications.

The corrective steps we have taken are: (1) We have drafted a revision to procedures 7246 and 7220 to account for violations A.1.a and A.1.c; (2) we acquired a gas chromatobraphy machine for meeting A.1.b requirements, and (3) We are devising a procedure to govern the  $D_2$  concentration analysis. We expect that full compliance will be achieved by September 15, 1987.

Mr. Luis A. Reyes Pape 3 July 15, 1957

We do not consider A.2.a a violation. It is true that by February 23, 1987, the procedures had not all been revised to reflect the cover gas change from helium to nitrogen. But the Nuclear Safeguards Committee did not require updating by a certain date. There are many procedures impacted by the change and at the time of the inspection we were in the process of updating the procedures. Please remember that we have limited resources, but nevertheless, as of May 22, 1987, we have completed updating all procedures.

We deny that A.2.b is a violation. It was stated in inspection report (IR) that certain handwritten changes were made to procedures 2002 and 2003 for over a year and a half without these changes being incorporated into a permanent revision. The IR states further that on a number of occasions these handwritten changes were omitted causing failure to follow procedure as written.

The changes that the IR refers to are not changes to procedures 2002 and 2003 but are comments on certain equipment operational status. The comments are limited to the phrase, "out of commission" being used to describe the status of the following eq ipment: (1) universal counter; (2) PA system; (3) storage pool drained for painting; (4) picoammeter #1, and so on. In all cases, except the universal counter, the concitions are temporary. With repard to the universal counter, we have been unable to buy parts for this instrument to keep it in working order. No one makes this instrument any more. Consequently we decided to replace it. This will be done by February 1986.

We admit that errors were committed as charged in A.3.a by not logging initial critical conditions and equilibrium condition data. The reason is simple oversight. I emphasized to the operators that we <u>must</u> methodically and step by step comply with all procedures. More care shall be taken to appropriately follow procedures. Additionally, I have instituted internal audits to monitor our compliance. Compliance was achieved May 1, 1987.

We addit violation 1.3.b. The reason for the violation is again oversight. A contributing factor to the violation is the limited number of licensed operators we have.

We are taking steps to increase the number of licensed operators by 2. Additionally we have discussed at length the need for procedure 2210. Originally the requirement of procedure 2210 was instituted during the extended period of no reactor operation at the time of conversion from one to five MW. A concensus exists that this procedure serves no safety function. Consequently, we will ask the Nuclear Safeguards Committee to approve deletion of this procedure. Until we get approval, we have been in compliance since June 25, 1937. Mr. Luis A. Reyes Pape 4 July 19, 1907

### Item II

B. Technical Specification 6.3 defines requirements for the administrative controls of experiments, including requirements for approval, quality assurance, and documentation. Technical Specification 6.3.a(1) requires that no experiment shall be performed without review and approval by the Nuclear Safeguards Committee. Technical Specification 6.3.e requires that there shall be a quality assurance (QA) program to assure compliance with the limitations on experiments in Technical Specification 5.4. Technical Specification 6.3.c(3) requires that each experiment removed from the reactor be subject to radiation monitoring and the results be documented.

Contrary to the above, the licensee failed to meet the requirements of Technicol Specification 6.3 for the approval, QA, and documentation of experiments in the following instances:

- lechnical Specification 6.5.a(1) is implemented in part by the "Request for Minor Experiment Approval" form, which provides information necessary for obtaining and documenting Safeguards Committee approval of experiments. The "Request for Minor Experiment Approval" requires a copy of calculations of estimated activities of principal isotopes to be attached. Numerous copies of this form were on file for 1985 without attached calculations of estimated activities.
- 2. Technical Specifications 6.3.a(1) and 6.3.e are implemented in part by Procedure 5102, which requires that an Experiment Schedule Form be completed and retained in the files each time an experiment is performed. The required Experiment schedule Forms were frequently not completed and filed for runs in the pneumatic facility or for Nuclear \_ng\_neering class laboratory experiments.
- 5. Technical Specification 6.3.e is implemented in part by the "Experimentor's Checklist" form. No Experimentor's Checklist form was on file for experiment R6512 for the run on September 10, 1986.
- 4. Technical Specification 6.3.c(3) is implemented for experiments performed using the pneumatic facility by entering the results of radiation monitoring in the cousole los. Dose rates for experiments were not documented as required on pages 125, 131, and 147 of console log #29.

This is a Severity Level IV violation (Supplement I).

## Response

B.1. The Inspection Report stipulates that calculations of estimated activities of principle isotopes are required in every case. While this interpretation is possible based on the information requested on the "Request for Minor Experiment Approval Form," it was never meant to be a requirement. Mr. Luis A. Reyes Pape 5 Jul, 15, 1907

In fact the practice at the NNRC before I came was often not to fill-in this information. I made a conscious effort to estimate the activities on the form based on knowledge of what was in the sample. Often however we have samples that we do not know their elemental composition. Consequently, we approach the problem with care, i.e., we irradiate a small sample for a short duration at normally low power. The bottom line here is that we will make, to the extent possible, analyses of the activities of the principle isotopes, but we do not treat this as a requirement. We therefore deny that any violations were committee in B.1.

B.2, 3, 4. We admit the violations and admit further that our procedures for tracking required information under Technical Specifications 6.3.a(1) and 0.3.c are somewhat confusing and unnecessarily complex. We are re-evaluating the whole process. The root cause is that we have too many f rms. The form consoluation and streamlining will be finished October 15, 1987. We are currently reviewing and re-evaluating all procedures to be finished October 15, 1987. We are 1987. We achieved compliance with this requirement on March 1, 1987.

Item III

C. Technical Specification 4.2.b requires that a channel check of the pwoer trip channels and picoammeter channels, comparing the channel checks to a heat balance, shall be made weekly when the reactor is operated at a power level at or above one megawatt.

Contrary to the atove, no heat balance calibration check was made between March 31, 1935 and April 14, 1935, although the reactor was operated at one megawatt on April 7, 1986.

This is a Severity Level IV violation (Supplement I).

#### Response

We added the violation in that no heat balance was used between March 51-April 14, 1986. The operators claim it was an oversight. I continue to stress the need to minimize or eliminate oversight altogether. Our internal audits, started this year, will help monitor this problem. I will evaluate whether or not progress is being made in about one year from now. Compliance was achieved July 1, 1957.

#### Item IV

D. 10 CFR 50.59 allows the holder of a license to make changes in the facility as described in the safety analysis report without prior Commission approval unless the proposed change involves a change in the Technical Specifications incorporated in the license or an unreviewed safety question. The holder of a license who desires a change in the facility which involves a Technical Specification change shall submit an application for amendment of the license pursuant to 10 CFR 50.90. Mr. Luis A. Reyes Page 5 July 13, 1907

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Technical Specification 3.6.e addresses the use of helium as the cover gas of the Georgia Tech Research Reactor, stating that the reactor shall not be critical unless "The D<sub>2</sub> concentration in the helium sweep is less than  $2\frac{2}{5}$  by volume.

Contrary to the above, the licensee made a change to the facility involving a change in the Technical Specifications without prior Commission approval, in that the cover gas was changed from helium to nitropin in mio-1956 without first obtaining a Technical Specification change. In addition, the licensee did not include the change from helium to nitropen cover gas in the annual report to the NRC, as required by Techical Specification 6.7.a.

This is a Severity Level IV violation (Supplement I).

#### Response

The charge in D is that Technical Specifications were violated because the cover gas was changed from He to No and for not reporting the change in the Annual Report. Our response to the charge of violation on the cover gas change is as follows: Although the word helium appears in the Technical Specifications 3.6.e. it was felt that the 3.6.e requirement is 2% by volume D, concentration in the cover gas. The fact that the cover gas was mentioned as helium is incidental to the requirement. For this reason we felt that Technical Specifications 5.6.e was not violated. We still hold that view. We will however submit a formal request to change the Technical Specifications to reflect, among other things, the change in cover gas mentioned in 3.6.e and on page 24 of Technical Specifications. The amendment to the Technical Specifications has been drafted and is awaiting approval by the Nuclear Safeguards Committee (scheduled to ment on July 23, 1967). Submittal of the request to amend Technical Specifications will take place July 24, 1987. With regard to the violation account of not including the change in the Annual Report, we are guilty as charged. This again was a simple oversight that cludes reviews of seve different people. I have however established a punchlist for items to be done and this list will be updated weekly. On this punchlist there will be an item to review Nuclear Safeguards Committee minutes in January of every year. This review should help refresh appropriate memories of whether or not changes to the facility were incorporated.

#### Item V

10 CFR 50.54 paragraph (i-1) requires the licensee to have in effect an NRC approved operator regualification program which satisfies the requirments of Part 55 Appendix A. The licensee may not make changes in the approved program which decrease the scope or frequency of conducting different parts of the program. Hr. Luis A. Reyes Puse 7 July 15, 1957

> 10 CFR 55 Appendix A Paragraph 3 requires that the requalification program include control manipulations. Appendix A Paragraph 4.c requires that the requalification program include systematic observation and evaluation of the performance and competency of licensed operators including evaluation of actions taken or to be taken during actual or simulated abnormal and emergency conditions.

> The licensee's approved requalification program requires that summaries of both the control manipulation, and the performance observations required by 10 CFR 55 Appendix A Paragraph 4,c be documented annually.

Contrary to the above, as of February 25, 1987, yearly summaries of control manipulations and annual observations of the performance of licemsed operators under simulated emergency conditions had not been documented since 1983.

This is a Severity Leve. IV violation (Supplement I).

# Response

The charge in (E) is that we failed to keep summaries of the control manipulations and the performance observations by licensed operators. Annual summaries of control manipulations do exist in our files. Therefore no violation was committed. The performance evaluations were not done since 1983. This appears to coincide with the change in personnel. The person in charge of this activity stated that he simply forgot.

As a step to correct this, I have begun to list all system worksheets, procedure 4500, on my punchlist with due dates listed. Compliance was achieved July 1, 1957.

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F. Technical Specification 6.4a requires that all procedures and major changes thereto shall be reviewed and approved by the Nuclear Safeguards Committee prior to being effective.

Technical Specification 6.4.t(5) requires that written procedures shall be provided and utilized for preventive or corrective maintenance operations which could have an effect on the safety of the reactor.

Technical Specification 6.2.e(5) requires that the Nuclear Safeguards Committee shall audit reactor operations and reactor operational records for compliance with internal rules, procedures, and regulations and with licensed provisions including Technical Specifications.

Technical Specification 6.2.e(7) requires that the Nuclear Safeguards Committee audit plant equipment performance. Mr. Luis A. Reyes Page 0 July 15, 198

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Technical Specification 6.2.e(6) requires that the Nuclear Safeguards Committee audit existing operating procedures for adequacy and to assure that they achieve their attended purpose in light of any changes since their implementation.

Contrary to the above, the Nuclear Safeguards Committee failed to perform the review, approval and rudit functions required by the license in the following instance::

- Procedure 4901 provides administrative requirements for preparing written job plans to satisfy the requirement of Technical Specification 6.4.6(5) that maintenance operations be conducted according to written procedures. The Nuclear Safeguards Committee was not performing reviews or audits of the completed job plans as required to satisfy Technical Specification 6.2.e(5), 6.4.a and 0.4.0.5.
- Suclear Engineering laboratory experiments were being performed each quarter without documentation that the Nuclear Safeguards Committee had ever reviewed the procedures as required by Technical Specification 6.4.a.
- Systematic audits of equipment function were not being performed as required by Technical Specification 6.2.e(7).
- 4. Nuclear Safebuards Committee audits of operations, operational records, and existing procedures required by Technical Specifications 6.2.e.(5) and 6.2.e.(6) were inadequate in that the same eight procedures were audited each year, and records of operiments were not being audited.

This is a Deverity Level IV violation (Supplement I).

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The charge in F.1 refers to the Nuclear Safeguards Committee not performing reviews and audits. The implication is that this committee must audit everything exhaustively and annually. The Technical Specifications do not specify such a requirement. Recent audits have been more extensive than in years past but not to the degree implied in item F. I would be delighted to have the Committee conduct exhaustive and thorough audits. But we all should realize that the Committee does this work on a voluntary basis and realistic expectations of how much they can do would be useful to all. I will distribute the inspection report and this response to the Committee members. I also will recommend to the President of Georgia Tech to enlarge the membership of the Committee so that more depth and breadth of audits can be realized. Mr. Luis A. Reyes Page 9 July 15, 1957

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Technical Specifications 6.2.e(5) requires that the Committee perform audits on reactor operations and reactor operational records out it does not specify at what frequency. Consequently no violation was committed in F.1; however, we appreciate NRC's efforts to bring this issue out in the open.

The charge in F.2 is that the records for approval of class experiments by the Committee were not found. But the experiments are all minor in nature and as such explicit approval by the Committee is not needed. Technical Specifications 5.2.e(1) states that the Committee shall: Review and approve proposed experiments and tests utilizing the reactor facility which are significantly different from tests and experiments previously performed at the GTRR. All experiments involving students have previously been performed many times. Consequently no violation was committed in F.2.

Ite. F., relates to audits of equipment functions as required by Technical Specifications. Again we feel no violations were committed here for the same reasons given in F.1. We agree however that expanded audits by the Committee are necessary to meet the spirit and letter of Technical Specifications.

Item F.4 relates to audits by the Nuclear Safeguards Committee being insdequate. This charge is rather subjective and again no violations were committed. Expanded audits will however be instituted.

Additionally we are evaluating methods to track limiting conditions for operation and also instrument calibration necessary for the operability of safety equipment. These evaluations should be completed by October 30, 1937.

I hope that you will find our response satisfactory. If you have any questions please let me know.

Sincerely yours,

R.A. Tare

R.A. Karan Director

RAK:jlr