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U.S. NUCLEAR REGULATORY COMMISSION

REGION I

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INSPECTION REPORT 30-07033/87-99

RADIATION TECHNOLOGY INCORPORATED (RTI)

RTI-ROCKAWAY

ASSESSMENT PERIOD: AUGUST 22, 1986 - JANUARY 31, 1987

BOARD MEETING DATE: FEBRUARY 20, 1987

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## I. INTRODUCTION

### A. Purpose and Overview

The Systematic Assessment of Licensee Performance (SALP) is an integrated NRC staff effort to collect available observations and data, and evaluate licensee performance based upon this information. SALP is supplemental to normal regulatory processes used to ensure compliance to NRC rules and regulations, and is intended to be sufficiently diagnostic to provide meaningful guidance to the licensee's management to promote quality and safety of facility operations.

SALP evaluation is not typically performed for non-reactor facilities. However, in light of the licensee's past performance, the public concern and controversy that continues to surround Radiation Technology, Incorporated (RTI), and the fact that the Staff's confidence in the licensee was severely eroded by the indifferent attitude to radiation safety and the condition of the facility displayed by the licensee's previous Chief Executive Officer, such evaluation is necessary in order to assure objectivity with respect to NRC actions affecting the license and RTI's current management.

A NRC SALP Board, composed of the staff members listed below, met on February 20, 1987, to assess the licensee's performance in accordance with the guidance in NRC Manual Chapter 0516, "Systematic Assessment of Licensee Performance." A summary of the guidance and evaluation criteria is provided in Section II of this report.

This report is the SALP Board's assessment of the licensee's safety performance at Radiation Technology, Inc.'s facility at Rockaway, New Jersey for the period August 22, 1986 to January 31, 1987.

### B. SALP Board Members

#### Chairman:

T. T. Martin, Director, Division of Radiation Safety  
and Safeguards (DRSS)

#### Members:

S. Collins, Deputy Director, Division of Reactor Projects (DRP)  
J. Wiggins, Chief, Reactor Projects Section 1B, PB1 (DRP)  
J. Linville, Chief, Reactor Projects Section 2C, PB2 (DRP)  
J. Joyner, Chief, Nuclear Materials Safety and Safeguards  
Branch (DRSS)  
J. Kinneman, Chief, Nuclear Materials Safety Section A (DRSS)  
J. Glenn, Chief, Nuclear Materials Safety Section B (DRSS)  
J. White, Chief, Nuclear Materials Safety Section C (DRSS)

C. Background

1. Licensee Activities

Radiation Technology Incorporated is authorized by License No. 29-13613-02 to use, receive, acquire, possess and transfer certain byproduct material subject to specified conditions:

<u>Material</u>	<u>Max. Amount (Form)</u>	<u>Use</u>
A. Cobalt-60	12,000 Curies per source, 3,000,000 Curies, total (Sealed Sources)	RTI Model 2101 Irradiator for service irradiation; storage in pool irradiator
B. Cobalt-60	320 Curies (Sealed Source)	Storage in AMERAY irradiator
C. Strontium-90	120 millicuries (Sealed Source)	Storage
D. Strontium-90	30 microcuries (Sealed Source)	Instrument Calibration
E. Hydrogen-3	16 Curies	Storage

In addition, RTI is authorized by License No. 29-13613-03 to possess and store byproduct material with Atomic Numbers between 3 and 83, incident to the decontamination of nuclear reactor components.

Since August 22, 1986, the licensee has operated the Radiation Technology Model 2101 Irradiator during two eight hour shifts per day, 5 days per week, except when mechanical difficulty interrupted operation. Product was irradiated occasionally on Saturdays. The licensee has not performed licensed activities under the authorization of License No. 29-13613-03 during the assessment period.

On August 22, 1986, License No. 29-13613-02 was amended and renewed for a probationary period of six months, to expire February 28, 1987. Since receipt of an application for renewal of this license on February 20, 1987, the license has been maintained active in accordance with 10 CFR 30.37.

2. Inspection Activities

NRC's normal inspection program for irradiator facilities requires one inspection per year of about 10-16 hours of direct inspection effort. This licensee was inspected on thirteen

occasions during this less than 6 month assessment period. Six of these inspections were conducted during backshifts. The total NRC on-site effort for the assessment period was approximately 160 hours of on-site inspection. Each comprehensive inspection was usually performed in accordance with the attached inspection plan and examined the following areas:

- a. Organizational Structure and Training
- b. Control of Facility Design and Equipment
- c. Management and Procedural Control of Activities and Quality Assurance

The results of these inspections, including the five violations cited during the probationary period, are summarized in Table 1.

## II. CRITERIA

Licensee performance is assessed in selected functional areas which have the potential to significantly affect nuclear safety and the environment. The following evaluation criteria, where appropriate, were used to assess each functional area:

1. Management involvement and control in assuring quality
2. Approach to resolution of technical issues from a safety standpoint
3. Responsiveness to NRC initiatives
4. Enforcement history
5. Reporting and analysis of reportable events
6. Staffing (including management)
7. Training and qualification effectiveness

Based upon the SALP Board assessment, each functional area evaluated is classified into one of three performance categories. Licensee performance determined to fall below the lowest category would have already resulted in escalated enforcement actions which would have included modification, suspension or revocation of the license. The definitions of these performance categories are:

Category 1. Reduced NRC attention may be appropriate. Licensee management attention and involvement are aggressive and oriented toward radiation safety. Licensee resources are ample and effectively used, resulting in a high level of performance with respect to operational safety.

Category 2. NRC attention should be maintained at normal levels which are appropriate for this licensee. Licensee management attention and involvement are evident and reflect concern for radiation safety. Licensee resources are adequate and reasonably effective so that satisfactory performance with respect to operational safety is being achieved.

Category 3. Both NRC and licensee attention should be increased. Licensee management attention or involvement is acceptable and considers radiation safety, but weaknesses are evident. Licensee resources appear to be strained or not effectively used so that minimally satisfactory performance with respect to operational safety is being achieved.

### III. SUMMARY OF RESULTS

#### A. Overall Facility Evaluation

During this assessment period, licensee personnel exhibited thorough and complete cooperation during NRC inspections. The attitude of management and employees was positive and reflected an overall effort to comply with all requirements. The Radiation Safety Officer provided excellent guidance to the entire staff and served as a strong liaison between the NRC, licensee management and the employees. The licensee made substantial progress in developing and implementing a formal training program. While the five violations cited during this assessment period were due in part to a failure to follow procedures, the training program generally contributed to a good understanding of the license and regulatory requirements, and adherence to procedures. This accomplishment is noteworthy given the recent adoption of new detailed procedures covering all safety related activities and the tendency that was fostered by the previous management of the organization to ignore requirements.

The production mentality that previously pervaded both management and workers, which emphasized the accomplishment of production goals to the general exclusion of safety, appears to have been rectified. Current philosophy appears to be more balanced, and generally conservative with regard to safety.

The violations cited were generally minor in nature, did not directly affect health and safety, were not recurrent, and were not indicative of programmatic problems. The number of violations identified, given the extraordinary inspection effort provided, was not cause for concern and appear attributable to difficulties faced by a new management in reversing old bad habits. The licensee's corrective actions were generally prompt and effective. However, there was indication that site management was remiss in not consistently and thoroughly reviewing operating logs and records on a daily basis. This deficiency contributed to some of the violations identified.

The positive and cooperative attitude of shift supervisors and licensee management was a noteworthy aspect of NRC inspections conducted in this period, and is in direct contrast to previous experience with this licensee.

In general, the licensee's performance was determined to be adequate and improving in each functional area reviewed. However, the SALP board recommends that the licensee devote additional effort to:

1. Strengthening the Implementation and Maintenance of the Quality Assurance Program.

While the licensee has established and implements a Quality Assurance Program, the program is not well defined, comprehensive with respect to attributes that are examined, nor systematized sufficiently to assure that all license requirements and criteria are subject to inspection and surveillance activities. Better defined procedures and more explicit identification of quality assurance objectives should be established.

2. Reinforcement of the Need to Adhere to Procedures

Though lapses of procedural adherence were noted this period, the nature and circumstances of the violations do not indicate a significant programmatic problem. However, these violations do appear to indicate a tendency on the part of some operating personnel to make decisions and take action based on their own experience and knowledge without sufficient consideration of management-approved procedures that may apply. To ameliorate this tendency, management must enhance efforts to identify and review instances of non-adherence to procedures, determine trends and common factors, review procedure adequacy and clarity, effect remedial action (such as personnel retraining or procedure revision) as appropriate, and provide follow-up to assure that corrective measures are implemented effectively.

3. Continuation of Emphasis on Safety

The improved attitude toward safety that is now generally apparent in NRC's dealing with the licensee, and the positive and cooperative attitude of the licensee staff, should receive continued emphasis in order to further establish the organizational commitment to conduct operations safely and in an open and forthright manner.

4. Expansion of the Preventative Maintenance Program

During the assessment period, equipment or component failures resulted in three significant operational events that caused safety systems and procedures to be challenged. While design may be a factor, the age (nearly 17 years) of the facility and equipment appears to be a major contributor to the intensive reactive maintenance that the system requires. More attention should be directed toward enhancing the existing preventive maintenance program to reduce the frequency of system failures.



B. Facility Performance Assessment

<u>FUNCTIONAL AREA</u>	<u>CATEGORY</u>
1. Organizational Structure and Training	2
2. Control of Facility Design and Equipment	2
3. Management and Procedural Control of Activities and Quality Assurance	2

IV. PERFORMANCE ANALYSIS

A. ORGANIZATIONAL STRUCTURE AND TRAINING

1. Analysis

The licensee's current organization which operates the Rockaway, New Jersey facility is depicted in Table 2. A number of the indicated positions continue to be filled by acting personnel, an interim arrangement necessitated by the small size of the company, the NRC's probationary restrictions placed on several employees, the license requirements for personnel holding specific positions to possess certain qualifications and experience, and the reported reluctance of the licensee to increase personnel costs by hiring additional staff, given the small profit margin of the operations. The licensee has informed NRC that they expect to assign permanent personnel to the vacant positions following training and qualification, provided the current license condition 11.F, which restricts some personnel from management involvement, is removed.

Staffing was sufficient to operate the facility in accordance with the specifications of the license. In all cases observed, at least one person designated in the license was on shift whenever the irradiator was operating. Although continuity was somewhat compromised, the acting personnel alternated their assignments in a manner that generally assured effective management oversight. NRC inspections indicate assigned personnel understand their responsibilities and authorities. However, formal documentation of each position's responsibilities and authorities was not established in this assessment period.

Both the interim and planned staff have sufficient experience for management and operation of the facility. Sufficient expertise is available within the staff to handle most operational and administrative contingencies. An outside

consultant, required by license condition, continues to perform periodic audits as a third party review of radiation safety and operational performance.

Licensee operating personnel have received comprehensive training in the mechanics of irradiator operation, normal and emergency operating procedures, and procedures for radiation safety. However, while the training and qualification program contributed to generally good understanding of procedures, there were some occasions when personnel failed to implement requirements of operating and emergency procedures. Failure to follow procedures contributed, in part, to all five violations that were cited during the assessment period. Since licensee personnel have expressed and exhibited a desire for compliance, the examples of failure to follow procedures may indicate an inadequate knowledge of procedure detail, failure to consider procedures to confirm requirements, or the surfacing of previous bad habits, the latter a legacy of previous management.

The licensee administers a training program that is generally well defined and effective in communicating information. However, the training sessions dealing with emergency and contingency response appear to emphasize non-radiological events such as fires, and deemphasize the likelihood of any radiological emergency event.

RTI appears interested in enhancing the quality of training programs, and has recently established a corporate program to train and qualify personnel for all of RTI's facilities. Currently, RTI is in the process of selecting a corporate staff to administer this function.

The Radiation Safety Officer (RSO), who is also RTI's Vice President of Operations and Engineering, has generally (with one exception, as noted in Section IV.B.1) exhibited a complete and thorough knowledge of day-to-day operational problems. This has been demonstrated in his detailed responses at inspection exit interviews and in his presentations before NRC management. Under the RSO's guidance, the shift supervisors have demonstrated an increased knowledge of the plant and its operation.

During the assessment period the interim organization provided consistent evidence of prior planning and assignment of priorities, and was able to develop generally effective procedures for the control of activities. For example, personnel entries into the irradiation cell to investigate anomalous events, such as loss of pool water or loss of system power and controls, were very carefully planned and performed by management personnel. In these events, very conservative protocols were



used to assure that personnel would not be subject to inadvertent or unplanned exposure.

2. Conclusion

Rating: Category 2

3. Board Recommendation

RTI: Define responsibilities and authorities of management and operating personnel. Enhance training of personnel relative to adherence to procedures. Assure that emergency response training adequately considers radiological contingencies.

NRC: Continue enhanced inspection program to assure that this area receives sufficient management attention.

B. Control of Facility Design and Equipment

1. Analysis

The primary engineered safety feature of this facility, the safety interlocks, were examined during each inspection. Safety interlock testing was observed on numerous occasions and was found to be complete and technically adequate. These tests are normally required to be performed prior to startup if testing has not occurred in the previous 24 hours. One violation identified by NRC resulted when the test procedure was apparently misinterpreted and the required test was not performed until 23 minutes after irradiator startup as opposed to prior to reactor startup. Lack of procedural clarity in reflecting the applicable requirement of 10 CFR 20.203(c)(6)(vii) was a factor in the misinterpretation. Subsequently, licensee management made significant efforts to understand the intent of 10 CFR 20.203(c)(6)(vii), to clarify the procedure with a logic flow chart, and to communicate the requirement to all operators.

Records of safety interlock tests were complete, well maintained, and available for NRC inspection. At no time during NRC inspections was the licensee operating the irradiator without the safety interlock system fully functional, nor did any inspection findings indicate that the irradiator had been operated without the safety interlock system operating. This is a significant improvement over past inspection findings and appears to reflect the current management's stated policy to operate in strict compliance with NRC license requirements.

During this assessment period, three significant operational events occurred. These events, while not having direct radiological significance, are of concern since they caused safety systems and safety procedures to be challenged.

On September 22, 1986, an incident occurred involving a broken PVC (polyvinyl chloride) pipe in the demineralizer room, resulting in the loss of approximately 5,000 gallons of water and approximately 6.5 feet of water shielding in both the service irradiator and R&D pools. The pipe break was probably induced as the result of over-tightening a fitting without consideration of limiting the torque to prevent stress. The consequent loss of so much water was largely due to a historical design defect in the installation of the demineralizer system, which permitted water to be pumped from the pools, discharged through the pipe break, and subsequently directed to floor drains. The water flowed to the facility's sanitary system, but no radioactivity was involved and there was no environmental impact. Licensee management became immediately involved as the Radiation Safety Officer (RSO) and Radiation Safety Supervisor (RSS) arrived on-site within one hour of notification from the shift supervisor. Upon arrival, the RSO and RSS assisted their staff in performing surveys to assess the radiological hazard present and planning a course of action. The licensee's immediate reactions to the event indicated conservatism when potential for safety significance existed. This event was promptly and completely reported to the NRC.

Following this event, the licensee determined that PVC pipe was not appropriate to the water temperature involved and consequently upgraded the water purification system piping to CPVC (chlorinated polyvinyl chloride). Further, operating and maintenance procedures, and the system design were changed to mitigate the effect of this type of event and enhance reliability. System modifications were performed in accordance with the licensee's engineering and design control procedures. Documentation of the licensee's design control activities for this modification was maintained. The entire scope of the corrective actions taken indicated a conservative, technically sound and thorough approach to resolving this problem.

On November 13, 1986, the licensee experienced a problem when the irradiator source rack could not be moved to the shielded position by conventional means. Neither the normal nor emergency shutdown controls functioned to return the sources to the shielded position. The operator was able to lower the sources only by manually venting air from the solenoid valve that controls the source lift mechanism. Since the operator believed that the cause of the problem was freezing of the solenoid valve (which is located in the normally unheated equipment room on the roof of the irradiator cell), due to low ambient temperature, he started a portable heater in the vicinity of the valve. When the valve began to function normally, the operator logged the occurrence in detail and resumed normal operations, after testing the interlock systems. However, the licensee's emergency shutdown procedure requires that the Radiation Safety Officer be informed. In this case, no management person, including the Radiation Safety Officer, was informed of the event until it was identified during an NRC inspection and brought to

management's attention by the inspector five days later. The NRC inspector learned of the event in his discussions with plant operators, who readily volunteered the information in response to routine questions on whether there had been any recent problems. The event was also amply described in facility logs and reportedly had been the subject of discussion between plant operators during shift relief.

In this instance, licensee management was not immediately informed that an important safety feature, the emergency shutdown control, failed to function. Consequently, the decision for determining corrective action was not made at a level that required management review. Until surfaced to management by the NRC, no one but the operators knew that such an event had occurred. Upon being made aware of the situation, licensee management took immediate action to review the operator's response, including reinforcing to all personnel the need to make management aware of anomalous occurrences. Further action was taken to insulate and better heat the roof enclosure containing the subject solenoid valve in accordance with the licensee's procedures for design control. While principally a design problem, this last event provides a second example of inadequate management review of operating logs. Previously, as indicated in Table 1, the licensee had been cited for logging and record deficiencies. Corrective actions for that citation included a commitment that management would carefully review records daily to assure adequate attention was directed toward problems. In this most recent example, that commitment was not fulfilled; however, it appears the root cause of this failure was the absence of the responsible supervisor due to personal problems and inadequate assumption of these responsibilities by remaining managers. Subsequent NRC review has not identified additional examples of this problem.

On January 21, 1987, the product conveyor malfunctioned when one of the tote boxes slipped past a retainer and was caught by a another tote box ascending on the conveyor lift. As a result, a tote was pressed against the ceiling and against a power cable. Subsequently, an electrical short developed and all system power, including power to the control panel and the system indicators, was lost. Consequently, operating personnel were not able to determine if the sources were still exposed or the status of the safety interlocks. Licensee management immediately informed the NRC of the occurrence and detailed a plan of action for entering the cell and determining actual system status. Proper conservatism and concern for safety were exhibited. The licensee determined that all safety features functioned as designed, and that the sources were in the shielded position. Repair activities were performed in accordance with the appropriate design control procedures.

In all three instances of design defect or failure identified during the assessment period, the licensee evaluated the failure mechanism

and developed corrective measures that were directed toward correcting the root cause and mitigating the effect of potential similar malfunctions in the future. Each malfunction appears to have evolved from problems in earlier design, construction and maintenance and the previous management's inattention to facility control. It is evident that current management has established and implemented an adequate facility control program sufficient to provide appropriate engineering evaluation of defects and modification and/or repairs to the facility.

During this assessment period it was observed that, the irradiator facility tends to be maintenance intensive. Observed maintenance activities were appropriately conducted, but were essentially all directed toward repair of malfunctions. The management philosophy and the licensee's procedures appear more reactive in nature, as opposed to preventive. Air hoses in the compressor system are changed out when leaks are identified, not at a scheduled frequency. Other short lived components, such as microswitches and relays, are replaced when they degrade, and not on a prescribed replacement schedule. The problem with the frozen solenoid reportedly has occurred previously, but no effective action was taken to prevent recurrence.

The current preventive maintenance program, including cleaning filters and conveyors, replenishing fluids, and lubrication of certain components, while a considerable improvement over previous efforts, is primarily an exhaustive checklist of items to be "checked" periodically. It does not identify performance criteria or attributes that consider aging or wear. Consequently, items that are "checked" may still fail, resulting in problems that, on occasion, challenge the facility's safety systems. While the licensee has demonstrated conservatism and a genuine concern for safety when responding to actual system failures, the age of the system (17 years) contributes to an inclination for component failures that could be better controlled and deterred by enhanced approaches to preventive maintenance.

During this assessment period, the licensee's personnel, procedures and hardware were challenged by equipment failures and design problems. However, in the cases observed, situations with compromising health and safety, and established and implemented engineering and design solutions for hardware and system faults that appeared reasonable and effective.

2. Conclusion

Rating: Category 2

3. Board Recommendation



RTI: Strengthen the preventive maintenance program to prudently counter anticipated and presumptive degradation of systems and components. Assure that system malfunctions are subject to evaluation and analysis to adequately determine causal factors and address corrective measures. Provide assurance that operating logs and records, including maintenance records are thoroughly reviewed on a daily basis by management personnel to identify deficiencies and/or anomalous occurrences, and to effect remedial action.

C. Management and Procedural Control of Activities and Quality Assurance

1. Analysis

During this assessment period, shift supervisors generally maintained thorough and detailed logs and records to facilitate orderly shift turnover. Shift supervisors adhered to the Shift Turnover Procedures and effective communication existed between the operators, as evidenced by NRC discussions with facility operators and by the shift supervisors' ability to generally meet daily, weekly, and monthly surveillance requirements.

Daily, weekly, and monthly maintenance, as currently described in the licensee's procedures, was generally performed at the required frequency. Records of the maintenance activities were complete, well maintained, and available for NRC inspection.

Though not a specific requirement of the license, the licensee has established a Quality Assurance (QA) program in an effort to provide for management control and feedback relative to licensed activities. Unfortunately, this QA Program was not well defined and was not sufficiently systematized to periodically assure that all applicable license criteria and requirements were being met. For example, while QA personnel audit the records of the maintenance program monthly, it is not apparent that surveillance of the performance of actual maintenance activities was ever performed or even planned; documentation of quality assurance activities appear somewhat perfunctory, in that identification of procedures, activities or individuals evaluated is not specifically recorded for each audit period; and, in the assessment period, quality assurance efforts appear to have been confined to only the first shift.

By this system it is possible that the same licensee activity could be repeatedly reviewed on the same shift, while other licensee activities might never be subject to review.

Currently, audits of the entire safety program are performed monthly by an independent party as specified in License Condition 20. Although the licensee is interested in eliminating this independent audit requirement, the inadequacies of the licensee's current quality assurance program indicate that it would not be prudent to remove this requirement until the licensee's QA Program is upgraded.



Procedures to evaluate water quality in terms of pH, conductivity, and radioactivity were adhered to and associated records were maintained. Whenever pool water quality fell out of specification, management was alerted and operations were curtailed until corrective actions were implemented.

As previously noted, the five violations cited during this assessment period were due, in part, to failure to follow procedures. Most of the violations appeared to result from individual reliance on past practices and knowledge based on the individuals own experience and operations under the direction of previous management, rather than by consulting the written procedures developed and approved by the current management. The licensee's corrective actions were prompt and effective in most cases observed and recurrence of violations of a similar nature was not noted. Given the intense inspection program conducted of this licensee, the number and severity of the violations identified is not particularly significant. In the majority of cases observed by inspectors, the licensee has followed procedures and generally assured that personnel both recognized and appreciated the need to conduct licensed activities in accordance with established instructions.

Both licensee management and their personnel were responsive to NRC initiatives. During this SALP period, the licensee's management and their staff exhibited complete cooperation with NRC inspectors. Management emphasis was directed more toward safety and less toward production in contrast to the previous management's philosophy. All licensee personnel appeared completely candid and open with NRC inspectors.

Throughout this assessment period, NRC inspectors and regional management did not observe any evidence that the former President and Chief Executive Officer, Dr. Martin Welt, exercised any influence or control relative to RTI's activities at Rockaway, New Jersey.

Management has shown strong initiative in implementing corrective action promptly and effectively in response to NRC, third party contractor or self audit findings. The effectiveness of the corrective actions is evident in the fact that identified items remained corrected. RTI's Vice President of Operations and Engineering, who is also the licensee's Radiation Safety Officer, has been directly involved with site activities and has been the principle contact with the NRC during the assessment period. This individual's influence appears largely responsible for the rapid improvement in the licensee's attitude, competence, and predilection toward safety.

## 2. Conclusion

Rating: Category 2

3. Board Recommendations

RTI: Explicitly define the Quality Assurance Program and provide for comprehensive implementation of quality assurance activities. Continue to emphasize open and candid communication with NRC management and inspectors. Enhance efforts to identify and review instances of non-adherence to procedures, determine trend and common factors, review procedure adequacy and clarity, and effect remedial action (such as personnel retraining or procedure revision), as appropriate.

NRC: Continue the incorporation of License Condition 20 requiring periodic program review by an independent auditor until the licensee's own efforts and abilities in QA are deemed sufficient to delete the requirement.

Table 1

Radiation Technology, Inc.  
Enforcement History  
August 22, 1986 to January 31, 1987

<u>Inspection No.</u>	<u>Results</u>
86-09 (August 25, 1986)	Clear
86-10 (August 28, 1986)	Clear
86-11 (September 4 & 5, 1986)	Several entries in the "Irradiator Down Time Log" did not correspond directly with the start times and dates entered in the "Irradiator Log." (Severity Level V violation)  <u>Corrective Action:</u>  Procedural training was given to all Operators/ Supervisors to ensure a full understanding of the purpose and intent of the logs. Enhanced management review of daily logs has been implemented to prevent recurrence.
86-12 (September 10, 1986)	Licensee did not perform interlock checks prior to operation of the irradiator. Interlocks had not been tested in 24 hours and the irradiator had not been in continuous operation during this time period. (Severity Level IV violation)  Surveillance check of the source hoist air system not performed weekly. (Severity Level IV violation)  <u>Corrective Action:</u>  Procedure revised to clearly define when safety interlock checks must be performed. A decision chart was added to the procedure which provides a basis for determining when safety interlock checks are required.

Table 1 Continued

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<u>Inspection No.</u>	<u>Results</u>
	The Operations Manager met with the Shift Supervisors and instructed them to perform weekly surveillance activities early in the week to minimize the probability that severe weather conditions could prevent performance of a required surveillance before it was overdue. Licensee committed to notify NRC immediately if inclement weather prevents Operators from performing required checks.
86-13 (September 15, 1986)	Clear
86-14 (September 22, 1986)	Clear
86-15 (October 3, 1986)	Clear
86-16 (October 9, 1986)	Clear
86-17 (November 3, 1986)	Clear
86-18 (November 19, 1986)	Operator repaired equipment involving radiation safety without obtaining authorization or approval by the RSO. (Severity Level IV violation)
	Operator was unable to return the source to the shielded position during shutdown of the irradiator and did not notify the RSO. (Severity Level IV violation)
	<u>Corrective Action:</u>
	In an effort to prevent solenoids from freezing, the licensee replaced the portable heater in the source hoist house with a thermostatically controlled heater and thermal insulation in the source hoist house was upgraded.
	The Licensee has responded to the Notice of Violation by asking for withdrawal of the citations. The basis for the licensee's contention is that the licensee does not consider the actions taken by the operator,

namely using a portable heater to free a frozen solenoid, to constitute equipment repair. Further, the licensee stated in its reply that the RSO was not required to be notified in light of the fact that the operator was able to lower the source into the shielded position by relieving the air pressure from the system.

The NRC has notified the licensee that their justification for withdrawal is inadequate and that the violations stand. Additional corrective action involving clarification of procedures and operator licensing have been solicited.

86-19 (December 4&5, 1986)

Clear

87-01 (January 8&9, 1986)

Clear

87-02 (January 21&22, 1986)

Clear



Table 2

RADIATION TECHNOLOGY, INCORPORATED  
ROCKAWAY FACILITY  
ORGANIZATIONAL ARRANGEMENT

<u>TITLE</u>	<u>NAME</u>
Chairman of the Board and Chief Executive Officer	Dr. Austin Smith
President	Mr. David Levitt
Vice President-Operations and Engineering	Dr. Robert Cockrell
Vice President-Quality Assurance	Mr. Paul Shapiro
Operations Manager/Radiation Safety Supervisor	Vacant *Mr. Leslie Ross (Acting) *Mr. Steve Hall (Acting)
Plant Superintendent	Vacant *Mr. Leslie Ross (Acting) *Mr. Steve Hall (Acting) Mr. John Singleton (In-training)
Radiation Safety Officer	Dr. Robert Cockrell
Shift Supervisors	**Mr. Thomas Church **Mr. Michael Ayres **Mr. Gerard Murray

\* These personnel alternate in these positions.

\*\* These personnel are currently restricted from any management involvement in any of RTI's facilities by Licence Condition 11.F.