Process Technology North Jersey

Subsidiary of RTI Inc.

108 LAKE DENMARK ROAD, ROCKAWAY, NJ 07866
(201) 625-8400 • FAX: (201) 625-7820

April 6, 1990

Mr. John D. Kinneman, Chief
Nuclear Materials Safety Section
United States Nuclear Commission
475 Allendale Road
King of Prussia, PA 19406

Ref: Mail Control #106655
Docket #030-07022
License ~~#29-13612-02~~ 29-13613-02

Subject: Radiation safety Audit First Quarter 1990

Dear Mr. Kinneman:

The subject audit by Mr. Michael J. Slobodien indicated no adverse findings. The following is submitted in response to the suggestions made in the audit.

REVIEW OF RADIATION SAFETY AUDITS BY QUALITY DEPARTMENT

The information regarding specific records reviewed is already being documented.

RECEIPT OF COBALT - 60

All appropriate procedures and source movement techniques will be reviewed with all personnel involved prior to receipt of the cobalt.

REVIEW OF CIRCUMSTANCES AND RESPONSE TO FILM BADGE READING INDICATING A DOSE GREATER THAN 500 REM

The handling of this case was appropriate as indicated in the report. Cytogenetic dosimetry was considered but was determined to be unnecessary due to the results of the physical examination and blood tests.

REVIEW OF TRAINING RECORDS

Minor omissions have been corrected.

POOL WATER AND RADIATION SURVEYS

All appropriate samples and surveys were completed by March 31, 1990.

R/76

SAFETY SYSTEM TESTING

No comment

MAINTENANCE RECORDS

No Comment

REVIEW OF POSTING AND NOTICES

No Comment

HOUSEKEEPING

We completely agree with this comment.

Very truly yours,

John D. Schlecht
Radiation Safety Officer

JDS:jk

cc: RTI Board of Directors
P. O. Shapiro
J. N. Scandalios

RTI Inc.

108 LAKE DENMARK ROAD, ROCKAWAY, NJ 07866
(201) 625-8400 • FAX (201) 625-7820

March 20, 1990

Mr. John Schlecht, Plant Manager
Process Technology of North Jersey
108 Lake Denmark Road
Rockaway, N.J. 07866

Dear John:

On March 15, 1990 a Radiation Safety Audit and inspection was performed at the Rockaway facility.

A compliance rating of 94% documents maintenance of the Radiation Safety Program and is consistent with the previous rating of 94%. A rating above 90% indicates an acceptable situation but we should not forget that our goal is 100% compliance, improvement is expected.

Employees interviewed were Mike Rosa, Andy Friedrich, Austin Beetle, and yourself. The following procedures were reviewed:

3.6.orig.	Radiation Safety Audit
3.9.orig.	Training
4.116.orig.	pH and Radiation Analysis of water
9.100.C	Auto Run Mode Start Up
9.101.C	Irradiator Shutdown
9.102.C	Irradiator Interlock Testing
9.105.C	Dosimetry Issue and Use
9.200.B	Emergency Shutdown
9.300.A	Care and Use of Radiation Survey Equipment
9.504.B	Irradiator Source Movement Log
9.700.C	Operator Certification
10.102.B	Radiation Surveys
10.105.orig.	Radiological Posting
12.100.orig.	Preventive Maintenance

The following observations were made during the audit. Details are in the attached audit report. Corrective action assignments with completion dates should be recorded directly on the audit questionnaire and a copy returned to Corporate Quality by March 26, 1990.

ACCOMPLISHMENTS

Safety Interlock tests are performed, documented, and reviewed as required, PM documentation is reviewed by the RSO, training is conducted and documented according to schedule, and current procedures are available in the control room.

B174

MAJOR ACTIONS REQUIRED:

* Semi-annual verification of the accuracy of the DI water system in-line conductivity meter had not been done as required. This was corrected prior to the end of the audit.

* All restricted areas must remain secured as per license requirements. Corrective action was taken immediately.

* Weekly preventive maintenance must be performed as scheduled and documentation errors eliminated.

* The entire audit report, including all negative responses and positive responses with comments, should be reviewed and responsibilities assigned to bring about prompt corrective action.

OPINION

Management must continue to emphasize procedures are to be followed. Radiological safety is at a level that we can be proud of. Only documentation loose ends remain.

Respectfully submitted;

Paul O. Shapiro

Paul O. Shapiro, VP

enc/

cc:
S. Maico
J. Scandalios

PROCESS TECHNOLOGY

RADIATION SAFETY
AUDIT QUESTIONNAIRE

PLANT Process Technology of North Jers

DATE March 15, 1990

AUDITOR P.O. Shapiro
R. Smith

"THIS QUESTIONNAIRE AND AUDIT REPORT IS INTENDED FOR INTERNAL USE IN VERIFYING COMPLIANCE TO RTI'S REQUIREMENTS AND IS NOT INTENDED TO INDICATE THE FACILITY'S CONFORMANCE TO GOVERNMENTAL REGULATORY STANDARDS. A NEGATIVE RESPONSE TO A QUESTION INDICATES ONLY THAT THE FACILITY'S PRACTICE DOES NOT MEET THE DEGREE OF COMPLIANCE REQUIRED TO SATISFY RTI'S QUALITY STANDARDS."

APRIL 28, 1989

SUMMARY
RADIATION SAFETY AUDIT QUESTIONNAIRE

Total No. of Questions	Number Yes	Total Possible Score	Score
68	65	282	266

% COMPLIANCE 94%

Key to Score - Score is obtained as follows:

# of Points	
0 -	Items is not in compliance
1 -	Item could cause minor problems and is in compliance
3 -	Item could cause minor to small problems and is in compliance
5 -	Item could cause small to minor to large problems and is in compliance
10 -	It could cause large to critical problems and is in compliance Any negative responses in this category requires immediate corrective action.

RADIATION SAFETY AUDIT QUESTIONNAIRE

	YES	NO	ASSIGNED RESP	ACTION DATE	VALUE	SCORE
1.0 Is there a quality unit with defined responsibilities and authority?	x				5	5
2.0 Is there a qualified individual identified to act in the absence of the quality person?	x				1	1
3.0 Is formal training:						
3.1 conducted in each department?	x				3	3
3.2 current for radiation workers?	x				3	3
3.3 current for irradiator operators?	x				10	10
4.0 Have workers been instructed on:						
4.1 health protection problems?	x				1	1
4.2 procedures to minimize exposure?	x				1	1
4.3 purpose and function of protective device?	x				1	1
4.4 reporting to licensee any conditions which may lead to a violation?	x				1	1
4.5 response to warnings of unusual occurrences or malfunctions?	x				1	1
4.6 radiation exposure reports?	x				1	1
5.0 Are there adequate personnel available to perform, supervise, and control all activities?	x				3	3

RADIATION SAFETY AUDIT QUESTIONNAIRE

	YES	NO	ASSIGNED RESP	ACTION DATE	VALUE	SCORE
6.0 Do employee files contain documentation that personnel have a combination of education, training, and experience to qualify them for their positions?	x					
7.0 Are current procedures available in the control room?	x					
8.0 Is a notice posted describing and stating where the following documents (or state equivalents) may be seen:						
8.1 10 CFR 19 and 20?	x					
8.2 NRC operating license and conditions?	x					
8.3 operating procedures?	x					
8.4 notice of any violations involving radiological work conditions?	x					
8.5 NRC - 3 Form?	x					
9.0 Are the above forms current?	x					
10.0 Are records maintained of worker exposure?	x					
11.0 Is worker exposure data made available to each worker?	x					
12.0 Is worker exposure data supplied to each worker expediently upon termination?	x					

Comments:

19.2 Radiological PM not recorded for week of 1/14-1/20 and 2/25-3/3 PM is done 2 times 1 week and then a week is missed.

Errors in recording hoist air piston PM for week of 2/28/90.

RADIATION SAFETY AUDIT QUESTIONNAIRE

	YES	NO	ASSIGNED RESP	ACTION DATE	VALUE	SCORE
13.0 Prior to start of actual work is a written signed statement obtained from each individual who will work in a radiation area as to exposure for the previous quarter?	X				3	3
14.0 Is equipment properly maintained and controlled during use and storage?	X				5	5
15.0 Do procedures describe the calibration of equipment in sufficient detail?	X				5	5
16.0 Does documentation verify the scheduled calibration of the following equipment?						
16.1 Survey Instruments.	X				3	3
16.2 Area monitors.	X				3	3
16.3 Pocket Dosimeters.	X				3	3
17.0 Are all survey instruments calibrated with current calibration stickers?	X				10	10
18.0 Are preventive maintenance procedures available and in use?	X				10	10
19.0 Is preventive maintenance documentation current on the:						
19.1 daily schedule?	n/a				3	3
19.2 weekly schedule?		X			3	0
19.3 monthly schedule?	X				3	3
19.4 quarterly schedule?	X				3	3
19.5 semi-annual schedule?	n/a				3	3
19.6 annual schedule?	X				3	3
20.0 Is major maintenance activity documented?	X				3	3

RADIATION SAFETY AUDIT QUESTIONNAIRE

	YES	NO	ASSIGNED RESP	ACTION DATE	VALUE	SCORE
21.0 Are radiation surveys routinely performed?	x				10	10
22.0 Is radiation survey documentation current?	x				5	5
23.0 Does the RSO review, sign and date survey documentation?	x				3	3
24.0 Are all areas requiring radioactive posting properly posted?	x				10	10
25.0 Is there a written procedure in sufficient detail describing the regeneration of demineralization resin beds?	x				1	1
26.0 Is resin bed regeneration documented?	x				3	3
27.0 Is there a written procedure in sufficient detail, describing operations required to start-up irradiator?	x				5	5
28.0 Is a start-up checklist available and in use?	x				5	5
29.0 Is there a written procedure in sufficient detail, describing irradiator interlock checks?	x				5	5
30.0 Is an interlock checklist available and in use?	x				5	5
31.0 Are irradiator interlock checks documented?	x				10	10

Comments:
37.0
License application condition 9.2.A semi annual check of resistivity meter
Weekly PM

RADIATION SAFETY AUDIT QUESTIONNAIRE

	YES	NO	ASSIGNED RESP	ACTION DATE	VALUE	SCORE
32.0 Are entry control devices established in such a way that no individual will be prevented from leaving the area?	x				10	10
33.0 Is there a written procedure, in sufficient detail, describing operations required for normal shut down of the irradiator?	x				3	3
34.0 Is there a written procedure in sufficient detail, describing operations required for an emergency shutdown of the irradiator?	x				10	10
35.0 Are the following records current and in order:						
35.1 Operators log?	x				5	5
35.2 Monitoring of water purification system for:						
35.2.1 radiation?	x				3	3
35.2.2 pH?	x				3	3
35.2.3 conductivity?	x				3	3
35.2.4 temperature?	x				3	3
35.2.5 water level?	x				3	3
35.3 Source movement log?	x				5	5
35.4 Security log?	x				3	3
35.5 Cobalt inventory?	x				5	5
36.0 Are records legible?	x				5	5
37.0 Are license conditions in compliance.		x			10	0
38.0 Is the check source used prior to entering the cell?.	x				3	3
39.0 Are all monitor alarms audible as specified?	x				3	3

Comments:

40.0 Resistivity last verified 6/17/89.

RADIATION SAFETY AUDIT QUESTIONNAIRE

	YES	NO	ASSIGNED RESP	ACTION DATE	VALUE	SCORE
40.0 Is resistivity verified semi-annually?		x			2	0
41.0 Is a radiation survey performed after the addition of cobalt, greater than for any previous survey, prior to start of operations?	x				10	10
42.0 Explosives flammable, or corrosives have not been irradiated?	x				10	10

Date

ROUTING AND TRANSMITTAL SLIP

TO: (Name, office symbol, room number, building, Agency/Post)	Initials	Date
1.		
2.		
3.		
4.		
5.		

Action	File	Note and Return
Approval	For Clearance	Per Conversation
As Requested	For Correction	Prepare Reply
Circulate	For Your Information	See Me
Comment	Investigate	Signature
Coordination	Justify	

REMARKS

Audits
1989

MW
4-3-90

DO NOT use this form as a RECORD of approvals, concurrences, disposals, clearances, and similar actions

FROM: (Name, org. symbol, Agency/Post)	Room No.—Bldg.
	Phone No.

5041-102

OPTIONAL FORM 41 (Rev. 7-76)
Prescribed by GSA
FPMR (41 CFR) 101-11.206

* GPO : 1981 O - 341-529 (75)

B/75

MIC EL J. SLOBODIEN
CERTIFIED HEALTH PHYSICIST

Board of Directors
RTI, Inc.
108 Lake Denmark Road
Rockaway, New Jersey 07866

03/27/89

Subject: Radiation Safety Audit First Quarter 1989

Gentlemen:

Enclosed herein please find the first quarter radiation safety audit of the facility at Rockaway, New Jersey. This audit has been performed to comply with license condition 20 of USNRC license 29-13613-02 (amendment 25).

Please do not hesitate to contact me should you have any questions or comments in this matter.

Sincerely

Michael J. Slobodien

Michael J. Slobodien, CHP

John Russen

cc: P. Shapiro, RTI
A Booth, RTI
USNRC, Region I

129 BORTON'S ROAD • MARLTON, NEW JERSEY 08053 • (609) 767-3455

ADIATION SAFETY AUDIT

FIRST QUARTER 1989

A radiation safety audit was conducted at the Lake Denmark Road facility on March 24, 1989. The audit consisted of observation of operations, discussions with personnel, reviews of selected records, and observation of the change out of a source hoist cable including the unloading of one source rack and reloading.

PERSONNEL RADIATION EXPOSURES

Radiation exposures in the first quarter are within the expected minimal range. All doses measured by film badges are well within regulatory limits. In general, all doses through February 28, 1989 are less than 10 millirem per month. This history demonstrates that licensed activities are in accordance with ALARA principles.

SAFETY SYSTEM TESTING

Interlock testing has been performed on a timely basis according to plant records. Discussions with operators indicate that there have not been any long standing uncorrected problems. The door latch on the cell maze door has been noted not to fully engage. This was noted as part of the RTI internal QC program. Corrective action is required in this matter.

PERIODIC WATER CHEMISTRY TESTING

Weekly testing of the cell pool water for pH and conductivity is required in accordance with the letter dated May 25, 1988 incorporated into the license in accordance with condition 26. I observed the records of water testing for the first calendar quarter of 1989. From the records in the water chemistry binder I was able to determine that there were two weekly tests performed in January, two tests in February, and one test in March. Since Mr. A. Friedrich who is responsible for the testing was not available on the day of my audit, I was not able to determine whether the records exist but were not yet posted or whether the required tests had not been performed. An audit should be performed to determine whether or the not the required testing was performed. This item was discussed with the Vice President - Quality during the audit.

MONTHLY CELL RADIATION TESTING

I noted that the monthly radiological analysis of the cell pool water had been conducted on January 16, and February 22, 1989. No test had been performed in March as of the date of the audit. I discussed this with the R.S.O. who was aware of the need for testing in the current month. All results of those tests completed were within normal expected results.

RADIOACTIVE MATERIALS INVENTORY

An inventory of the radioactive materials possessed by RTI was conducted in March 1989 and documented in a memorandum dated March 14, 1989. All of the licensed items were accounted for although a strontium-90 source had been misplaced. It was located after a search of the facility. The source has been properly labeled and stored. The complete details of the physical inventory of the pencils in the cell was not appended to this memorandum. Consideration should be given to including the cell pencil inventory documents with this inventory.

REPLACEMENT OF SOURCE RACK HOIST CABLE

The source hoist cable on one module had developed a buldge in the stainless steel strands. This was due to rubbing on the pulleys of the hoist mechanism. The hoist rubbing was corrected. On March 24, 1988 I observed the changeout of the damaged hoist cable.

Operations supervisor J. Singleton obtained a copy of the current procedures for handling source modules and preventative maintenance. In accordance with the two-person rule, another operator was assigned to assist with the job. The R.S.O. was also present during the operation. The source hoist mechanism was deactivated after the sources were lowered into the cell. This was accomplished by removing the key from the control console, opening the air line across the cell entrance, and closing the valve on the air line to isolate the pneumatic cylinders that lift the sources.

Cell entry was made using proper techniques to check for the presence of radiation. In accordance with procedure, a high range ion chamber was present throughout the operation.

The grating over the cell pool was removed. A water sample was taken for analysis prior to activities in the pool. The source modules were removed from the rack and placed in a storage rack located on the floor of the pool. The maximum radiation level recorded during the handling of the modules was 40 mR/hour at the pool grating. All persons working in the cell were equipped with pocket dosimeters in addition to assigned film badges. As the empty source rack was removed, radiation surveys were performed. Smears were taken of the rack and analyzed prior to further operations. The damaged source hoist cable was removed and checked for contamination. The new cable was inspected prior to installation.

The following observations are noted with respect to this operation:

- There is no fall protection around the pool when the grating is removed. Consideration should be given to installing a barrier, replacing grating as an intermediate step, or using fall protection devices tied off to the cell walls. This item was discussed

with the Vice President - Quality.

- The cell pool has considerable debris - dust, pieces of ceramic tile, paper and several hand tools - on its floor. These should be cleaned so as to maintain pool cleanliness at an optimum level. This matter was brought to the attention of Mr. Veraklis and Mr. Shapiro during the audit. Mr Veraklis made plans for pool cleaning to take place within ten days.

- The electrical connections used for under water lighting were normal industrial quality extension cords. No electrical hazard existed because of the very low conductivity of the highly deionized pool water. However, it is important that this practice be checked against OSHA standards to determine its acceptability.

- The use of a video camera/recorder would be useful to keep a record of these operations that could be used subsequently in operator training.

TRAINING

Training had been conducted recently for general employees and operators (refresher). The training materials were of good quality. It was noted that some employees did not attain satisfactory scores on tests for general employee training. Mr. Shapiro noted that these employees would be given special training to improve their performance.

SUBMISSION OF REQUIRED PLANS AND SURVEYS TO NRC

License condition 24 requires the submission of a plan and survey pursuant to removal of buried material at the RTI site and for the removal of radioactive material in the R&D pool. I was told that the required plans were submitted but did not review the plans themselves.

CALIBRATION OF WATER TREATMENT SYSTEM (WTS) RADIATION MONITOR

Section 10.9 of the application for license dated April 8, 1988 notes that the radiation monitor used on the charcoal bed of the WTS will be calibrated. The present monitor has not been calibrated. This was noted during the NRC inspection performed on March 21 and 23 1989.

PERSONS CONTACTED

The following persons were contacted during this audit:

M. Ayers - Irradiator Operator
J. Singleton - Operations Supervisor
M. Rosa - Irradiator Operator
J. Russen - R.S.O.
P. Shapiro - Vice President - Quality
T. Veraklis - Vice President - Operations
J. Schlecht - Physicist

Process Technology North Jersey
Subsidiary of RTI Inc.
108 LAKE DENMARK ROAD, ROCKAWAY, NJ 07866
(201) 625-[illegible] • FAX: (201) 627-7820

April [illegible], 1989

Mr. John Witte, Chief
Nuclear Materials Safety Section C
475 Allendale Road
King of Prussia, PA 19406

RE: Mail Control 106655
Docket 030-07022
License 37-12813-03

Dear Mr. Witte:

In compliance with condition 20.A, we describe below corrective actions taken in response to the quarterly independent radiation safety audit of March 27th.

SAFETY SYSTEM NOTING

Mr. Slobodian is correct in his statement that the cell maze door had been noted not to fully engage. This problem occurred in February and was corrected on February 10, 1989, by replacing the doorknob assembly with a new one of the same type. No additional corrective action is required.

PERIODIC RADIOACTIVITY TESTING

I have reviewed the records for testing the cell pool water for [illegible] activity. All required was complete and in order before and during the audit. This was an understandable oversight by Mr. Slobodian since a single sheet in the Water Chemistry binder accounts for two weeks of testing.

POSTON CELL RADIATION TESTING

The March monthly radiological analysis of the cell pool water has been completed.

RADIOACTIVE MATERIALS INVENTORY

Mr. Slobodian's suggestion of appending the inventory of the records in the cell to the memorandum which documents the inventory of all radioactive materials possessed by RTI has been completed.

REPLACEMENT OF SOURCE RACK HOIST CABLE

Mr. Slobodian's suggestion concerning the replacement of the source hoist cable will be encouraged. The cell pool was scheduled for cleaning. The [illegible] tools mentioned, some of which were a result of the day's work of replacing the cable, have been removed from the bottom of the pool

A-13613-2

MICHAEL J. SLOBODIEN
CERTIFIED HEALTH PHYSICIST

129 BORTON'S ROAD
MARLTON, NEW JERSEY 08053
609 - 767-3455

Board of Directors
RTI, Inc.
108 Lake Denmark Road
Rockaway, New Jersey 07866

06/22/89

Subject: Radiation Safety Audit Second Quarter 1989

Gentlemen:

Enclosed herein please find the second quarter radiation safety audit of the facility at Rockaway, New Jersey. This audit has been performed to comply with license condition 20 of USNRC license 29-13613-02 (amendment 25).

Please do not hesitate to ccntact me should you have any questions or comments in this matter.

Sincerely

Michael J. Slobodien

Michael J. Slobodien, CHP

cc: P. Shapiro, RTI
President, RTI
USNRC, Region I

OFFICIAL RECORD COPY

JUN 28 1989

RADIATION SAFETY AUDIT

SECOND QUARTER 1989

A radiation safety audit was conducted at the Lake Denmark Road facility on June 21, 1989. The audit consisted of observation of operations, discussions with personnel, reviews of selected records, and confirmatory radiation measurements at the entry to the radiation cell.

PERSONNEL RADIATION EXPOSURES

Radiation exposures in the second quarter are within the expected minimal range. All doses measured by film badges are well within regulatory limits. In general, all doses through May 31, 1989 are less than 10 millirem per month. This history demonstrates that licensed activities are in accordance with ALARA principles.

SAFETY SYSTEM TESTING

Interlock testing has been performed on a timely basis according to plant records. Discussions with operators indicate that there have not been any long standing uncorrected problems. On June 19, 1989 the door handle to the maze entry door was broken off when a product carrier contacted it. This occurred at approximately 0300 hours and operations ere stopped promptly until the condition was corrected. The RSO and VP Quality were informed of the occurrence. Both were on site during corrective actions. This response is indicative of an improvement in the sensitivity to safety situations and the need to strictly adhere to the conditions of the license.

PERIODIC WATER CHEMISTRY TESTING

Weekly testing of the cell pool water for pH and conductivity is required in accordance with the letter dated May 25, 1988 incorporated into the license in accordance with condition 26. I observed the records of water testing for the second calendar quarter of 1989. From the records in the water chemistry binder I was able to determine that all required testing was performed in accordance with the requirements of the license.

RADIOACTIVE MATERIALS INVENTORY

An inventory of the radioactive materials possessed by RTI was conducted in March 1989 and documented in a memorandum dated March 14, 1989. The operations superintendent noted that an inventory was scheduled to be performed in the second quarter. Note that the second quarter ends on June 30, 1989.

TRAINING

Training had been conducted recently for new general employees . Standard training materials were used. One area of concern was identified. The two new employees are not fluent in English. In some cases test questions were read to the student who then provided a verbal response that was documented. Although this approach is not inherently incorrect, care must be taken to insure that the employees have an adequate understanding of the plant and its radiological conditions. I did note that warning signs have been posted in Spanish to assist these workers. During a discussion with the Vice President - Quality and the Vice President for Operations I suggested that efforts be made to seek out instructional material in the workers native language to aid in their understanding. At the present time these workers act as material handlers and do not have unrestricted access to radiation or potentially radiation areas.

In another area of training, the test of two operator trainees were examined. In one quiz dated May 31, 1989 question 12 was answered and corrected in two different ways. This particular quiz involved converting millirad to rad and megarad to kilorad. the prefixes m (lower case) and M (upper case) were confused in answers and corrections. Since the facility deals equally with millirad per hour and Megarad per hour situations, it is important that the distinction between m (milli) and M (mega) be clearly understood.

Training Attendance Records were examined. I noted that in many cases these records were not filled out completely. For example is at least two instances the dates of training were not filled in. In many instances the training content section of the form was filled out superficially or left blank. There is a clear need for greater attention to the detail in record keeping in the training area.

MAINTENANCE RECORDS

Maintenance records were completed as required by procedure. In discussions with the Operations Supervisor and the Vice President - Quality I noted that it would be beneficial to upgrade the recording of maintenance related data by recording the actual value of measured parameters along with the initials of the person performing the surveillance. Furthermore, these measured parameters (radiation levels, oil levels, water levels, pH, etc.) should be plotted on a graph as a function of time as an aid to detect a trend of deteriorating condition.

PROCEDURE 9.106A

Procedure 9.106A defines a radiation area as one with radiation levels greater than or equal to 5 R/hour. 10CFR 20.202(b)(2) includes in the definition the requirement that in a radiation area no part of the body could receive in any

5 consecutive day. a dose in excess of 100 m .irems. If we assume a typical 40 hour work period in any 5 consecutive days, we can calculate an operational definition of a radiation area as 2.5 mR per hour. I suggest that the definition of radiation area in procedure 9.106A be changed to 2.5 mR/hour.

ACTION ON PREVIOUSLY IDENTIFIED FINDINGS

One area previously identified in both internal audits and in these independent audits is the need to complete action on the development and implementation of preventative maintenance procedures. This item remains outstanding.

PERSONS CONTACTED

The following persons were contacted during this audit:

*M. Rosa - Irradiator Operator
*J. Singleton - Operations Supervisor
*P. Shapiro - Vice President - Quality
T. Veraklis - Vice President - Operations
J. Schlecht - Physicist
*A. Friedrich - Chemist
*J. Scandalios - President

* Denotes persons with whom audit findings were discussed

Process Technology North Jersey

Subsidiary of RTI Inc.

108 LAKE DENMARK ROAD, ROCKAWAY, NJ 07866
(201) 625-8400 • FAX: (201) 625-7820

July 14, 1989

Mr. John White, Chief
Nuclear Materials Safety Section C
United States Nuclear Regulatory
Commission
475 Allendale Road
King of Prussia, PA 19406

Re: License #29-13613-02

Dear Mr. White:

In compliance with Condition 20 of USNRC License 29-13613-02 (amendment 25) we are responding to Mr. Slobodien's audit conducted June 22, 1989 and received July 1, 1989 by fax.

Radioactive Materials Inventory completed as per the semi annual schedule:

A.	Cobalt 60 Sealed Sources (Cell Area)	6/13/89
B.	Cobalt 60 Sealed Sources (Ameray)	6/20/89
C.	Strontium 90 Sealed Source (NJPTI Back Lab)	6/13/89
D.	Strontium 90 Sealed Source (Fenced In Area)	6/20/89
E.	Hydrogen 3 Ion Pump (Fenced In Area)	6/20/89
F.	Scandium 46 Gemstones (Corporate Safe)	7/06/89
G.	Cobalt 60 Contamination (Fenced In Area)	6/20/89
H.	Cesium 134 Rocks (Corporate Safe)	7/06/89

Training

We have received through the NRC some information that will prove helpful in training our Spanish employees on regulations. We will continue our efforts to obtain further information from various sources to assist in our training needs. The individuals who perform training have been instructed to keep more accurate records.

Maintenance Records

I do not feel that Mr. Slobodien's suggestion that these values be plotted on a graph is necessary. Recording of the actual value of some items would be beneficial and will be added to the PM Procedure.

Procedure 9.106A

This procedure has been revised and is in the process of being issued.

Action on Previously Identified Findings

Preventative maintenance has been implemented and is being completed on a routine basis. Procedure 12.100 Preventive Maintenance System was submitted and approved on June 1, 1989. We are developing card instructions for each maintenance item to be completed.

If you have any further questions please contact me.

Sincerely,

John B Russen

John B. Russen
Plant Manager and
RSO

JR:jk
cc: J. Scandalios
RSO File
T. Varaklis

MICHAEL J. SLOBODIEN
CERTIFIED HEALTH PHYSICIST

129 BORTON'S ROAD
MARLTON, NEW JERSEY 08053
609 - 767-3455

Board of Directors
RTI, Inc.
108 Lake Denmark Road
Rockaway, New Jersey 07866 08/13/89

Subject: Radiation Safety Audit August 1989

Gentlemen:

Enclosed herein please find the August 1989 radiation safety audit of the facility at Rockaway, New Jersey. This audit has been performed to comply with license condition 20 B of USNRC license 29-13613-02 (amendment 27).

Please do not hesitate to contact me should you have any questions or comments in this matter.

Sincerely

Michael J. Slobodien, CHP

cc:
J. Scandalios, President, RTI
P. Shapiro, V.P. Quality, RTI
USNRC, Region I

RADIATION SAFETY AUDIT

AUGUST 1989

A radiation safety audit was conducted at the Lake Denmark Road facility on August 10, 1989. The audit consisted of observation of operations, discussions with personnel, reviews of selected records, and confirmatory radiation measurements at the several locations within the plant.

SAFETY SYSTEM TESTING

Interlock testing has been performed on a timely basis according to plant records. Discussions with operators indicate that there have not been any long standing uncorrected problems. A review of interlock testing records indicated that testing has been performed at the beginning of each day and prior to any operations except for continued operation of the irradiation from one day into the next.

MAINTENANCE RECORDS

Maintenance records were completed as required by procedure. It was clear that preventative maintenance was in process in accordance with the procedurally prescribed schedule. Discussions with the operations staff on duty indicated that there have been few equipment problems. One area that has been a minor problem is the stop at the carrier rail in the loading area. When carriers strike the stop it has a tendency to fall off of its restraint. This can damage the carrier and could be a industrial safety hazard if a carrier would fall on a worker.

PROCEDURE 9.106A

Procedure 9.106A defines a radiation area as one with radiation levels greater than or equal to 5 mR/hour. 10CFR 20.202(b)(2) includes in the definition the requirement that in a radiation area no part of the body could receive in any 5 consecutive days a dose in excess of 100 millirems. If we assume a typical 40 hour work period in any 5 consecutive days, we can calculate an operational definition of a radiation area as 2.5 mR per hour. I suggested in the previous audit report that the definition of radiation area in procedure 9.106A be changed to 2.5 mR/hour. It appears that this actions has been taken operationally.

REVIEW OF POSTINGS AND NOTICES

I observed postings throughout the facility. I noted that postings at the entrance to the irradiator cell were in both English and Spanish (a follow up to the previous audit recommendation). Copies of 10CFR 19 and 20 were prominent

and the form NRC was present. A copy of the most recent NRC inspection report was on the employee bulletin board. No concerns were identified.

INSTRUMENTATION

I inspected the portable survey instrumentation in the plant. All instrumentation was in calibration. On GM survey meter - Eberline Serial No. 6585 was found to have been left in the "on" condition in the storage cabinet. When I tested its batteries, they indicated low. A Pic 6A high range survey meter Serial No. 1302 also indicated low batteries. This instrument was off.

The inventory of instruments is improved over previous audits. I recommend that when next calibrated, the Pic 6A units be separated in due date for recalibration. They are currently 10 days apart.

TRAINING ADEQUACY

I discussed radiological awareness and safety awareness with two materials handlers. Both correctly answered questions regarding precautions taken prior to entry into the irradiator, the nature of and reaction to source hoist alarms while in the irradiator cell, and the meaning of postings at the cell entry. Both had difficulty in correctly responding to questions about the effects of radiation on the body. Neither was able to adequately respond to the questions

> "What would you expect to happen following a very large dose of radiation received in a short period of time?"
>
> "What are the major health concerns from long term exposure to relatively low doses of ionizing radiation?"

I discussed these responses with the certified operator on duty who indicated that his discussions with the two persons indicated to him that they did have an understanding of radiation effects. He felt that my presence may have intimidated them. You should satisfy yourselves that these two individuals as well as others who are expected to know about elementary radiation bio-effects are suitably instructed and retain the requisite information.

PERSONS CONTACTED

The following persons were contacted during this audit:

D. Smith - Irradiator Operator
J. Singleton - Acting Radiation Safety Officer.
J. Schlecht - Plant Manager
R. Stout - Materials Handler
P. Grelicke - Materials Handler
J. Scandalios - President

MICHAEL J. SLOBODIEN
129 BORTON'S RD
MARLTON, NEW JERSEY 08053

SOUTH JERSEY, NJ 080
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UNITED STATES NUCLEAR REGULATORY COMMISSION
REGION I
DIVISION OF RADIATION SAFETY & SAFEGUARDS
475 ALLENDALE ROAD
KING OF PRUSSIA, PA. 19406

Marlene Taylor

14

8-18-89

MICHAEL J. SLOBODIEN
CERTIFIED HEALTH PHYSICIST

129 BORTON'S ROAD
MARLTON, NEW JERSEY 08053
609 - 767-3488

Board of Directors
RTI, Inc.
108 Lake Denmark Road
Rockaway, New Jersey 07866

08/13/89

Subject: Radiation Safety Audit August 1989

Gentlemen:

Enclosed herein please find the August 1989 radiation safety audit of the facility at Rockaway, New Jersey. This audit has been performed to comply with license condition 20 B of USNRC license 29-13613-02 (amendment 27).

Please do not hesitate to contact me should you have any questions or comments in this matter.

Sincerely

Michael J. Slobodien, CHP

cc:
J. Scandalios, President, RTI
F. Shapiro, V.P. Quality, RTI
USNRC, Region I

RADIATION SAFETY AUDIT

AUGUST 1989

A radiation safety audit was conducted at the Lake Denmark Road facility on August 10, 1989. The audit consisted of observation of operations, discussions with personnel, reviews of selected records, and confirmatory radiation measurements at the several locations within the plant.

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MAINTENANCE RECORDS

Maintenance records were completed as required by procedure. It was clear that preventative maintenance was in process in accordance with the procedurally prescribed schedule. Discussions with the operations staff on duty indicated that there have been few equipment problems. One area that has been a minor problem is the stop at the carrier rail in the loading area. When carriers strike the stop it has a tendency to fall off of its restraint. This can damage the carrier and could be a industrial safety hazard if a carrier would fall on a worker.

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P.O.S.

REVIEW OF POSTINGS AND NOTICES

I observed postings throughout the facility. I noted that postings at the entrance to the irradiator cell were in both English and Spanish (a follow up to the previous audit recommendation). Copies of 10CFR 19 and 20 were prominent

and the form NRC-3 was present. A copy of the most recent NRC inspection report was on the employee bulletin board. No concerns were identified.

INSTRUMENTATION

I inspected the portable survey instrumentation in the plant. All instrumentation was in calibration. One GM survey meter - Eberline Serial No. 6585 was found to have been left in the "on" condition in the storage cabinet. When I tested its batteries, they indicated low. A Pic 6A high range survey meter Serial No. 1302 also indicated low batteries. This instrument was off.

The inventory of instruments is improved over previous audits. I recommend that when next calibrated, the Pic 6A units be separated in due date for recalibration. They are currently 10 days apart.

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I discussed radiological awareness and safety awareness with two materials handlers. Both correctly answered questions regarding precautions taken prior to entry into the irradiator, the nature of and reaction to source hoist alarms while in the irradiator cell, and the meaning of postings at the cell entry. Both had difficulty in correctly responding to questions about the effects of radiation on the body. Neither was able to adequately respond to the questions

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I discussed these responses with the certified operator on duty who indicated that his discussions with the two persons indicated to him that they did have an understanding of radiation effects. He felt that my presence may have intimidated them. You should satisfy yourselves that these two individuals as well as others who are expected to know about elementary radiation bio-effects are suitably instructed and retain the requisite information.

PERSONS CONTACTED

The following persons were contacted during this audit:

D. Smith - Irradiator Operator
J. Singleton - Acting Radiation Safety Officer.
J. Schlecht - Plant Manager
R. Stout - Materials Handler
P. Grelicke - Materials Handler
J. Scandalios - President

Process Technology North Jersey

Subsidiary of RTI Inc.

108 LAKE DENMARK ROAD, ROCKAWAY, NJ 07866
(201) 625-8400 • FAX: (201) 625-7820

August 21, 1989

Mr. John D. Kinneman, Chief
Nuclear Materials Safety Section
United States Nuclear Commission
475 Allendale Road
King of Prussia, PA 19406

Ref: Mail Control #106655
Docket #030-07022
License #29-13613-02

Dear Mr. Kinneman:

In compliance with condition 20B., we describe below corrective actions taken in response to the monthly independent radiation safety audit of August 10, 1989.

Maintenance Records

Reference comment concerning carrier stop located at the end of the rail in the loading area outside the irradiation cell. The carrier stop is normally secured with a steel pin and cotter key assembly. When a carrier rests against the stop, the cotter pin tends to be squeezed through the steel pin hole which can allow the carrier to come off the rail.

On August 17, 1989 the steel pin on the loading rail carrier stop was replaced with a bolt and nut assembly. This should solve this problem.

Procedure 9.106A

Procedure 9.106A has been changed to define a radiation area as one with radiation levels greater than or equal to 2.5 mR per hour. Process Technology has and will continue to use 2.5 mR per hour to define a radiation area.

Instrumentation

There will be a survey instrument kept in the lab storage cabinet with batteries installed. All other survey instruments will be stored without batteries. Batteries will be available in the storage cabinet to be placed in the survey instruments as needed.

Training adequacy

The effects of radiation on the body have been reviewed with Richard Stout and Paul Grelicke, the two material handlers questioned by Mr. Slobodien.

In an NRC Radiation Safety inspection on August 16, 1989 and August 17, 1989 both material handlers were questioned by John Miller and Dick Ladun, NRC Inspectors, on the effects of radiation on the body.

In the exit interview John Miller and Dick Ladun indicated that Paul Grelicke and Richard Stout exhibited a thorough understanding of the biological effects of ionizing radiation.

Very truly yours,

John Singleton
Interim RSO

JS:jk

cc: J. Scandalios
RSO File
Plant Manager
P. Shapiro
Board of Directors

MICHAEL J. SLOBODIEN
CERTIFIED HEALTH PHYSICIST

129 BORTON'S ROAD
MARLTON, NEW JERSEY 08053
609 - 767-3455

Board of Directors
RTI, Inc.
108 Lake Denmark Road
Rockaway, New Jersey 07866

09/28/89

Subject: Radiation Safety Audit Third Quarter 1989

Gentlemen:

Enclosed herein please find the third quarter radiation safety audit of the facility at Rockaway, New Jersey. This audit has been performed to comply with license condition 20 of USNRC license 29-13613-02 (amendment 27).

Please do not hesitate to contact me should you have any questions or comments in this matter.

Sincerely,

Michael J. Slobodien

Michael J. Slobodien, CHP

cc: P. Shapiro, RTI
President, RTI
USNRC, Region I

RADIATION SAFETY AUDIT

THIRD QUARTER 1989

A radiation safety audit was conducted at the Lake Denmark Road facility on September 27, 1989. The audit consisted of observation of operations, discussions with personnel, reviews of selected records, and confirmatory radiation measurements at the several locations within the plant.

SAFETY SYSTEM TESTING

Interlock testing has been performed on a timely basis according to plant records. Discussions with operators indicate that there have not been any long standing uncorrected problems. A review of interlock testing records indicated that testing has been performed at the beginning of each day and prior to any operations except for continued operation of the irradiation from one day into the next. I observed process for cell entry and determined that all procedures were followed by the operator on duty and other staff members present. In particular, senior staff members who were in possession of appropriate survey instruments waited until approved for entry by the operations supervisor.

MAINTENANCE RECORDS

Maintenance records were completed as required by procedure. It was clear that preventative maintenance was in process in accordance with the procedurally prescribed schedule. Discussions with the operations staff on duty indicated that there have been few equipment problems. One area that has had minor problems is the stop at the carrier rail in the loading area. This concern appears to have been corrected.

PROCEDURE IMPROVEMENT PROGRAM

Substantial effort has been made to upgrade existing procedures in the radiation protection area. These procedures have been separated from the "9" series and made more visible. Furthermore the separation of procedures aids operators in recognizing their importance. The newly written procedures correct technical errors and clarify the staff actions. One important feature is that they provide clear actions expected of the staff based on as found conditions.

REVIEW OF POSTINGS AND NOTICES

I observed postings throughout the facility. I noted that postings at the entrance to the irradiator cell were in both English and Spanish (a follow up to the previous audit recommendation). Copies of 10CFR 19 and 20 were prominent

and the form NRC was present. A copy of the most recent NRC inspection report was on the employee bulletin board. No concerns were identified.

INSTRUMENTATION

I inspected the portable survey instrumentation in the plant. All instrumentation was in calibration. In the previous audit I noted that one GM survey meter Eberline Serial No. 6585 was found to have been left in the "on" condition in the storage cabinet, its batteries indicated low. A Pic 6A high range survey meter Serial No. 1302 also indicated low batteries. Corrective action in these matters has been effective and no further concerns remain.

TRAINING ADEQUACY

Corrective action has been taken in response to the previous audit and appears to be effective.

SUPERVISORY AND MANAGEMENT OVERSIGHT

Interviews with the staff and a review of plant records indicated an improvement in supervision and management oversight of irradiator operations. Both the Operations Supervisor and Plant Manager have routinely reviewed and signed the operations log book. Follow up actions to problems identified have been taken promptly and have been documented in the operations logs. This demonstrates a significant forward step in the maturing the plant management. Mr. Schlecht appears to recognize the value of and implement mechanisms for providing constructive feedback to his subordinates. He is fully knowledgeable about all activities involving licensed materials. His "hands on" approach is an asset to the existing program.

The internal program reviews by the Radiation Safety Committee and the Quality Department have been performed as required. These also indicate a strong desire to meet not only the minimum requirements of the appropriate regulations but to go beyond and aim for continuous improvement. I reviewed committee minutes, actions items and the documentation of responses.

HOUSEKEEPING

The plant appearance has improved. Efforts in this area are quite apparent to anyone who has made previous visits to the plant.

PERSONS CONTACTED

The following persons were contacted during this audit:

M. Rosa - Irradiator Operator
J. Singleton - Acting Radiation Safety Officer

J. Schlecht Plant Manager
P. Shapiro - Vice President - Quality
A. Friedrich - Dosimetrist, Laboratory Services
M. Buring - Consulting Radiation Safety Officer
J. Scandalios - President

129 BORTONS ROAD
MARLTON, NEW JERSEY 08053
DECEMBER 23, 1989

PROCESS TECHNOLOGY OF NORTH JERSEY
ATTN: BOARD OF DIRECTORS
108 LAKE DENMARK ROAD
ROCKAWAY, NEW JERSEY 07866

GENTLEMEN:

SUBJECT: INDEPENDENT RADIATION SAFETY AUDIT
FOURTH QUARTER 1989

The subject report of the audit of activities performed under USNRC byproduct materials license 29-13613-02 is attached. This audit was performed in accordance with condition 20 of the referenced license. The audit took place on two days - October 24 and December 23, 1989 at the Lake Denmark Road facility.

Please feel free to contact me should you have any questions regarding this audit.

Sincerely,

Michael J. Slobodien
CERTIFIED HEALTH PHYSICIST

cc:
USNRC

IN..PENDENT RADIATION SAFETY A..IT

FOURTH QUARTER 1989

This audit covers the period from October 1, 1989 through December 31, 1989 and was conducted in accordance with condition 20 of USNRC Byproduct Materials License 29-13613-02 Amendment number 28. The audit was performed on two separate dates - October 24 and December 23, 1989. Both on site audits are reflected in this report.

PERSONS CONTACTED

P. Shapiro, Vice President, Quality
J. Singleton, Operations Supervisor (Oct. 24, 1989)
A. Friedrich, Operations Supervisor (Dec. 23, 1989)
M. Rosa, Authorized Operator
D. Smith, Authorized Operator
J. Schlecht, Manager of Plant Operations and RSO

REVIEW OF ROUTINE OPERATIONS

During both on site visits, operations logs were reviewed. I noted that Mr. Schlecht has implemented the practice of reviewing the operations log and initials the individual pages when he has made his reviews. In my review and based on discussions with the operators, I did not identify any ongoing uncorrected deficiencies with the irradiator systems.

Safety interlock testing has been performed in accordance with condition 22 of the above referenced license. There have been no significant problems associated with the interlocks. One record keeping error was identified. One record dated October 27, 1989 appears in between records dated October 18 and October 19, 1989. The interlock test was performed at 0027 hours. It appears that the time was placed in the date position since on the date of my observation (October 24, 1989), October 27, 1989 had not yet occurred.

PREVENTATIVE MAINTENANCE

A review of the log books and based on discussions with the Operations Supervisors indicated that preventative maintenance has been performed in accordance with procedure. I noted that all required maintenance in the monthly and annual schedules have been performed as required. I noted that quarterly maintenance items were not completed as of December 23, 1989. This fact was brought to the attention of A. Friedrich at the time of the finding. Eight days remain in which to complete these maintenance items according to the proceduralized schedule.

REVIEW OF MATERIALS CONCERNS

M. Rosa identified that the contact block used in the start up switch (Square D, Type KA2, Class 9001) experiences

radiation damage after periods of 4 - 6 weeks. He noted that a shield over the switch may reduce the frequency of replacement. I noted this observation to the Manager of Operations.

INSTRUMENT CALIBRATION

I observed four instruments available for use. They were one GMSM equipped with a pancake probe, one PIC 6A GMSM/ ion chamber, one GMSM equipped with a side window probe, and one Ludlum ion chamber. All were in current calibration. Batteries in each were in good order

SHIPMENT OF RADIOACTIVE MATERIALS

I reviewed the records pertaining to the shipment of 26100 curies of cobalt-60 pencils that had been stored in the "R&D" pool. Records included inventory, radiation and contamination surveys, a proper bill of lading, a truck transport route plan, and state and federal notifications history. No concerns were identified from the records review.

REVIEW OF UNUSUAL FILM BADGE RESULT

The film badge of one materials handler for the month of October 1989 indicated a dose of 180 millirem. This is well above the typical monthly dose of less than 10 millirem. An investigation was conducted and documented by the Radiation Safety Officer promptly upon receipt of the dosimetry report from the vendor.

The RSO review identified that the film badge was inadvertently left attached to an outer jacket that was left in the first leg of the cell entry maze while loading and unloading operations were being conducted. The jacket and film badge remained in the cell entry maze during one cycle of operation. The person to whom the badge was assigned was not in the maze during cell operation.

The film badge report indicated an exposure to low to medium energy photons. This is consistent with a badge in the first leg of the maze where any exposure would be by highly scattered radiation from the source rack.

I noted that another indicator that could be checked was the filter pattern on the film. A crisp pattern would be expected as it would indicate an exposure in which the badge was static with respect to the source. A "fuzzy" filter pattern would be indicative of motion during irradiation. Given the circumstances of the exposure, a crisp filter pattern would be expected.

CONCLUSION

Operations appear to have been conducted in a manner that is consistent with good radiation safety practice. Discussions with key personnel indicate that the emphasis for work has

been to observ afety first.