SOIL & MATERIAL TESTING, INC.
57 SOUTH MAIN STREET • CASTLETON, N.Y. 12033

Office	Telephone	Office	Telephone
Castleton	(518) 732-7205	Binghamton	(607) 722-1582
	Fax (518) 732-4516	Kingston	(914) 336-4471
		Pittsfield	(413) 499-5338

March 14, 1997

REPLY TO A NOTICE OF VIOLATION
FOLLOW-UP

Ms. Jenny Johansen, Chief
Nuclear Materials Safety Branch 3
Division of Nuclear Materials Safety
USNRC-Region 1
475 Allendale Road
King of Prussia, Pennsylvania 19406-1415

RE: Docket No. 030-29345
License No. 31-27860-01
Inspection No. 030-29345/96-001

Dear Ms. Johansen,

This letter is being written as a follow-up to the letter dated January 10, 1997. In the letter, I stated that the findings from Mr. John A. Dapolito, MS,CRESO investigations of high exposures on the TLDs would follow at a later date. Enclosed you will find his findings and recommendations.

I will be following Mr. Dapolito's recommendations and have contacted Landauer for possibly changing radiation dosimetry service. I will probably change from TLDs to film badges.

All enclosures mentioned in Mr. Dapolito have been sent to you in the previous letter, however, I have enclosed them again for your convenience.

If you have any questions regarding this matter, do not hesitate to contact us.

Sincerely,

Lizette L. Strait
Radiation Safety Officer

RETURN ORIGINAL TO
REGION I
IE:07

LLS
C: Mr. Ronald E. Vaughn, President - Soil & Material Testing, Inc.
U.S. Nuclear Regulatory Commission, ATTN: Document Control Desk,
Washington, D.C. 20555

Enclosures

MAR 19 1997

RADIATION SAFETY PROFESSIONALS, INC.

Albany, New York

John A. Dapolito, MS, CRESO
Certified Medical/Health Physicist
Certified Hazardous Materials Manager

Vincent T. Franconere, CRESO
Certified Healthcare Safety Professional
Certified Product Safety Manager

March 5, 1997

Ms. Lizette L. Strait, VP, RSO
Field & Laboratory Services & Radiation Safety Officer
Soil & Material Testing, Inc.
57 South Main Street
Castleton, NY 12033

RE: Professional Consultative Visit on January 21, 1997

Dear Ms. Strait:

This correspondence/Report summarizes my professional consultative visit on Tuesday, January 21, 1997, to review "dosimetry reports" and attempt to clarify/explain occupational causes, if any, of higher than normal reported exposures to four (4) monitored individuals. No exposure exceeded the regulatory limit specified in Section 38.18 of **Industrial Code Rule 38** as amended effective June 29, 1994, (cited as 12NYCRR 38.18).

Each individual's reported exposure is discussed below with corresponding comments/ recommendations. Overall recommendations, in conclusion, are also provided for consideration.

I.

Individual #1, President, Soil & Material Testing, Inc., did *not* work with density gauges or wear a dosimetry badge during January 1995 (1/95). Thus, very simply, the reported 372 mrem is *not* an occupational exposure. The 2/95 (14 mrem) and 11/95 (11 mrem) reported exposures are both within the error interval of the MDL ("computed dose equivalent is less than 10 mrem") and may be considered acceptable values.

Recommendations

1. Notify, in writing, Troxler Radiation Monitoring Services to delete the 372 mrem exposure to Individual #1 badge exposure for the period 1/95 and to correct accordingly all permanent consultative totals.

2. Eliminate issuance of personnel monitoring for Individual #1 (based on current duties, past exposure results, and 12NYCRR 38.24 - that is, less

1234 Western Avenue, Suite A, Albany, New York 12203 (518) 438-2626
7 Matilda Street, Albany, New York 12209 (518) 462-0486

than 10 percent of limits). Future issuance may be determined by a change of occupational duties.

3. Include a copy of this Report as part of Indiv. #1 personnel exposure records with reference to the deleted 372 mrem (1/95). (Also include copies of your correspondence relative to this topic).

II.

Indiv. # 2 1994 reported badge exposure history (447 mrem), with specific reference to 1/94 (360 mrem), 7/94 (32 mrem), 8/94 (42 mrem), and 9/94 (13 mrem), were reviewed with the RSO in some detail. In addition, radiation measurements at 1 foot and 3 feet (both closed and open) to simulate user conditions using a Model MC-1DR (10 mCi Cs-137 and 50 mCi Am 241/Be) moisture density gauge were taken to perhaps explain the 360 mrem.

As discussed in your January 10, 1997, reply to the USNRC, the 360 mrem is somewhat higher than the 17 year average exposure to Indiv. # 2 badge. Troxler's explanation (to you through Ms. Karen Bryant) that the badge was exposed "in the box or near the gauge" would require approximately 180 hrs. (closed) to 18 hrs. (open) of exposure at 1 foot. These appear to be unrealistic and inconsistent with 17 year employment safety record (to include radiation safety) and experience.

Recommendations

1. Include your findings regarding Indiv. # 2 447 mrem for 1994 (i.e., page 3 of your January 10, 1997, correspondence to the USNRC) as part of his personnel exposure history. A copy of this Report may also be included in Mr. Wemple's exposure records.

III. Indiv. #3

The questionable badge exposure of 569 mrem for 1996 year-to-date (YTD) appears to have been adequately investigated by you and follow-up is actively being pursued. To reiterate, the June 1996 Report was determined by Troxler to be <MDL ("computed dose equivalent is less than 10 mrem") and should not have included YTD totals (shallow = 128 mrem, etc.) since Ind. # 3, a student and summer employee only, did not begin employment in 1996 until June. Further, Ms. Bryant, as noted by your January 20, 1997, correspondence to her, indicates "that a revised report will be issued."

The remaining badge exposure of 441 mrem (569-128=441) appears on the Troxler Report for the period 08/01/96-08/31/96 as G&B ("X or gamma radiation

plus beta radiation"). I concur with you and Ms. Bryant that the badge exposure to this type of radiation from the moisture density gauges is *highly unlikely*. It is significant that Ms. Bryant speculates that the badge exposure was "probably due to contamination with a speck of dust" and "is to investigate further."

Thus, it does not appear that Ind # 3 badge exposure was correctly stated as 569 mrem for 1996 YTD and should be corrected accordingly.

Recommendations

1. Ensure that Troxler promptly corrects the badge exposures (128 mrem and 441 mrem) for Ind # 3 to < MDL and that future Reports reflect the corrected numbers.

2. Include all appropriate correspondence (i.e., page 3 your January 10, 1997, correspondence to USNRC, your January 20, 1997, correspondence to Ms. Karen Bryant, and a copy of this Report) as part of radiation exposure records.

IV.

The May 1995 exposure of 889 mrem to Ind. # 4 badge is indeed significant <u>if accurate</u> (since you speculated that "...the reading from his July badge could also be high" for the same apparent reasons, that is, "vehicle ashtray storage/heat sensitive"). Your immediate investigation and reiteration of "badge protocol" (e.g., adequate badge storage when not being worn for radiation monitoring purposes) is commendable. Ind # 4 , permanent cumulative total of 931 mrem (shallow), as noted on Troxler's 01/14/97 Report for the period 12/01/96-12/21/96 indicates that adequate corrective measures have been followed since there has been no recurrence.

Recommendations

1. Include a copy of Troxler's July 27, 1995, correspondence to Ind # 21 , regarding Individual # 4 May 1995, 889 mrem exposure, your August 14, 1995, response, and a copy of this Report as part of Mr. Nooney's personnel exposure records.

As part of my investigation of the above normal badge exposures, discussed above, I noted your efforts to maintain radiation exposures as low as reasonably achievable (ALARA) to be more than adequate. With respect to Personnel Monitoring the following overall recommendations are provided for your consideration.

Overall Recommendations

1. Initiate a different Radiation Dosimetry Service tailored to your type of radiation use (that is, discuss the type of sources with the technical advisor of the vendor.) Film may be the best choice (instead of TLD) for it provides a permanent record in order to elucidate anomalies which were more than apparent with the present vendor. The vendor must be accredited by the National Institute of Standards and Technology through NVLAP.

   Note: Landauer is highly recommended as an adequate vendor of Radiation Dosimetry Services (Landauer, Inc., 2 Science Road, Glenwood, Illinois 60425-1586, telephone 708/755-7000).

   ICN, another adequate vendor, recently acquired Siemens and, in my view, may be experiencing some problems at present.

2. Initiate a monthly service as opposed to a quarterly frequency. (Change to a quarterly frequency may be appropriate after a suitable time and a detailed study of results)

3. Implement the enclosed "Personnel Monitoring Recommendations" which will also permit compliance with 12NYCRR 38.

Please feel free to communicate with me if you have any questions.

Sincerely,

John A. Dapolito, MS, CMP/CHP
CERTIFIED MEDICAL/HEALTH PHYSICIST

JAD/jmh

Enclosure

PERSONNEL MONITORING RECOMMENDATIONS

It is urged that the following recommendations, some of which are required by Part 16 of the New York State Sanitary Code, Ionizing Radiation (+) either continue to be implemented or be implemented with your film badge service.

+1. Ensure that your film badge service is provided with the Social Security numbers and the dates of birth (DOB) of all film badge wearers and request that they provide same on all their personnel exposure reports to your installation. This will allow compliance with Part 16 of the New York State Sanitary Code, Sections 16.6(a)(2)(iii) and 16.14(b)(1).

+2. Collate and maintain all the personnel monitoring records until disposition is authorized by the New York State Health Department. [10NYCRR 16.14(b)(2)].

3. Ensure that all film badge wearers see the personnel exposure reports (or copies thereof) and have them acknowledge same by initialing or signing the respective reports. The person responsible for Radiation Safety should review and sign each report.

4. Request your film badge service to immediately notify your installation via phone or telegram of any personnel exposure exceeding 100 mrem in a month. Any such exposure should be investigated as to cause, and corrective measures, if necessary, should be implemented to prevent a recurrence. The investigative results and corrective measures instituted should be made a permanent part of the individual's personnel exposure record.

5. Ensure that the same film badge (and film badge number) is not used for more than one individual. Each individual should have his or her own number.

6. Ensure that the film badges are changed and returned promptly to the vendor monthly. Evaluation may not be possible due to the aging effects of the sensitive film if retained for long periods.

7. Ensure that the vendor control badge is properly stored (in an environment similar to that of the other film badges when they are not being worn for radiation monitoring purposes) and returned with the film badge lot that it was received with. The vendor uses the control badge to determine film badge exposures in storage, transit, etc., in order to achieve net personnel badge exposures.

SOIL & MATERIAL TESTING, INC.
57 SOUTH MAIN STREET • CASTLETON, N.Y. 12033

Office	Telephone	Office	Telephone
Castleton	(518) 732-7205	Binghamton	(607) 722-1582
	Fax (518) 732-4516	Kingston	(914) 336-4471
		Pittsfield	(413) 499-5338

August 14, 1995

Mr. Michael R. Dishman
Technical Director of Dosimetry Services
Troxler Electronic Laboratories, Inc.
3008 Cornwallis Road
P.O. Box 12057
Research Triangle Park, North Carolina 27709

RE: High Reading on Individual #4 May Badge

Dear Mr. Dishman:

Thank you for the response on the above reference badge. I have spoken with Ind #4 and discussed his protocol with the Nuclear Meter and his badge.

I have supervised his handling of the meter and could not see a potential problem, however Ind #4 stores his badge in the ashtray of his vehicle when not in use. From my understanding the badge is heat sensitive and during the day the cab could heat up quite a bit. Ind #4 and I both agreed that the badge should only be worn while transporting or operating a meter. The badge will be stored in a low radiation area away from heat and sunlight when not in use.

Since this was brought to my attention at the end of July, the reading from his July badge could also be high.

I have also spoken with the other technicians of possible false high readings and action will be taken to try to prevent this from happening.

Sincerely,

Lizette L. Strait
Radiation Safety Officer

SOIL & MATERIAL TESTING, INC.
57 SOUTH MAIN STREET • CASTLETON, N Y 12033

Office	Telephone	Office	Telephone
Castleton	(518) 732-7205	Binghamton	(607) 722-1582
	Fax (518) 732-4516	Kingston	(914) 336-4471
		Pittsfield	(413) 499-5338

January 20, 1997

Ms. Karen Bryant
Troxler Electronic Laboratories, Inc.
P.O. Box 12057
Research Triangle Park, N.C. 27709

RE: Dosimetry Reports

Dear Karen,

This letter is being written as a follow up to the telephone conversation we had January 10, 1997 in reference to dosimetry reports.

We spoke about Individual # 3 June 1996 report, where the Calendar Year is:

Shallow:	128 mrem
Deep:	82 mrem
Eye:	82 mrem

and an exposure for the month to the badge is <MDL. You determined that the Calendar Year was actually Cumulative Totals (permanent) and that a revised report will be issued.

You also reviewed Individual # 3 August 1996 exposure and mentioned that since the badge was exposed to Beta radiation and taking in account to the sources in the portable gauges, the high readings were probably due to the TLC contaminated with a speck of dust. Please keep me informed of your findings.

Also discussed was Individual # 1 January 1995 exposure. After reviewing the letter sent to Troxler dated March 2, 1995 about the investigation for the incident, we concluded that it was a non-occupational dose. You commented that with the help of our Health Physics Consultant, an occupational dose could be assigned. I will inform you of the dose assigned.

If you have any questions regarding these matters, do not hesitate to contact us.

Sincerely,

Lizette L. Strait
Radiation Safety Officer

LLS

SOIL & MATERIAL TESTING, INC.
57 SOUTH MAIN STREET
CASTLETON, NEW YORK 12033
(518)7327205

SUMMARY OF
Individual #1
DOSIMETER BADGES
1994-1995

DATE	EXP. TO BADGE SHALLOW	EXP. TO BADGE DEEP	EXP. TO BADGE EYE	YR. TO DATE SHALLOW	YR. TO DATE DEEP	YR. TO DATE EYE	PERM. SHALLOW	PERM. DEEP	PERM. EYE
1/94	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	275	275	
2/94	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	275	275	
3/94	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	275	275	<MDL
4/94	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	275	275	<MDL
5/94	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	275	275	<MDL
6/94	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	275	275	<MDL
7/94	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	275	275	<MDL
8/94	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	275	275	<MDL
9/94	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	275	275	<MDL
10/94	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	275	275	<MDL
11/94	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	275	275	<MDL
12/94	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	275	275	<MDL
1/95	372	372	372	372	372	372	647	647	372
2/95	14	<MDL	<MDL	386	372	372	661	647	372
3/95	<MDL	<MDL	<MDL	386	372	372	661	647	372
4/95	<MDL	<MDL	<MDL	386	372	372	661	647	372
5/95	<MDL	<MDL	<MDL	386	372	372	661	647	372
6/95	<MDL	<MDL	<MDL	386	372	372	661	647	372
7/95	<MDL	<MDL	<MDL	386	372	372	661	647	372
8/95	<MDL	<MDL	<MDL	386	372	372	661	647	372
9/95	<MDL	<MDL	<MDL	386	372	372	661	647	372
10/95	<MDL	<MDL	<MDL	386	372	372	661	647	372
11/95	11	<MDL	<MDL	397	372	372	672	647	372
12/95	<MDL	<MDL	<MDL	397	372	372	672	647	372

SOIL & MATERIAL TESTING, INC.
57 SOUTH MAIN STREET
CASTLETON, NEW YORK 12033
(518)7327205

SUMMARY OF
Individual #2
DOSIMETER BADGES
1993-1994

DATE	EXP. TO BADGE SHALLOW	EXP. TO BADGE DEEP	EXP. TO BADGE EYE	YR. TO DATE SHALLOW	YR. TO DATE DEEP	YR. TO DATE EYE	PERM. SHALLOW	PERM. DEEP	PERM. EYE
1/93	0	0	0	0	0	0	1545	1545	
2/93	0	0	0	0	0	0	1545	1545	
3/93	0	0	0	0	0	0	1545	1545	
4/93	0	0	0	0	0	0	1545	1545	
5/93	0	0	0	0	0	0	1545	1545	
6/93	0	0	0	0	0	0	1545	1545	
7/93	0	0	0	0	0	0	1545	1545	
8/93	0	0	0	0	0	0	1545	1545	
9/93	0	0	0	0	0	0	1545	1545	
10/93	0	0	0	0	0	0	1545	1545	
11/93	0	0	0	0	0	0	1545	1545	
12/93	0	0	0	0	0	0	1545	1545	
1/94	360	360	360	360	360	360	1905	1905	
2/94	<MDL	<MDL	<MDL	360	360	360	1905	1905	360
3/94	<MDL	<MDL	<MDL	360	360	360	1905	1905	360
4/94	<MDL	<MDL	<MDL	360	360	360	1905	1905	360
5/94	<MDL	<MDL	<MDL	360	360	360	1905	1905	360
6/94	<MDL	<MDL	<MDL	360	360	360	1905	1905	360
7/94	32	32	32	392	392	392	1937	1937	392
8/94	42	19	19	434	411	411	1979	1956	411
9/94	13	13	13	447	424	424	1992	1969	424
10/94	<MDL	<MDL	<MDL	447	424	424	1992	1969	424
11/94	<MDL	<MDL	<MDL	447	424	424	1992	1969	424
12/94	<MDL	<MDL	<MDL	447	424	424	1992	1969	424

SOIL & MATERIAL TESTING, INC.
57 SOUTH MAIN STREET
CASTLETON, NEW YORK 12033
(518)7327205

SUMMARY OF
Individual #4
DOSIMETER BADGES

DATE	EXP. TO BADGE SHALLOW	EXP. TO BADGE DEEP	EXP. TO BADGE EYE	YR. TO DATE SHALLOW	YR. TO DATE DEEP	YR. TO DATE EYE	PERM. SHALLOW	PERM. DEEP	PERM. EYE
1/95									
2/95									
3/95									
4/95									
5/95	889	889	889	889	889	889	889	889	889
6/95	<MDL	<MDL	<MDL	889	889	889	889	889	889
7/95	24	24	24	913	913	913	913	913	913
8/95	<MDL	<MDL	<MDL	913	913	913	913	913	913
9/95	<MDL	<MDL	<MDL	913	913	913	913	913	913
10/95	18	<MDL	<MDL	931	913	913	931	913	913
11/95	<MDL	<MDL	<MDL	931	913	913	931	913	913
12/95	<MDL	<MDL	<MDL	931	913	913	931	913	913
1/96	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	931	913	913
2/96	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	931	913	913
3/96	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	931	913	913
4/96	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	931	913	913
5/96	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	931	913	913
6/96	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	931	913	913
7/96	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	931	913	913
8/96	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	931	913	913
9/96	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	931	913	913
10/96	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	931	913	913
11/96	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	931	913	913
12/96	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	931	913	913