

APPENDIX A



UNITED STATES
NUCLEAR REGULATORY COMMISSION
REGION II
101 MARIETTA STREET, N.W., SUITE 2900
ATLANTA, GEORGIA 30323-0199

November 12, 1996

MEMORANDUM TO: Charles M. Hosey, Branch Chief
Materials Licensing and Inspection Branch 1
Division of Nuclear Materials Safety

FROM: Stewart D. Ebner, Regional Administrator *Stewart D. Ebner*

SUBJECT: AUGMENTED INSPECTION TEAM CHARTER
(PROFESSIONAL SERVICE INDUSTRIES APPARENT OVEREXPOSURE)

This memorandum confirms the establishment of an Augmented Inspection Team (AIT) to conduct inspection followup of the apparent hand overexposure that occurred at the Professional Service Industries, Inc. (PSI) facility near Bristol, Virginia. You are the team leader and should report status directly to me. Your team members are: Brian Parker (Region II), Sami Sherbini (NMSS), Tom Rich (NMSS) and John Jones (Region III). Dr. Nora Janjan has agreed to provide support as a medical consultant.

An AIT Charter has been prepared in accordance with NRC Management Directive (MD) 8.3, Inspection Manual Chapters 0325 and 93800. A copy of the Charter, MD, and Chapters are attached for your use. The objective of the team is to gather information and make appropriate findings and conclusions in the areas listed in the Charter. These will then be used as a basis for any necessary followup actions. The on site portion of this inspection at the Bristol facility should be concluded by November 15, 1996, with an exit and press conference to follow. The evaluation of the gauge and inspection of Charter Item 8 may extend beyond this date, but should be completed by November 22, 1996. While assigned to this inspection, all team members are relieved of their normal duties. The team's report should be issued within about 30 days of the time the team exits from the site. If equipment evaluation cannot be completed on a schedule to support this report date, a supplement to the AIT report should be issued within 30 days of receipt of the report of equipment evaluation.

You should serve as the on site NRC spokesperson.

If you have any questions, please contact Bruce Mallett or me.

Attachments: 1. AIT Charter
2. MD 8.3
3. IMC 0325
4. IMC 93800

cc w/atts:
J. Milhoan, EDO
H. Thompson, EDO
C. Paperiello, NMSS
D. Cool, NMSS
E. Jordan, AEOD

9702110038 970121
PDR ADOCK 03031566
C PDR

PSI Augmented Inspection Team Charter

A. Basis

On November 8, 1996, the licensee reported an exposure to the hand of a technician. The technician had been using a Campbell Pacific Nuclear Gauge to perform moisture/density measurements. As a result of problems with the gauge's shutter mechanism, the technician may have handled the cesium-137 source rod with the technician's hand on multiple occasions. The basis of the AIT is there may have been a significant overexposure when compared to the NRC annual limit of 50 rems to extremities.

B. Scope

In order to develop the safety significance of the consequences of the apparent overexposure, the team should focus on the following areas:

1. Develop and validate the sequence of events associated with the use of the gauge by the individual apparently overexposed. This sequence should begin with the initial training of the individual and include routine use and any events or problems with use of the gauge.
2. Determine the whole body and extremity dose to the individual as a result of the use of the gauge.
3. Determine the process and procedures actually implemented by the individual in actual use of the gauge.
4. Evaluate the root cause(s) of the exposure and associated problems with procedures and equipment. This should include review of (1) the design and actual condition of gauge (including as appropriate independent evaluation of the gauge condition), (2) adequacy of training, (3) adequacy of routine and emergency procedures, (4) adequacy of repair, testing and maintenance of the gauge, (5) adequacy of procedures for dealing with gauge malfunctions, and (6) adequacy of licensee management oversight of licensed activities, to include review of procedures and supervision of activities.
5. Evaluate the adequacy of the licensee's investigation of the event, dose evaluation, and initial corrective actions.
6. Determination by the medical consultant of any confirmed and potential medical consequences of the dose received.
7. Determine whether other individuals may have been exposed as a result of using this gauge. If so, determine the whole body and extremity dose for those individuals.
8. Determine/evaluate the generic aspects of the above at other PSI facilities.

APPENDIX B

PARTIAL LIST OF PERSONS CONTACTED

Licensee Personnel

E. Aaron, District Manager, St. Louis, MO
*A. Ackermann, CRSD, Lombard, IL
A. Adas, District Manager, Fairfax, VA
M. Circeo, Interim RSO, Roanoke, VA
W. Foster, RSO, Ann Arbor, MI
B. Hauptmann, Branch RSO, St. Louis, MO
*M. Kesselmayr, Administrative Coordinator, Lombard, IL
B. Laughlin, Branch Manager, Ann Arbor, MI
G. Putt, Department Manager, Construction Services, Detroit, MI
A. Tuck, Interim Branch Manager, Roanoke, VA
B. Utier, Branch Manager and RSO, Bristol, VA
J. Walter, Department Manager and RSO, Lansing, MI

Oak Ridge Institute for Science and Education

L. Littlefield, PhD, Director, Cytogenetics Laboratory

Landauer, Inc.

C. Parks, Sales Representative

Boart LongYear CPN

D. Carter, RSO
S. Reilly, Service Manager

State of California

F. Fong, P.E., Health Physicist

In addition, various licensee technicians and office personnel were contacted during the inspections.

*Attended the exit meeting held on December 4, 1996, in the Region II offices in Atlanta, Georgia.

APPENDIX C

ACRONYMS AND ABBREVIATIONS

AIT	Augmented Inspection Team
Al	Aluminum
ALARA	As Low as Reasonably Achievable
ARSO	Assistant Radiation Safety Officer
CAL	Confirmation of Action Letter
CRSD	Corporate Radiation Safety Director
cm	Centimeter
CPN	Campbell Pacific Nuclear
GM	Geiger-Muller
kg	Kilogram
lbs	Pound
mCi	MilliCurie
mg	Milligram
min	Minute
NMSS	Office of Nuclear Materials Safety and Safeguards
NRC	Nuclear Regulatory Commission
OW	Open Window
ORISE	Oak Ridge Institute for Science and Technology
Pb	Lead
PSI	Professional Service Industries, Inc.
R	Roentgen
RSO	Radiation Safety Officer
sec	second
SOP	Standard Operating Procedure
TLD	Thermoluminescent Dosimeter
VP	Vice President

APPENDIX D

LIST OF DOCUMENTS REVIEWED

PSI SOP SF-9 Moisture/Density Gauge Manual

PSI organization chart

List of PSI Branch offices

CPN MC-1 Portaprobe Operator's Manual

NRC Sealed Source and Device Registry No. CA208D102S

CPN MC-1 gauge and sealed source drawings/specifications

Maintenance records for CPN gauge s/n M15076224 (1st, 2nd and 3rd sets)

CPN list of parts shipped to PSI-Pittsburgh dated 11/26/96

Gauge utilization logs (Bristol - January-November 1996) (Other offices - various)

Gauge utilization summaries of Technician A's usage (June 11 - November 1, 1996)

PSI-Bristol Personnel Film Badge Results - 1994-1996

Landauer, Inc. letter signed by C. Parks dated November 14, 1996

Landauer, Inc. letter signed by C. Ochampaugh dated November 25, 1996

Oak Ridge Cytogenetics Dosimetry Report dated November 22, 1996

Alternative Waste Technology Report dated November 30, 1996

CPN fax re: estimated surface dose rate of source rod dated November 6, 1996

PSI purchase order for gamma radiation measurements of CPN gauge dated November 21, 1996

J.L. Shepherd letter dated November 22, 1996

"The Story of Radiation" videotape and study guide

PSI gauge operator certification exams (various - 1995-1996)

PSI gauge operator training confirmation forms (various - 1995-1996)

Technician A's exam copy w/ answers used during Technician A's exam on March 15, 1996

Summary of field and class training for Technician A

Non-PSI gauge operator training certificates for PSI employees

PSI gauge operator field audit reports (various)

PSI bi-annual Vice-President audit reports (various)

Sealed source leak test records (various)

PSI Quarterly inventory reports for CPN gauges s/n M15076224 and s/n M14105777

PSI-Bristol employee timesheets (various - November 1, 1995 - November 1, 1996)

1996 calendar indicating Technician A's workdays

PSI-Bristol compaction reports (various - Juner 11 - November 1, 1996)

Compaction calculation sheets for test case by AIT (completed by Technician A on November 14, 1996)

PSI-Bristol notes taken by A. Ackermann (November 5-7, 1996)

PSI memos re: suspension of gauge operator status (2 Bristol technicians - both dated November 11, 1996)

Records of PSI-Bristol RSO's interviews w/ technicians re: gauge operability

PSI-Bristol radiation safety meeting outline for meeting held on November 11, 1996

PSI-Bristol radiation safety meeting sign-up sheet for meeting held on November 11, 1996

Notices to all Bristol gauge operators (signed and dated November 8, 10, and 13, 1996)

"It Could Have Been You" PSI newsletter (Issue No. 41 dated November 1996)

PSI Corporate Radiation Safety Department Notes - Special Edition newsletter dated November 1996

"Reporting of Radiation Safety Concerns" posting dated November 1996

PSI Radiation Safety Memo sent to all PSI technicians re: reporting of radiation safety concerns dated November 20, 1996

APPENDIX E



UNITED STATES
NUCLEAR REGULATORY COMMISSION
REGION II
101 MARIETTA STREET, N.W., SUITE 2900
ATLANTA, GEORGIA 30323-0199

November 8, 1996

CAL No. 2-96-017

Professional Service Industries, Inc.
ATTN: Adam C. Ackermann
Corporate Radiation Safety
Director
510 East 22nd Street
Lombard, IL 60148

SUBJECT: CONFIRMATORY ACTION LETTER

Dear Mr. Ackerman:

This refers to our inspection of activities authorized under the license issued to your Bristol, Virginia, facility on November 7 and 8, 1996. The inspector was to follow up on a potential overexposure of an individual using a gauge containing licensed material. As a result of this review, it appears that an individual may have received an overexposure to the extremities (hands) while using the gauge.

Pursuant to our telephone conversation on November 8, 1996, it is our understanding that you have taken or will take the following actions which will be completed by the dates specified:

1. Restricted the exposed individual from further occupational radiation exposure until you have finished your investigation of the exposure event and your findings have been reviewed with the NRC.
2. Provided medical assistance to the exposed individual and will continue to do so to evaluate any medical consequences from the exposure.
3. Quarantined the gauge used by the exposed individual and placed it in secure storage. No maintenance, repairs, modifications, or other changes will be made to the gauge without first discussing the proposed actions with the NRC and obtaining the NRC's agreement.
4. Will evaluate the dose to the individual to determine the actual dose to the extremities and whole body.
5. Will inspect other gauges possessed under this license to determine whether there are operability problems, and inform the NRC of any problems identified prior to making any changes or repairs.
6. Will inform all individuals who use licensed materials of the problems with the use of the gauge that resulted in the exposure of the individual and will remind them that the source is not to be touched. This will be completed for each individual prior to their next use of a gauge.

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7. Will evaluate the extremity exposure(s) of other individuals who used the gauge.

Pursuant to Section 182 of the Atomic Energy Act, 42 U.S.C. 2232, you are required to:

1. Notify me immediately if your understanding differs from that set forth above;
2. Notify me if for any reason you cannot complete the above actions, and advise me in writing of any modifications, in advance of the change.

Issuance of this Confirmatory Action Letter does not preclude issuance of an order formalizing the above commitments or requiring other actions on the part of the licensee; nor does it preclude the NRC from taking enforcement action for violations of NRC requirements that may have prompted the issuance of this letter. In addition, failure to take the actions addressed in this Confirmatory Action Letter may result in enforcement action.

In accordance with 10 CFR 2.790 of the NRC's "Rules of Practice," a copy of this letter and your response will be placed in the NRC Public Document Room (PDR). To the extent possible, your response should not include any personal privacy, proprietary, or safeguards information so that it can be placed in the PDR without redaction. If personal privacy or proprietary information is necessary to provide an acceptable response, then please provide a bracketed copy of your response that identifies the information that should be protected and a redacted copy of your response that deletes such information. If you request withholding of such material, you must specifically identify the portions of your response that you seek to have withheld and provide in detail the bases for your claim of withholding (e.g., explain why the disclosure of information will create an unwarranted invasion of personal privacy or provide the information required by 10 CFR 2.790(b) to support a request for withholding confidential commercial or financial information). If safeguards information is necessary to provide an acceptable response, please provide the level of protection described in 10 CFR 73.21.

Should you have any questions concerning this letter, please contact me at 404/331-5514 (voice) or 404/331-5559 (facsimile).

Sincerely,



Bruce S. Mallett, Director
Division of Nuclear Materials Safety

Docket No.: 030-31566
License No.: 45-25088-01

cc: (See Page 3)

PSI

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cc: Professional Service Industries
ATTN: Mr. Banan Utier
Office Manager
1788 Island Road, Suite 1
Bristol, Virginia 24201

Commonwealth of Virginia