



George V. Voinovich
Governor

Cameron

OHIO DEPARTMENT OF TRANSPORTATION

25 South Front Street
P.O. Box 899
Columbus, Ohio 43216-0899

March 1, 1994

U.S. Nuclear Regulatory Commission
801 Warrenville Road
Lisle, Illinois 60532-4351
Attn: B.J. Holt

Re: Reply to Notice of Violation, License # 34-05239-01,
Docket # 030-05703

Dear Ms. Holt,

This is in response to an inquiry for additional information regarding our recent reply to the Notice of Violation dated December 8, 1993.

Mr. James Cameron contacted our office on February 2, 1994 to obtain additional information in regards to violation B.1. After discussing this violation with Mr. Cameron, we issued a memo to all density gauge users explicitly explaining the procedures for temporary storing density gauges in project trailers. This memo is enclosed.

If you have any further questions concerning this response please contact Jeff Thurston at (614) 466-9743.

Sincerely,

Nancy Fisher

Nancy Fisher, Administrator
Health, Safety and Claims

Jeff Thurston

Jeff Thurston,
State Radiation Safety Officer

C: Kris Dix, Don Conaway, Ron Gary

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PDR ADDOCK 03005703
C PDR

MAR 4 1994

INTER-OFFICE COMMUNICATION

To: All Nuclear Density Gauge Operators
From: Nancy Fisher, Administrator, Health, Safety and Claims *Nancy*
By: Jeff Thurston, State Radiation Safety Officer *Jeff*
Subj: Storing of Density Gauges
Date February 25, 1994

On December 8, 1993 ODOT was cited by the Nuclear Regulatory Commission for several violations involving an accident that occurred in August, 1993. One of the violations that ODOT incurred regarded the storage of density gauges in project trailers.

The proper way to store density gauges at project trailers is as follows:

- * The source rod must be locked in the shielded position.
- * The gauges must be kept in the proper transport case.
- * The gauge must be stored in a nuclear gauge storage box that meets specifications as outline by the department.
- * The nuclear gauge storage box must be locked at all times.
- * At no time will any nuclear gauge be taken home for storage.

There are no exceptions to these requirements. If a density gauge is found to be stored in any different manner than outlined above the user may be subject to disciplinary action.

If you should have any questions concerning storage of density gauges please contact Jeff Thurston at 466-9743.

C: Ron Gary
Bob Martindill
Dan Paxton
All DCE's



George V. Voinovich
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OHIO DEPARTMENT OF TRANSPORTATION

25 South Front Street
P.O. Box 899
Columbus, Ohio 43216-0899

December 20, 1993

U.S. Nuclear Regulatory Commission
799 Roosevelt Rd.
Glen Ellyn, IL 60137-5927
Attn: B.J. Holt

Re: Reply to Notice of Violation, License # 34-05239-01, Docket # 030-05703

Dear Ms. Holt,

This is in response to the notice of violation that the Ohio Department of Transportation received from you on December 13, 1993. An explanation of what corrective actions have been taken to the violations cited in your letter are as follows:

A 1. Failure to perform a radiation exposure survey on the employee's hand after he handled an unshielded sealed source.

Troxler Electronics, Inc. was contacted to determine the exposure of the source at the surface or .1 meters. Troxler stated that the exposure level at this distance was approximately 1 rem/hour. It was determined that Mr. Richard Haines did not exceed the allowable exposure limits stated in 10CFR 20.101. The standard states the limit for "Hands, Forearms, Feet and Ankles" to be 18 3/4 rem. Mr. Haines handled the unshielded source for at most two or three minutes, therefore his exposure level was less than 1 rem. No report was filed with the NRC concerning this matter because it was not required.

A 2. Failure to perform a radiation exposure survey of the unprotected sealed source in an unrestricted area.

Troxler Electronics, Inc. was contacted to obtain information regarding the exposure level of radiation regarding this particular violation. A letter was sent to the Document Control Desk in Washington DC as well as to John Martin of your Region 3 office concerning this exposure. These letters are attached.

B 1. Failure of the licensee to store the gauge properly overnight.

The Department takes the gauge user's actions after this incident very seriously. Mr. Haines will not be allowed to operate a nuclear density gauge from this point forward. Mr. Haines has also received discipline regarding his actions. Letters regarding the actions that were taken by the Department concerning Mr. Haines are attached.

C 1. Failure to comply with 10CFR 21.21.


This regulation was brought to our attention during the November 4, 1993 inspection by Mr. James Cammeron. We were unaware of any requirement to evaluate or to notify the NRC in regard to safety defects of gauging devices. The Department has since taken action to inspect new gauges when they arrive and before they are put into service. Gauges will also be inspected on a yearly basis. A procedure and checklist for doing this is attached.


D 1. Failure to comply with the posting requirement of 10CFR Part 21.

This was pointed out to us during Mr. Cammeron's inspection. The Department took immediate steps to ensure that 10CFR part 21 is posted wherever nuclear gauges are stored.

If you have any further questions concerning this reply please contact Jeff Thurston at (614)466-9743.

Respectfully,


Nancy Fisher, Administrator
Bureau of Health, Safety and Claims


Jeff Thurston
State Radiation Safety Officer

C: Kris Dix
Don Conaway
Ron Gary



George V. Voinovich
Governor

OHIO DEPARTMENT OF TRANSPORTATION

25 South Front Street
P.O. Box 899
Columbus, Ohio 43216-0899

November 12, 1993

U.S. Nuclear Regulatory Commission
Document Control Desk
Washington DC 20555

Re: Reporting of defects or Noncompliance, License # 34-05239-01

Dear Sirs,

This is to inform you and to document defective nuclear gauging equipment as required by 10CFR part 21.

On August 8, 1993 during routine use of a Troxler 3401 nuclear gauging device, the tip of the source rod containing 8 millicuries of Cesium 137 fell off. After extensive investigation it was determined that the operator of the gauge was not at fault. It was also determined that the only logical explanation would be a physical breaking of the weld securing the encapsulated source to the gauge probe.

The manufacturer was contacted to inquire if any other incidents similar to ours had happened before. Troxler was not aware of any. At that time we decided to examine all other similar model gauges that we possessed. The results of the examination are attached. After completing the examinations it was decided to discontinue the use of all Troxler 3401 gauges. These gauges are now in storage awaiting disposal. The intent is to dispose of the sources with the manufacturer when new gauges are purchased. The new gauges are scheduled to be purchased around the first quarter of 1994.

~~9311170281~~



George V. Voinovich
Governor

OHIO DEPARTMENT OF TRANSPORTATION

25 South Front Street
P.O. Box 899
Columbus, Ohio 43216-0899

November 12, 1993

U.S. Nuclear Regulatory Commission
799 Roosevelt Rd
Glen Ellyn, IL 60137-5927
Attn: John Martin

Re: Reporting of defects or Noncompliance, License # 34-05239-01

Dear Mr. Martin,

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If you have any questions concerning this matter, please contact
Jeff Thurston at (614) 466-9743.

Respectively,

Nancy Fisher
Nancy Fisher, Administrator
Health, Safety and Claims

Jeff Thurston
Jeff Thurston,
Radiation Safety Officer

NF:JT

C: Kris Dix
Ron Gary

inter-office communication

to: Jeff Thurston, ODOT R.S.O. date: August 13, 1993
from: Bob Martindill, Equipment Maintenance Superintendent 2
subject: Condition of 3401 Moisture/Density Gauges

As per instructions from Jeff Thurston, ODOT R.S.O. and due to an incident which occurred with gauge 12711 on August 3, 1993, an inspection of all 3401 model gauges was necessary.

The results were as follows:

<u>Gauge #</u>	<u>Status</u>
12711	Broken source rod
12713	Weld worn slightly
12706	Weld worn slightly
12712	Rod cracked
12710	Weld worn and possibly cracked
12715	Rod cracked in 1988 - was repaired, now OK
10234	OK
12704	OK
12716	OK - but worn at weld
12708	OK - but worn at weld
12714	OK
12707	Small hole in source rod - looked like it was filed or ground
12705	Looked like it was filed or ground
12717	OK

BM
BM:rtg

c: Dennis Bunke
Ron Gary
File

RECEIVED
HEALTH SAFETY
AND CLAIMS
AUG 17 1993
AM 7, 8, 9, 10, 11, 12, 1, 2, 3, 4, 5, 6 PM



George V. Voinovich
Governor

OHIO DEPARTMENT OF TRANSPORTATION

25 South Front Street
P.O. Box 899
Columbus, Ohio 43216-0899

November 19, 1993

U.S. Nuclear Regulatory Commission
Document Control Desk
Washington D.C. 20555

Re: Reporting of possible overexposure in an unrestricted area, License # 34-05239-01

Dear Sirs,

This is to inform you and to document a possible overexposure of radiation in an uncontrolled environment that took place on August 3, 1993.

The Ohio Department of Transportation had an incident involving a Troxler 3401 nuclear density gauge. The 8 millicurie Cesium 137 radioactive source that is located at the tip of the source rod fell off. Attached is a letter describing the incident in detail. It was determined through our investigation that the cesium source was taken home and left in an unrestricted location over night.

The Radiation Safety Officer for the department contacted Troxler to determine the extent of decay of the source and the exposure level of the area around the unprotected source. According to Troxler the source had decayed to approximately 7 millicuries at the time of the incident. It was also determined that the exposure level at .1 meters from the source was approximately 1 rem, at 1 meter it was approximately 2.3 millirem. According to Richard Haines, the gauge operator, the source was placed in the storage box of his truck for approximately 19 hours. He stated that the vehicle was parked in an area that was away from contact with any one. The estimated exposure from the source was 43.7 millirem at 1 meter for that time period.

93/20302816

An Equal Opportunity Employer



George V. Voinovich
Governor

OHIO DEPARTMENT OF TRANSPORTATION

25 South Front Street
P.O. Box 899
Columbus, Ohio 43216-0899

November 19, 1993

U.S. Nuclear Regulatory Commission
799 Roosevelt Rd.
Glen Ellyn, IL 60137-5927
Attn: John Martin

Re: Reporting of possible overexposure in an unrestricted area, License # 34-05239-01

Dear Sirs,

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If you have any questions concerning this matter, please contact Jeff Thurston at (614) 466-9743.

Respectfully,

Nancy Fisher

Nancy Fisher, Administrator
Health, Safety and Claims

Jeff Thurston

Jeff Thurston
Radiation Safety Officer

C: Kris Dix
Don Conaway
Ron Gary

INTER-OFFICE COMMUNICATION

To: Joseph Powell, District 12 Construction Engineer

From: Nancy Fisher, Administrator, Health, Safety and Claims

Nancy Fisher

By: Jeff Thurston, State Radiation Safety Officer

Jeff Thurston

Subj: August 3, 1993 gauge incident involving Dick Haines

Date September 2, 1993

On August 3, 1993 Richard Haines, a nuclear density gauge operator for your district, had an incident involving a Troxler 3401 gauge that was assigned to him. It appears that the tip of the source rod of the gauge broke off. This tip contained the radioactive source (cesium 137) that is required to test for the density of the sub-grade or the material that is being tested. Once Mr. Haines noticed that the tip had broken off, he proceeded to pick up the broken parts and put them in his gauge carrying case. Mr. Haines then left the site and proceeded back to the project trailer and attempted to contact Mr. Bob Martindill of the Central Office Test Lab. Mr. Martindill was not able to be reached. At this point, Mr. Haines then took his gauge out of the gauge carrying case and placed it inside the project office temporary storage box. The broken tip of the source rod was still located in the gauge carrying case that was located inside the gauge transport box that was attached to his truck. At the end of the day Mr. Haines took the truck that contained the broken source rod home. Upon arriving the next morning he contacted Mr. Martindill and explained the situation to him. Mr. Martindill and myself went to Mr. Haines's project and performed the necessary procedures to ensure that there was no radioactive contamination from the incident and brought the gauge back to the C.O. Test Lab to assess how the gauge could be fixed.

The reason for this IOC is not because the source rod broke but because of the actions Mr. Haines took after he noticed that it was broken. After a thorough investigation it has been determined that Mr. Haines violated the following ODOT rules and regulations.

1. Mr. Haines failed to isolate the area around the damaged gauge.

Failing to isolate the area around a damaged nuclear gauge is a violation of ODOT's Radiation Safety Program section 6.2 Emergency Procedures. By not immediately isolating the area, Mr. Haines could have exposed other individuals to undue amounts of radiation. He could have also contaminated other individuals as well as machinery, etc., had the source encapsulation been broken and leaking.

2. Mr. Haines failed to contact any personnel listed on the emergency response card.

Failing to contact responsible individuals as designated by ODOT is a violation of the ODOT Radiation Safety Program section 6.2 Emergency Procedures. By not notifying the proper personnel immediately, he caused the situation to become uncontrollable and left ODOT open to many unknown events that could have occurred.

3. Mr. Haines used his hands to retrieve the broken source rod tip from the ground.

By picking the radioactive source up with his hands, Mr. Haines exposed himself unnecessarily to an extreme amount of radiation. By doing this Mr. Haines violated the ODOT Radiation Safety Program section 6.1 Handling Precautions.

4. Mr. Haines put the gauge in temporary storage out of the transport case.

This is a violation of the ODOT Radiation Safety Program section 5.3 Temporary Work Site Storage. Transport cases are provided by the manufacturer to protect the gauge from any damage. The transport case for any nuclear gauge has met the guidelines set forth by the Federal Department of Transportation. All nuclear gauges must be stored and transported inside their transport case.

5. Mr. Haines took the broken source rod home at night.

Taking the radioactive source home at night is a violation of the ODOT Radiation Safety Program section 5.3 Temporary Work Site Storage.

All of these are very serious violations and must be dealt with accordingly. For this reason, I am requesting that Mr. Richard Haines be disciplined to the fullest extent possible. Mr. Haines will no longer be permitted to use a nuclear gauging device.

At this time it is unknown how the Nuclear Regulatory Commission will view this incident. It should be noted that in the past, ODOT came under extreme criticism and at one point lost it's NRC license. Currently, ODOT is in good standing with the NRC and we need to follow all regulations in order to maintain our good standing.

If you have any further questions concerning this matter, please contact me at 466-9743.

C: Kris Dix, Don Conaway, Ron Gary, Bob Martindill, Brayn Groden, Marty Sulzmann

INTER-OFFICE COMMUNICATION

To: Ron Gary, State Assistant Radiation Safety Officer
From: Nancy Fisher, Administrator, Health, Safety and Claims *Nancy*
BY: Jeff Thurston, State Radiation Safety Officer *Jeff*
Subj: Inspection policy of gauging devices and possible purchasing
of new density gauges.

Date August 9, 1993

As you are aware, the density gauge incident in District 12 was due to a cracked source rod. After thorough inspection of the source rod from the gauge it is my perception that it had been cracked for some period of time. It was over this period of time that the crack increased and finally caused the tip containing the radioactive source to break off. Also, after discussing this matter with Bob Martindill it was his opinion that one of the probable causes that may have expedited this cracking was the fact that it had not been lubricated with in the past year to year and a half. Bob also stated that this procedure can only be done by him because the source rod needs to be removed on the 3401 gauges.

For these reasons I am requesting that a statewide policy be drawn up and instituted immediately to ensure that all nuclear gauging devices be inspected at six month intervals. This policy should include the density gauges as well as the asphalt content gauges. The benefits of a policy of this nature will be two fold. We will be able to inspect each gauge to help ensure that a similar incident as to the one stated above will not happen again. Also, ODOT will possibly see an increase in the use life of the gauges and should see less repair costs because of the increased preventive maintenance that will be done on them.

I have requested that all 3401 density gauges be inspected for cracked source rods. ODOT had a similar incident three to four years ago where on another 3401 density gauge the source rod was found cracked. This gauge was sent to Troxler for repair before the source tip had fallen off. The department currently has 14, 3401 density gauges either located throughout the state or in C.O. storage. Upon the completion of this inspection a determination will be made as to whether or not this series of density gauges will continue to be used by ODOT employees.

If you have any questions concerning this matter, please contact me at 466-9743.

C: Bob Martindill



inter-office communication

to: To Whom It May Concern date: October 26, 1993
from: Dennis L. Bunke, PE, Engineer of Tests by Bob Martindill, Equipment Supt. 2
subject: Procedure for Inspection of Gauges During Time of Leak Check February 15
thru March 15, each year.

1. Gauge to be leak checked.
2. Gauge will be cleaned and lubed.
3. Source rod will be inspected.
4. All components will be checked.
5. All standard counts will be checked. (4 times)
6. All constants will be checked.
7. Stat test will be run.
8. Calibration of gauges should be done at least every 18 months.
9. Check all source labels, replace if necessary.

BM;vp

New and Annual Density Gauge Inspection

Gauge Serial Number _____

Gauge User or New Gauge _____

Gauge Leak Tested _____

Source Rod Inspected For Defects (Visually) _____

All Components Checked _____

All Standard Counts Checked _____

All Constants Checked _____

Gauge Cleaned and Lubed (Annual Inspection) _____

Stat Test Run (Annual Inspection) _____

All Source, Gauge, and Transport Case
Labels Checked and Replaced if needed _____

**All Gauges will be calibrated every 24 months

COMMENTS

Inspector _____

_____ Date

The State Radiation Safety Officer must receive a copy of each inspection form



George V. Volnovich
Governor

OHIO DEPARTMENT OF TRANSPORTATION

25 South Front Street
P.O. Box 899
Columbus, Ohio 43216-0899

October 14, 1993

Richard F. Haines
5027 Claremont Boulevard
Cleveland, Ohio 44125

Dear Mr. Haines:

This letter is to inform you that you are hereby suspended from employment as a Project Inspector, assigned to the Construction Department for a period of ten work days effective October 18, 1993 and continuing through October 29, 1993.

After reviewing the recommendation of the impartial administrator, and others; it has been determined that just cause exists for this action.

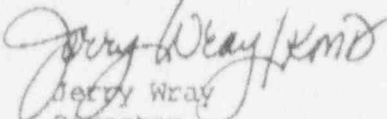
You are found to have violated directive WR 101, Item 26-Other actions that could harm the employee, a fellow employee(s) or a member or members of the general public.

During your suspension, you are to remain off Ohio Department of Transportation property and away from all Ohio Department of Transportation Field Projects.

You are to return to work at your regularly scheduled time on November 1, 1993 and report to Joseph Powell, Construction.

Further infractions may lead to further discipline up to and including termination.

Respectfully,


Jerry Wray
Director

JW/aj