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4310-C Technology Drive
South Bend, IN 46628
574-233-6820 (FAX) 574-233-8242

March 31, 2011

Mr. Steven A. Reynolds, Director
Division of Nuclear Materials Safety
U.S. Nuclear Regulatory Commission, Region III
2443 Warrenville Road, Suite 210
Lisle, IL 60532-4352

Re: Response to Confirmatory Order IA-09-044
Quarterly Radiation Safety Activities -Report No. 6
First Quarter - 2011

Dear Mr. Reynolds:

As per a Confirmatory Order by the Nuclear Regulatory Commission (NRC), which was a result of an agreement reached during an Alternative Dispute Resolution mediation conducted at your facility August 25, 2009, I am submitting the sixth report of our documentation of radiation safety activities (RSA) performed by Earth Exploration, Inc. as required by the confirmatory order referenced above. Activity this past quarter included:

Annual Audits

The process of the audits began early January, 2011 when work began on our audit of the Indianapolis office. Completion of this audit was made January 25, 2011. On February 10, 2011, I traveled to our South Bend office to begin the audit process for that location. Completion of the South Bend office audit was made February 18, 2011. Copies of our audits are included with this report.

Independent Audit

As required, on January 21, 2011, another independent audit of our Radiation Safety Program (RSP) was performed by InstroTek, Inc. (II). During this audit, the only deficiency noted by II was that records of acknowledgement by two EEI gauge operators to "work safely with nuclear gauges" had been misplaced and not on file. The employees were re-introduced to the training manual and acknowledged by signature they would follow the guidelines of the manual. Otherwise, it was our understanding that II considered our RSP in good standing. A copy of their audit is attached with this report.

Dosimetry

Submittal of dosimetry for our gauge operators by both office locations was made January, 2011, for the fourth quarter, or last wear period of 2010. Upon receipt of the dosimetry reports from Landauer, mid to late January, 2011, we noted no unusual results of radiation exposure to our employees. Also at the beginning of the month, new dosimetry was provided to the gauge operators for the first quarter of 2011. Copies of the dosimetry reports are included with this report.

Leak Tests for Portable Gauges

Leak test samples were collected from our portable gauges at our South Bend office on January 17, 2011. The leak tests were analyzed by Troxler Electronic Laboratories (TEL) on January 24, 2011, and reviewed by the RSO, January 31, 2011. Samples from our gauges at the Indianapolis office were collected on January 6 and 7, 2011. The leak tests were analyzed by TEL on January 14, 2001, and also reviewed by the RSO on January 25, 2011. All of the leak test results reported less than 185 Bq (0.005uCi).

Portable Gauge Security

Earth Exploration, Inc. has been in process of determining ways to better improve the security of our portable gauges during transportation and in the field. We have purchased and modified a prototype tailored steel "job-box" to make this improvement in security and restriction of movement of the portable gauges during transportation, as we stated we would in previous correspondence to you. We now have a total of six of these steel transportation boxes for our portable gauges, three each, at the two office locations. It is our intent to continue to purchase these "improved" steel boxes for the security of our gauges during transportation. The hardware for the storage and transportation box is bolted to the truck beds and two concealed Master Locks are used to secure the lid to the boxes. In short, we continue to make efforts to improve our radiation safety program and the security and transportation of our portable gauges to and from jobsites.

Physical Inventory of Portable Gauges

Physical inventory of the portable gauges at the South Bend office was performed January 17, 2011, and the reports were sent to the RSO on that date. Physical inventory of the portable gauges at the Indianapolis office was performed January 6 and January 7, 2011. Photo copies of these reports are included with this report.

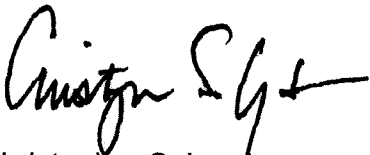
TroxAlert Survey Meters

Each of our offices maintains a TroxAlert brand survey meter. As required, these meters were provided with yearly calibration service, on February 4, and February 28, 2011, for the South Bend and Indianapolis offices, respectively. Photo copies of these calibrations are included with this report.

We trust this information provides adequate documentation of our previous quarter RSA. Should you have any questions or if you are in need of any additional information, please contact me at your convenience.

Sincerely,

EARTH EXPLORATION, INC.



Christopher S. Loyd
Radiation Safety Officer

Attachments: Quarterly Radiation Safety Activity Checklist – Report No. 6
Quarterly Radiation Safety Activity Guideline
Dosimetry Reports for Indianapolis Office – 4th Qtr. 2010
Dosimetry Reports for South Bend Office – 4th Qtr. 2010
Gauge Leak Test Results for Indianapolis Office – January 2011
Gauge Leak Test Results for South Bend Office – January 2011
Annual Audit – Indianapolis Office
Annual Audit – South Bend Office
TroxAlert Survey Meter Calibration Reports
InstroTek, Inc. Audit Report

**QUARTERLY RADIATION SAFETY ACTIVITIES
REPORT NO. 6 – FIRST QUARTER - 2011
DATE: 3-31-11**

Quarterly Radiation Safety Activities
Report No.: 6 (1st Qtr. 2011)
Date: 3-31-11



Activity	Yes	No	Footnote
RSO Responsibilities			
All terms and conditions of the materials license are being adhered to.	x		
All gauges have been leak tested in accordance with the required time frames and documentation of such testing is made, recorded and filed in an orderly manner (bi-quarterly or annually).	x		1
All gauge operators have been provided with, and have worn their personnel monitoring equipment (dosimeters) while operating or servicing the portable gauges and the dosimeters have been submitted to Landauer® on a quarterly basis for required testing.	x		
Records of the gauge operators radiation exposure based on the test results provided by Landauer® have been posted and any exposure perceived as being in excess of typical exposure has been discussed and documented with the gauge operators .	x		2
All gauges are properly secured and protected at all times, when not in use by the individual gauge operators.	x		
The RSO has reviewed the gauge operator's usage of equipment and has assured that any unsafe practices are stopped immediately and has developed, implemented or documented corrective actions when violations of the program have been identified.	x		
Gauge Operator Responsibilities			
The portable gauges have been inspected and adequately logged in and out of the designated storage area of our facilities each day they are used.	x		
The transportation documents are in order and the equipment is secured in the transporting vehicle as required by our radiation safety program and DOT requirements.	x		
The gauges have been maintained in their control at all times.	x		



Activity	Yes	No	Footnote
Respective personnel monitoring devices have been worn at all times.	x		
The following have been in the possession of the gauge operators at all times when they are using the gauges in the field:			
Copy of the License	x		
Authorization card from RSO	x		
Copy of the Radiation Safety Plan	x		
Copy of the equipment operations manual	x		
Copy of current Leak Test Certificate	x		
Copy of Emergency Procedures	x		
Footnote No. 1 - Leak test results all negative.			
Footnote No. 2 - Exposure level for Techs for Fourth Quarter, 2010 typical.			



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**Earth Exploration, Inc.
Quarterly Radiation Safety Activities
For 2010 and 2011**

A. The following shall serve as a guideline and checklist for radiation safety activities to be performed by the Radiation Safety Officer (RSO) and individual gauge operators on a quarterly basis throughout the time period noted above:

1. The RSO shall assure that all terms and conditions of the materials license are being adhered to.
2. The RSO shall verify that the gauges have been leak tested in accordance with the required time frames and that documentation of such testing is made and recorded and filed in an orderly manner (bi-quarterly or annually).
3. The RSO shall assure that gauge operators are provided with and wear their personnel monitoring equipment (dosimeters) while operating or servicing the portable gauges and that the dosimeters are submitted to Landauer® on a quarterly basis for required testing.
4. The RSO shall post records of the gauge operators radiation exposure based on the test results provided by Landauer®, discuss and document with the gauge operators any exposure perceived as being in excess of typical exposure.
5. The RSO shall assure that the gauges are properly secured and protected at all times when not in use by the individual gauge operators.
6. The RSO will review the gauge operator's usage of equipment and assure that any unsafe practices are stopped immediately and develop, implement and document corrective actions when violations of the program are identified.

B. The gauge operators during each quarter shall be responsible for:

1. Ensuring the portable gauges have been inspected and adequately logged in and out of the designated storage area of our facilities each day they are used.
2. Ensuring the transportation documents are in order and that the equipment is secured in the transporting vehicle as required by our radiation safety program and DOT requirements.
3. Maintain control over the gauge at all times.
4. Wear their respective personnel monitoring device.
5. Have the following in their possession during gauge use:
 - a. Copy of the License
 - b. Authorization card from RSO
 - c. Copy of the Radiation Safety Plan
 - d. Copy of the equipment operations manual
 - e. Copy of current Leak Test Certificate
 - f. Copy of Emergency Procedures

**DOSIMETERY REPORTS FOR
INDIANAPOLIS OFFICE – FOURTH QUARTER -
2010**

EARTH EXPLORATION INC
CHRISTOPHER LOYD
7770 WEST NEW YORK ST
INDIANAPOLIS IN 46214

LANDAUER®

Landauer, Inc. 2 Science Road Glenwood, Illinois 60425-1586
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Customer Service: (800) 323-8830 Customer Service Technical: (800) 438-3241
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RADIATION DOSIMETRY REPORT

ACCOUNT NO.	SERIES CODE	ANALYTICAL WORK ORDER	REPORT DATE	DOSIMETER RECEIVED	REPORT TIME IN WORK DAYS	PAGE NO.
179781	IND	1100660386	01/12/11	01/06/11	4	1 OF 1

PARTICIPANT NUMBER	NAME			DOSIMETER	USE	RADIATION QUALITY	DOSE EQUIVALENT (MREM) FOR PERIODS SHOWN BELOW			YEAR TO DATE DOSE EQUIVALENT (MREM)			LIFETIME DOSE EQUIVALENT (MREM)			RECORDS FOR YEAR	INCEPTION DATE (MM/YY)
	ID NUMBER	BIRTH DATE	SEX				DEEP DDE	EYE LDE	SHALLOW SDE	DEEP DDE	EYE LDE	SHALLOW SDE	DEEP DDE	EYE LDE	SHALLOW SDE		
FOR MONITORING PERIOD:							10/01/10 - 12/31/10				2010						
00IND	CONTROL			Pa	CNTRL		M	M	M							4	09/03
00005	LOYD C S			Pa	WHBODY		M	M	M	M	M	M	82	82	159	4	04/93
		/23/1952	M														
00009	SCHUSTER G M			Pa	WHBODY	P	11	12	13	25	31	38	553	570	597	4	06/93
		7/21/1968	M														
00013	EGOLD KIRK			Pa	WHBODY		M	M	M	1	1	M	25	28	31	4	05/94
			M														
00032	TROUTMAN DAN			Pa	WHBODY	P	1	4	6	5	12	19	220	233	252	4	05/00
		/1969	M														
00040	TINCHER T M			Pa	WHBODY	P	6	7	8	16	18	18	326	332	332	4	05/01
			M														
00054	LOYD ROSS			Pa	WHBODY	P	2	2	1	3	3	2	96	98	103	4	09/02
		04/1984	M														
00084	KING LEWIS			Pa	WHBODY	P	2	3	2	5	7	7	124	128	133	4	01/06
		/09/1966															
00091	SIMISON RON			Pa	CHEST					14	14	13	118	124	142	4	07/06
		30/1974	M		NOTE	UNUSED											
00094	ROOSA SCOTT			Pa	WHBODY		M	M	M	M	M	M	1	1	2	4	07/07
		1981	M														
00099	SAWYER TOM			Pa	WHBODY	P	19	21	21	50	55	57	110	116	121	4	07/07
		19/1986	M														
00103	SOIL LAB			Pa	AREA	P	21	23	22	88	91	87	170	173	165	4	01/09

M: MINIMAL REPORTING SERVICE OF 1 MREM

QUALITY CONTROL RELEASE: SEB

1 - PR 9673 - RPT1318- N1

- 00686

*Reviewed by C. J. S. H. L., RSD
1-18-11*



NVLAP®

NVLAP LAB CODE 100518-0**

*Rel'd
1-18-11*

**DOSIMETERY REPORTS FOR
SOUTH BEND OFFICE – FOURTH QUARTER -
2010**

120 ✓

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RADIATION DOSIMETRY REPORT

ACCOUNT NO	SERIES CODE	ANALYTICAL WORK ORDER	REPORT DATE	DOSIMETER RECEIVED	REPORT THIS WORK DATE	PAGE NO
179781	SB	1036210225	01/04/11	12/28/10	4	1 OF 1

PARTICIPANT NUMBER	NAME			DOSIMETER	USE	RADIATION QUALITY	DOSE EQUIVALENT (MREM) FOR PERIODS SHOWN BELOW			YEAR TO DATE DOSE EQUIVALENT (MREM)			LIFETIME DOSE EQUIVALENT (MREM)			RECORDS FOR YEAR	INCEPTION DATE (MM/YY)
	ID NUMBER	BIRTH DATE	SEX				DEEP DDE	EYE LDE	SHALLOW SDE	DEEP DDE	EYE LDE	SHALLOW SDE	DEEP DDE	EYE LDE	SHALLOW SDE		
FOR MONITORING PERIOD:							10/01/10 - 12/31/10			2010							
00058	CONTROL			Pa	CNTRL		M	M	M							4	08/03
00012	MCALISTER JIM	03/23/1952	M	Pa	WHBODY	P	2	2	6	2	2	7	324	324	327	4	10/83
00092	MILLER MARK	08/29/1958	M	Pa	WHBODY	P	25	25	74	36	41	24	197	199	205	4	04/07
00104	STONE CHRISTOPHER	02/11/1977	M	Pa	WHBODY	P	2	3	8	19	21	25	19	21	25	4	01/10
00105	CYLINDER LOG-IN			Pa	AREA	P	32	33	37	474	487	485	474	481	497	4	01/10

M: MINIMAL REPORTING SERVICE OF 1 MREM

QUALITY CONTROL RELEASE: RCH

1 - PR 9667 - RPT131A- M

35228

Reviewed by: Amy S. L., RSO
1-7-10

0001/10
OVERALL DOSE: 10.10M

**LEAK TEST RESULTS FOR
INDIANAPOLIS OFFICE – JANUARY, 2011**

**Troxler Electronic Laboratories, Inc.**

3008 Cornwallis Rd., P.O. Box 12057
Research Triangle Park, NC 27709
Tel: (877) 876-9537 Fax: (866) 391-2759
License: NC 032-0182-1

Christopher S. Loyd
EARTH EXPLORATION
7770 WEST NEW YORK ST.
INDIANAPOLIS, IN 46214

Cust ID: 6675

LEAK TEST CERTIFICATE

DEVICE:

Model: 3430 Serial No: 21301

#1

SEALED SOURCES:

Serial No.	Measure Date	Nuclide	GBq	mCi
75-2807	05/07/1992	CS-137	0.296	8
76-25	05/22/1992	CF-252	0.002	.06

LEAK TEST ANALYSIS:

Sample collected on: 01/07/2011
Sample analyzed on: 01/14/2011 1:07:53 PM Position: 23
Analyzed by: D. Rose

	ALPHA	BETA-GAMMA
Conversion factor (cpm/Bq)	1.22E+01	1.95E+01
Background measurement (cpm)	2	27
Sample measurement (cpm)	0	17
Activity (Bq)	< MDA	< MDA
Min. Detectable Activity (Bq)	7.2E-01	1.4E+00

This certifies that the leak test results are:

☒ Less than 185 Bq (0.005 uCi) ☐ Greater than 185 Bq (0.005 uCi)

Rev. 9/2006

Reviewed by Chris S. Loyd, RSO
1-25-11

**Troxler Electronic Laboratories, Inc.**

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License: NC 032-0182-1

Christopher S. Loyd
EARTH EXPLORATION
7770 WEST NEW YORK ST.
INDIANAPOLIS, IN 46214

Cust ID: 6675

LEAK TEST CERTIFICATE

DEVICE:

Model: 3411

Serial No: 17587

2

SEALED SOURCES:

Serial No.	Measure Date	Nuclide	GBq	mCi
50-7078	07/24/1989	CS-137	0.296	8
47-13016	05/10/1989	AM-241:BE	1.48	40

LEAK TEST ANALYSIS:

Sample collected on: 01/07/2011

Sample analyzed on: 01/14/2011 11:31:31 A Position: 11

Analyzed by: D. Rose

	ALPHA	BETA-GAMMA
Conversion factor (cpm/Bq)	1.22E+01	1.95E+01
Background measurement (cpm)	2	27
Sample measurement (cpm)	1	21
Activity (Bq)	< MDA	< MDA
Min. Detectable Activity (Bq)	7.2E-01	1.4E+00

This certifies that the leak test results are:☒ Less than 185 Bq (0.005 uCi)☐ Greater than 185 Bq (0.005 uCi)

Rev. 9/2006

Reviewed by Chris S. Loyd, P.E.
1-25-11

**Troxler Electronic Laboratories, Inc.**

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7770 WEST NEW YORK ST.
INDIANAPOLIS, IN 46214

Cust ID: 6675

LEAK TEST CERTIFICATE

DEVICE:

Model: 3430 Serial No: 21832

3

SEALED SOURCES:

Serial No.	Measure Date	Nuclide	GBq	mCi
47-17160	08/18/1992	AM-241:BE	1.48	40
75-3408	12/29/1992	CS-137	0.296	8

LEAK TEST ANALYSIS:

Sample collected on: 01/06/2011

Sample analyzed on: 01/14/2011 11:37:33 A Position: 16

Analyzed by: D. Rose

	ALPHA	BETA-GAMMA
Conversion factor (cpm/Bq)	1.22E+01	1.95E+01
Background measurement (cpm)	2	27
Sample measurement (cpm)	0	21
Activity (Bq)	< MDA	< MDA
Min. Detectable Activity (Bq)	7.2E-01	1.4E+00

This certifies that the leak test results are:

☒ Less than 185 Bq (0.005 uCi)

☐ Greater than 185 Bq (0.005 uCi)

Rev. 9/2006

Reviewed by Auger Spt. RSO
1-25-11

**Troxler Electronic Laboratories, Inc.**

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Christopher S. Loyd
EARTH EXPLORATION
7770 WEST NEW YORK ST.
INDIANAPOLIS, IN 46214

Cust ID: 6675

LEAK TEST CERTIFICATE

DEVICE:

Model: 3430 Serial No: 22603

#4

SEALED SOURCES:

Serial No.	Measure Date	Nuclide	GBq	mCi
75-4359	07/26/1993	CS-137	0.296	8
47-18446	05/18/1993	AM-241:BE	1.48	40

LEAK TEST ANALYSIS:

Sample collected on: 01/07/2011

Sample analyzed on: 01/14/2011 1:16:19 PM Position: 30

Analyzed by: D. Rose

	ALPHA	BETA-GAMMA
Conversion factor (cpm/Bq)	1.22E+01	1.95E+01
Background measurement (cpm)	2	27
Sample measurement (cpm)	0	16
Activity (Bq)	< MDA	< MDA
Min. Detectable Activity (Bq)	7.2E-01	1.4E+00

This certifies that the leak test results are:

☒ Less than 185 Bq (0.005 uCi)

☐ Greater than 185 Bq (0.005 uCi)

Rev. 9/2006

Reviewed by Chris S. Loyd, P.S.O.
1-25-11



Troxler Electronic Laboratories, Inc.

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Christopher S. Loyd
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7770 WEST NEW YORK ST.
INDIANAPOLIS, IN 46214

Cust ID: 6675

LEAK TEST CERTIFICATE

DEVICE:

Model: 3440 Serial No: 27261

#6

SEALED SOURCES:

Serial No.	Measure Date	Nuclide	GBq	mCi
47-23887	11/05/1996	AM-241:BE	1.48	40
750-1023	02/04/1997	CS-137	0.296	8

LEAK TEST ANALYSIS:

Sample collected on: 01/06/2011

Sample analyzed on: 01/14/2011 11:32:43 A Position: 12

Analyzed by: D. Rose

	ALPHA	BETA-GAMMA
Conversion factor (cpm/Bq)	1.22E+01	1.95E+01
Background measurement (cpm)	2	27
Sample measurement (cpm)	1	19
Activity (Bq)	< MDA	< MDA
Min. Detectable Activity (Bq)	7.2E-01	1.4E+00

This certifies that the leak test results are:

☒ Less than 185 Bq (0.005 uCi)

☐ Greater than 185 Bq (0.005 uCi)

Rev. 9/2006

Reviewed by Chris S. Loyd, RSO
1-25-11

**Troxler Electronic Laboratories, Inc.**

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Christopher S. Loyd
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7770 WEST NEW YORK ST.
INDIANAPOLIS, IN 46214

Cust ID: 6675

LEAK TEST CERTIFICATE

DEVICE:

Model: 3440

Serial No: 27267

#7

SEALED SOURCES:

Serial No.	Measure Date	Nuclide	GBq	mCi
750-1029	02/04/1997	CS-137	0.296	8
47-23893	11/05/1996	AM-241:BE	1.48	40

LEAK TEST ANALYSIS:

Sample collected on: 01/06/2011

Sample analyzed on: 01/14/2011 1:06:41 PM Position: 22

Analyzed by: D. Rose

	ALPHA	BETA-GAMMA
Conversion factor (cpm/Bq)	1.22E+01	1.95E+01
Background measurement (cpm)	2	27
Sample measurement (cpm)	0	21
Activity (Bq)	< MDA	< MDA
Min. Detectable Activity (Bq)	7.2E-01	1.4E+00

This certifies that the leak test results are:

☒ Less than 185 Bq (0.005 uCi)

☐ Greater than 185 Bq (0.005 uCi)

Rev. 9/2006

Reviewed by Cheryl Schmitt, RSO
1-25-11



Troxler Electronic Laboratories, Inc.

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Christopher S. Loyd
EARTH EXPLORATION
7770 WEST NEW YORK ST.
INDIANAPOLIS, IN 46214

Cust ID: 6675

LEAK TEST CERTIFICATE

DEVICE:

Model: 3440 Serial No: 19641

AG

SEALED SOURCES:

Serial No.	Measure Date	Nuclide	GBq	mCi
50-9368	10/30/1990	CS-137	0.296	8
47-15187	11/09/1990	AM-241:BE	1.48	40

LEAK TEST ANALYSIS:

Sample collected on: 01/06/2011

Sample analyzed on: 01/14/2011 11:38:45 A Position: 17

Analyzed by: D. Rose

	ALPHA	BETA-GAMMA
Conversion factor (cpm/Bq)	1.22E+01	1.95E+01
Background measurement (cpm)	2	27
Sample measurement (cpm)	0	27
Activity (Bq)	< MDA	< MDA
Min. Detectable Activity (Bq)	7.2E-01	1.4E+00

This certifies that the leak test results are:

☒ Less than 185 Bq (0.005 uCi)

☐ Greater than 185 Bq (0.005 uCi)

Rev. 9/2006

Reviewed by Chris S. Loyd, RSO
1-25-11

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Christopher S. Loyd
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7770 WEST NEW YORK ST.
INDIANAPOLIS, IN 46214

Cust ID: 6675

LEAK TEST CERTIFICATE

DEVICE:

Model: 3440 Serial No: 18314

#9

SEALED SOURCES:

Serial No.	Measure Date	Nuclide	GBq	mCi
50-7815	12/19/1989	CS-137	0.296	8
47-13763	01/18/1990	AM-241:BE	1.48	40

LEAK TEST ANALYSIS:

Sample collected on: 01/06/2011

Sample analyzed on: 01/14/2011 11:36:20 A Position: 15

Analyzed by: D. Rose

	ALPHA	BETA-GAMMA
Conversion factor (cpm/Bq)	1.22E+01	1.95E+01
Background measurement (cpm)	2	27
Sample measurement (cpm)	0	22
Activity (Bq)	< MDA	< MDA
Min. Detectable Activity (Bq)	7.2E-01	1.4E+00

This certifies that the leak test results are:

☒ Less than 185 Bq (0.005 uCi)

☐ Greater than 185 Bq (0.005 uCi)

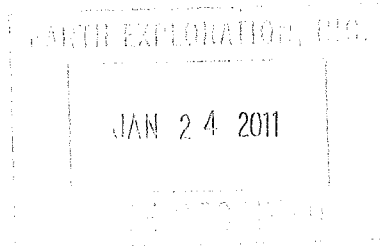
Rev. 9/2006

Reviewed by Aug. Sht, RSO
1-25-11

**Troxler Electronic Laboratories, Inc.**

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Tel: (877) 876-9537 Fax: (866) 391-2759
License: NC 032-0182-1

Christopher S. Loyd
EARTH EXPLORATION
7770 WEST NEW YORK ST.
INDIANAPOLIS, IN 46214



Cust ID: 6675

LEAK TEST CERTIFICATE

DEVICE:

Model: 3411 Serial No: 13427

#10

SEALED SOURCES:

Serial No.	Measure Date	Nuclide	GBq	mCi
50-1254	05/23/1985	CS-137	0.296	8
47-8618	10/22/1985	AM-241:BE	1.48	40

LEAK TEST ANALYSIS:

Sample collected on: 01/07/2011
Sample analyzed on: 01/14/2011 11:33:56 A Position: 13
Analyzed by: D. Rose

	ALPHA	BETA-GAMMA
Conversion factor (cpm/Bq)	1.22E+01	1.95E+01
Background measurement (cpm)	2	27
Sample measurement (cpm)	0	27
Activity (Bq)	< MDA	< MDA
Min. Detectable Activity (Bq)	7.2E-01	1.4E+00

This certifies that the leak test results are:

☒ Less than 185 Bq (0.005 uCi) ☐ Greater than 185 Bq (0.005 uCi)

Rev. 9/2006

Reviewed by *Angie Schatz, RSO*
1-25-11

**Troxler Electronic Laboratories, Inc.**

3008 Cornwallis Rd., P.O. Box 12057

Research Triangle Park, NC 27709

Tel: (877) 876-9537 Fax: (866) 391-2759

License: NC 032-0182-1

Christopher S. Loyd
EARTH EXPLORATION
7770 WEST NEW YORK ST.
INDIANAPOLIS, IN 46214

Cust ID: 6675

LEAK TEST CERTIFICATE

DEVICE:

Model: 3430

Serial No: 39113

11

SEALED SOURCES:

Serial No.	Measure Date	Nuclide	GBq	mCi
78-3900	02/19/2007	AM-241:BE	1.48	40
77-6583	04/12/2007	CS-137	0.296	8

LEAK TEST ANALYSIS:

Sample collected on: 01/06/2011

Sample analyzed on: 01/14/2011 11:35:08 A Position: 14

Analyzed by: D. Rose

	ALPHA	BETA-GAMMA
Conversion factor (cpm/Bq)	1.22E+01	1.95E+01
Background measurement (cpm)	2	27
Sample measurement (cpm)	1	33
Activity (Bq)	< MDA	< MDA
Min. Detectable Activity (Bq)	7.2E-01	1.4E+00

This certifies that the leak test results are:☒ Less than 185 Bq (0.005 uCi)☐ Greater than 185 Bq (0.005 uCi)

Rev. 9/2006

Reviewed by Andy Sht, ZSO
1-25-11

**Troxler Electronic Laboratories, Inc.**

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License: NC 032-0182-1

Christopher S. Loyd
EARTH EXPLORATION
7770 WEST NEW YORK ST.
INDIANAPOLIS, IN 46214

Cust ID: 6675

LEAK TEST CERTIFICATE

DEVICE:

Model: 3430 Serial No: 39114

#12

SEALED SOURCES:

Serial No.	Measure Date	Nuclide	GBq	mCi
77-6584	04/12/2007	CS-137	0.296	8
78-3901	02/19/2007	AM-241:BE	1.48	40

LEAK TEST ANALYSIS:

Sample collected on: 01/07/2011

Sample analyzed on: 01/14/2011 1:05:29 PM Position: 21

Analyzed by: D. Rose

	ALPHA	BETA-GAMMA
Conversion factor (cpm/Bq)	1.22E+01	1.95E+01
Background measurement (cpm)	2	27
Sample measurement (cpm)	0	21
Activity (Bq)	< MDA	< MDA
Min. Detectable Activity (Bq)	7.2E-01	1.4E+00

This certifies that the leak test results are:

☒ Less than 185 Bq (0.005 uCi)

☐ Greater than 185 Bq (0.005 uCi)

Rev. 9/2006

Reviewed by Christopher S. Loyd, DSO
1-25-11

**LEAK TEST RESULTS FOR
SOUTH BEND OFFICE – JANUARY, 2011**



Troxler Electronic Laboratories, Inc.
3008 Cornwallis Rd., P.O. Box 12057
Research Triangle Park, NC 27709
Tel: (877) 878-9537 Fax: (866) 391-2759
License: NC 032-0182-1

Terry Sharp
EARTH EXPLORATION
4310-C TECHNOLOGY DRIVE
SOUTH BEND, IN 46628

Cust ID: 5093

LEAK TEST CERTIFICATE

DEVICE:

Model: 3440

Serial No: 20691

SEALED SOURCES:

Serial No.	Measure Date	Nuclide	GBq	mCi
47-16182	12/16/1991	AM-241:BE	1.48	40
75-2076	09/16/1991	CS-137	0.296	8

LEAK TEST ANALYSIS:

Sample collected on: 01/17/2011

Sample analyzed on: 01/24/2011 12:27:17 P Position: 28

Analyzed by: D. Rose

	ALPHA	BETA-GAMMA
Conversion factor (cpm/Bq)	1.22E+01	1.95E+01
Background measurement (cpm)	2	27
Sample measurement (cpm)	0	31
Activity (Bq)	< MDA	< MDA
Min. Detectable activity (Bq)	7.2E-01	1.4E+00

This certifies that the leak test results are:

☒ Less than 185 Bq (0.005 uCi)

☐ Greater than 185 Bq (0.005 uCi)

Rev. 9/2006

Reviewed By *Chris Sipe*, DSO
1-31-11



Troxler Electronic Laboratories, Inc.
3008 Cornwalls Rd., P.O. Box 12057
Research Triangle Park, NC 27709
Tel: (877) 876-9537 Fax: (866) 391-2759
License: NC 032-0182-1

Terry Sharp
EARTH EXPLORATION
4310-C TECHNOLOGY DRIVE
SOUTH BEND, IN 46626

Cust ID: 5093

LEAK TEST CERTIFICATE

DEVICE:

Model: 3430

Serial No: 23347

SEALED SOURCES:

Serial No.	Measure Date	Nuclide	GBq	mCi
75-5363	03/17/1994	CS-137	0.296	8
47-19229	03/08/1994	AM-241:BE	1.43	40

LEAK TEST ANALYSIS:

Sample collected on: 01/17/2011

Sample analyzed on: 01/24/2011 12:28:29 P Position: 29

Analyzed by: D. Rose

	ALPHA	BETA-GAMMA
Conversion factor (cpm/Bq)	1.22E+01	1.96E+01
Background measurement (cpm)	2	27
Sample measurement (cpm)	0	26
Activity (Bq)	< MDA	< MDA
Min. Detectable Activity (Bq)	7.2E-01	1.4E+00

This certifies that the leak test results are:

Less than 185 Bq (0.005 uCi)

Greater than 185 Bq (0.005 uCi)

Rev. 9/2006

Reviewed by Andy Sht, P50
1-31-11



Troxler Electronic Laboratories, Inc.
3008 Cornwalls Rd., P.O. Box 12057
Research Triangle Park, NC 27709
Tel: (877) 876-9537 Fax: (866) 391-2759
License: NC 032-0182-1

Terry Sharp
EARTH EXPLORATION
4310-C TECHNOLOGY DRIVE
SOUTH BEND, IN 46628

Cust ID: 5093

LEAK TEST CERTIFICATE

DEVICE:

Model: 3440

Serial No: 14747

SEALED SOURCES:

Serial No.	Measure Date	Nuclide	GBq	mCi
47-10109	03/18/1987	AM-241/BE	1.48	40
50-3477	06/15/1987	CS-137	0.296	8

LEAK TEST ANALYSIS:

Sample collected on: 01/17/2011

Sample analyzed on: 01/24/2011 12:29:41 P Position: 30

Analyzed by: D. Rose

	ALPHA	BETA-GAMMA
Conversion factor (cpm/Bq)	1.22E+01	1.95E+01
Background measurement (cpm)	2	27
Sample measurement (cpm)	0	29
Activity (Bq)	< MDA	< MDA
Min. Detectable Activity (Bq)	7.2E-01	1.4E+00

This certifies that the leak test results are:

Less than 185 Bq (0.005 uCi)

Greater than 185 Bq (0.005 uCi)

Rev. 9/2006

Reviewed by Chris Sht, P50
1-31-11



Troxler Electronic Laboratories, Inc.

3008 Cornwallis Rd., P.O. Box 12057

Research Triangle Park, NC 27709

Tel: (877) 876-9537 Fax: (866) 391-2759

License: NC 032-0182-1

Terry Sharp
EARTH EXPLORATION
4310-C TECHNOLOGY DRIVE
SOUTH BEND, IN 46628

Cust ID: 5093

LEAK TEST CERTIFICATE

DEVICE:

Model: 3430

Serial No: 29621

SEALED SOURCES:

Serial No.	Measure Date	Nuclide	Bq	mCi
750-3887	07/23/1998	CS-137	0.296	8
47-26571	03/20/1998	AM-241:BE	1.48	40

LEAK TEST ANALYSIS:

Sample collected on: 01/17/2011

Sample analyzed on: 01/24/2011 12:30:53 P Position: 31

Analyzed by: D. Rose

	ALPHA	BETA-GAMMA
Conversion factor (cpm/Bq)	1.22E+01	1.95E+01
Background measurement (cpm)	2	27
Sample measurement (cpm)	1	26
Activity (Bq)	< MDA	< MDA
Min. Detectable Activity (Bq)	7.2E-01	1.4E+00

This certifies that the leak test results are:

✓ Less than 185 Bq (0.005 uCi)

- Greater than 185 Bq (0.005 uCi)

Rev. 9/2006

Reviewed by Chris Sht, RSO
1-31-11

**ANNUAL AUDIT
INDIANAPOLIS OFFICE
JANUARY, 2011**

EARTH EXPLORATION, INC. (INDIANAPOLIS, IN)
RADIATION SAFETY PROGRAM & PORTABLE NUCLEAR GAUGE AUDIT
January 25, 2011

1.AUDIT HISTORY

Inquiry	Yes	No	Remarks
a. Last audit of this location conducted on date <u>February 12, 2010</u>	X		Ninth Audit. Audit process began late Dec. 2010 and early Jan. 2011. 2 nd independent audit performed by InstronTek, Inc. on January 21, 2010.
b. Were previous audits conducted yearly?	X		Yes, as of August 4, 2008
c. Were records of previous audits maintained?	X		Yes. Audits maintained on PC and in hard copy form.
d. Were any deficiencies identified during last two audits or two years, whichever is longer?	X		Other than simple records docs, no deficiencies noted by EEI or InstronTek since NRC inspection July, 2008, and subsequent corrections made to RSP by EEI August, 2008.
e. Were corrective actions taken?	X		All matters of deficiencies corrected and continue to be discussed w/NRC through quarterly reports as required by ADR w/NRC August, 2009.

2.ORGANIZATION AND SCOPE OF PROGRAM

Inquiry	Yes	No	Remarks
a. If the mailing address or places of use changed, was the license amended?			N/A
b. If ownership changed or bankruptcy filed, was NRC prior consent obtained or was NRC notified?			N/A
c. If the RSO was changed, was license amended? Does new RSO meet NRC training requirements?			No RSO change.
d. If the designated contact person for NRC changed, was NRC notified?			No contact change.
e. Does the license authorize all of the NRC-regulated radionuclides contained in gauges possessed?	X		
f-1. Are the gauges as described in the Sealed Source and Device (SSD) Registration Certificate or Sheet? Have copies of (or access to) SSD Certificates?	X		
f-2. Have manufacturer's manuals for operation and maintenance?	X		
g. Are the actual uses of gauges consistent with the authorized uses listed on the license?	X		
h. Is RSO fulfilling his/her duties?	X		Yes. In addition, two additional employees at the Indianapolis and South Bend offices attended RSO training January of 2010, to assist the RSO.

3. TRAINING AND INSTRUCTIONS TO WORKERS

Inquiry	Yes	No	Remarks
a-1. Were all workers who are likely to exceed 100 mrem/yr instructed per [10 CFR 19.12]?	X		Exposure history of employees typically does not exceed 100 mrem/yr. ALARA and EEI radiation safety philosophy emphasized to workers.
a-2. Refresher training provided as needed [10 CFR 19.12]?			
b. Did each gauge operator attend an approved course prior to using gauges?	X		
c. Are training records maintained for each gauge operator?	X		
d. Did interviews with operators reveal that they know the emergency procedures?	X		Up-dates with operators performed on periodic basis throughout the year.
e. Did this audit include observations of operators using the gauge in a field situation? Operating gauge?	X		Multiple observations, interviews and discussions w/gauge operators performed by RSO and Asst. RSO(s) over the course of 2010. This type of activity occurred practically every work day gauges are used by the operators.
f-1. Performing routine cleaning and lubrication?	X		Routine maint. by C. Loyd, D. Troutman, and G. Schuster. See section (e.) above regarding transporting and storage of gauges.
f-2. Transporting gauge?	X		
f-3. Storing gauge?	X		
g. Did the operator(s) demonstrate safe handling and security during transportation, use and storage?	X		
h. HAZMAT training provided as required? [49 CFR 172.700, 49 CFR 172.701, CFR 172.702, 49 CFR 172.703, 49 CFR 172.704]	X		Updates made in 2010, for necessary employees. Documented and filed.

4. RADIATION SURVEY INSTRUMENTS

Inquiry	Yes	No	Remarks
a. If the licensee possesses its own survey meter, does it meet the NRC's criteria?	X		EEI maintains TroxAlert survey meter, Serial #61677. Meter calibrated Feb 5, 2010. Meter will be sent for recalibration end of January, 2011.
b. If the licensee does not possess a survey meter, are specific plans made to have one available?	N/A		
c. Is the survey meter needed for non-routine maintenance calibrated as required [10 CFR 20.1501]?	N/A		No non-routine maintenance performed. This service provided by InstroTek of Grand Rapids, Michigan.
d. Are calibration records maintained [10 CFR 20.2103(a)]?	X		Both hard copy and electronic files maintained.

5. GAUGE INVENTORY

Inquiry	Yes	No	Remarks
a. Is a record kept showing the receipt of each gauge? [10 CFR 30.51(a)(1)]	X		
b. Are all gauges received physically inventoried every six (6) months?	X		Physical inventories have been performed as required. Last performed 1-6-11.
c. Are records of inventory results with appropriate information maintained?	X		Hard copy and electronic files maintained.

6. PERSONNEL RADIATION PROTECTION

Inquiry	Yes	No	Remarks
a. Are ALARA considerations incorporated into the radiation protection program? [10 CFR 20.1101(b)]	X		ALARA philosophy constantly emphasized to gauge operators.
b. Is documentation kept showing that unmonitored users receive $\leq 10\%$ of limit? [10 CFR 20.1502(a)]	X		Survey w/ calibrated meter performed and area dosimeter maintained for soil lab techs at part-time work station close to gauge storage area as supplement to public dose calculations.
c. Did unmonitored users' activities change during the year which could put them over 10% of limit?		X	
d. If yes to c. above, was a new evaluation performed?			N/A
e. Is external dosimetry required (user receiving $>10\%$ of limit)? And is dosimetry provided to users?	X		
1) Is the dosimetry supplier NVLAP approved? [10 CFR 20.1501(c)]	X		
2) Are the dosimeters exchanged quarterly for film badges and at industry recommended frequency for TLDs?	X		Dosimeters current since August 2008.
3) Are dosimetry reports reviewed by the RSO when they are received?	X		Reviewed and signed by RSO.
4) Are the records NRC Forms or equivalent? [10 CFR 20.2104(d), 10 CFR 20.2106(c)]	X		
• NRC-4 "Cumulative Occupational Exposure History" completed?	X		
• NRC-5 "Occupational Exposure Record for a Monitoring Period" completed?	X		
5) If a worker declared her pregnancy, did licensee comply with 10 CFR 20.1208?			N/A. New pregnancy forms completed and filed.
• Were records kept of embryo fetus dose per 10 CFR 20.2106(e)?			N/A. No pregnant employees working with gauges.
f. Are records of exposures, surveys, monitoring and evaluations maintained [10 CFR 20.2102, 10 CFR 20.2103, 10 CFR 20.2106]?	X		

7. PUBLIC DOSE

Inquiry	Yes	No	Remarks
a. Are gauges stored in a manner to keep doses below 100 mrem in a year? [10 CFR 20.1301(a)(1)]	X		
b. Has a survey or evaluation been performed per 10 CFR 20.1501(a)? Have there been any additions or changes to the storage, security or use of surrounding areas that would necessitate a new survey or evaluation?		X	Recent survey performed w/survey meter. Area dosimetry supplement pdc's and that public doses are <100 mrem/yr. Area badge yearly dose equivalent = 88-91-87 mrems.
c. Do unrestricted area radiation levels exceed 2 mrem in any one (1) hour? 10 CFR 20.1301(a)(2)]		X	No, based on information above and surveys performed in 2010. Area badge still provided for soil lab as supplement to public dose calculations.
d. Are gauges being stored in a manner that would prevent unauthorized use or removal? [10 CFR 20.1801]	X		Means and methods of in-house security same as 2010. Access to storage room only by authorized gauge operators.
e. Records maintained? [10 CFR 20.2103, 10 CFR 20.2107]	X		

8. OPERATING AND EMERGENCY PROCEDURES

Inquiry	Yes	No	Remarks
a. Have operating and emergency procedures been developed?	X		Discussion with gauge operators made periodically throughout 2010.
b. Do they contain the required elements?	X		
c. Does each operator have a current copy (telephone numbers) of the operating and	X		
d. emergency procedures?	X		
e. Did any emergencies occur? If so, and were they handled properly by operator? Were appropriate corrective actions taken?		X	

9. LEAK TESTS

Inquiry	Yes	No	Remarks
a. Was each sealed source leak tested every 12 months or at other prescribed intervals? Six month testing frequency required and performed for (older) Model 3411 gauges.	X		Leak tests performed January & July 2010, and results received from Troxler Labs. All test results <185Bq (0.005 uCi).
b. Was the leak test performed as described in correspondence with NRC and according to the license?	X		
c. Are records of results retained with the appropriate information included?	X		Test results maintained in individual gauge files and electronically also.
d. Were any sources found leaking and if yes, was NRC notified?		X	All test results < 185 Bq (0.005 uCi).

10. MAINTENANCE OF GAUGES

Inquiry	Yes	No	Remarks
a. Are manufacturer's procedures followed for routine cleaning and lubrication of gauge?	X		
b. Does the source or source rod remain attached to the gauge during cleaning?	X		
c. Is non-routine maintenance performed where the source or source rod is detached from the gauge? If yes, was it performed according to license requirements (e.g., extent of work, individuals performing the work, procedures, dosimetry, survey instrument, compliance with 10 CFR 20.1301 limits?		X	No non-routine service performed by EEI. If necessary, this service is provided by InstroTek of Grand Rapids, Michigan.

11. TRANSPORTATION

Inquiry	Yes	No	Remarks
a. DOT-7A or other authorized packages used? [49 CFR 173.415, 49 CFR 173.416(b)]	X		EEL continues to improve security during transportation of gauges by purchase of several steel "jobsite" boxes, bolted to the beds of pickup trucks.
b. Package performance test records on file?	X		
c. Special form sources documentation? [49 CFR 173.476(a)]	X		Source certificates filed electronically.
d. Package has 2 labels (ex. Yellow-II) with TI, Nuclide, Activity, and Hazard Class? [49 CFR 172.403, 49 CFR 173.441]	X		On-going maintenance of labels performed as necessary. Heavy transparent tape now used to protect labels from premature wear.
e. Package properly marked? [49 CFR 172.301, 49 CFR 172.304, 49 CFR 172.310, 49 CFR 172.324]	X		
f. Package closed and sealed during transport? [49 CFR 173.475(f)]	X		
g. Shipping papers prepared and used? [49 CFR 172.200(a)]	X		
h. Shipping papers contain proper entries? {Shipping name, Hazard Class, Identification Number (UN Number), Total Quantity, Package Type, :Nuclide, RQ, Radioactive Material, Physical and Chemical Form, Activity, category of label, TI, Shipper's Name, Certification and Signature, Emergency Response Phone Number, Cargo Aircraft Only (if applicable)} [49 CFR 172.200, 49 CFR 172.201, 49 CFR 172.202, 49 CFR 172.203, 49 CFR 172.204, 49 CFR 172.604]	X		
i. Shipping papers within drivers reach and readily accessible during transport? [49 CFR 177.817 (e)]	X		
j. Secured against movement? [49 CFR 177.834]	X		As improvement to security and movement, EEL has purchased 3 new steel, locking security boxes, bolted to truck beds for the transportation of gauges.
k. Placarded on vehicle, if needed? [49 CFR 172.504]			N/A
l. Proper overpacks, if used? [49 CFR 173.25]			N/A
m. Any incidents reported to DOT? [49 CFR 171.15, 16]		X	

12. AUDITOR'S INDEPENDENT SURVEY MEASUREMENTS (IF MADE)

Inquiry	Yes	No	Remarks
a. Describe the type, location and results of measurements. Do any radiation levels exceed regulatory limits?		X	Based on previous surveys with TroxAlert survey meter, readings of <0.06 mrem/hr obtained in unrestricted areas. New survey performed 1-21-11 yielded same result.

13. NOTIFICATION AND REPORTS

Inquiry	Yes	No	Remarks
a. Was any radioactive material lost or stolen? Were reports made? [10 CFR 20.2201, 10 CFR 30.50]		X	
b. Did any reportable incidents occur? Were reports made? [10 CFR 20.2202, 10 CFR 30.50]		X	
c. Did any overexposures and high radiation levels occur? Reported? [10 CFR 20.2203, 10 CFR 30.50]		X	
d. If any events (as described in items a through c above) did occur, what was root cause? Were corrective actions appropriate?		N/A	
e. Is the licensee aware of telephone number for NRC Emergency Operations Center? [(301) 816-5100]	X		Posting on Bulletin Board.

14. POSTING AND LABELING

Inquiry	Yes	No	Remarks
a. NRC-3 "Notice to Workers" posted? [10 CFR 19.11]	X		Posting on Bulletin Board.
b. NRC regs., license documents posted or a notice posted? [10 CFR 19.11, 10 CFR 21.6]	X		
c. Other posting and labeling? [10 CFR 20.1902, 10 CFR 20-1904]	X		

15. RECORD KEEPING FOR DECOMMISSIONING

Inquiry	Yes	No	Remarks
a. Records kept of information important to decommissioning? [10 CFR 30.35(g)]	X		
b. Records include all information outlined in [10 CFR 30.35(g)]?	X		

16. BULLETINS AND INFORMATION NOTICES

Inquiry	Yes	No	Remarks
a. NRC Bulletins, NRC Information Notices, NMSS Newsletters, received?	X		All correspondence from NRC maintained in files at Indianapolis office.
b. Appropriate training and action taken in response?	X		

17. SPECIAL LICENSE CONDITIONS OR ISSUES

Inquiry	Yes	No	Remarks
a. Did auditor review special license conditions or other issues (e.g., non-routine maintenance)?	X		No special license conditions or issues.

18. DEFICIENCIES IDENTIFIED IN AUDIT; CORRECTIVE ACTIONS

Inquiry	Yes	No	Remarks
a. Summarize problems/deficiencies identified during audit.	X		Only deficiency was that RSO noted that EEI "Working Safely w/ Nuclear Gauges" agreement form needed to be signed and filed for two gauge operators.
b. If problems/deficiencies identified in this audit, describe corrective actions planned or taken. Are corrective actions planned or taken at ALL licensed locations (not just location audited)?	X		Forms discussed above executed by two employees and filed.
c. Provide any other recommendations for improvement.			Continues to self scrutinize the RSP and administered in diligent manner, in order to create a safety culture as desired by EEI and the NRC.

19. EVALUATION OF OTHER FACTORS

Inquiry	Yes	No	Remarks
a. Senior licensee management is appropriately involved with the radiation protection program and/or Radiation Safety Officer (RSO) oversight?	X		Management involvement with RSP continues to be more than in past. Quarterly, bi-yearly and yearly correspondence as a means of checks and balances now occurring between management and RSO. This includes the requirements of a Confirmatory Order (CO) as a result of the Alternative Dispute Resolution (ADR) with the NRC, August 2009. The CO requires special activities and correspondence with the NRC by EEI over the course of two years. These activities and correspondence are required of both management and the RSO. To-date, all requirements of the CO has been met by EEI.
b. RSO has sufficient time to perform his/her radiation safety duties?	X		
c. Licensee has sufficient staff to support the radiation protection program?	X		

Audit performed by Angie S. H.

Route To: R. Olson RDO

**ANNUAL AUDIT
SOUTH BEND OFFICE
JANUARY, 2011**

EARTH EXPLORATION, INC. (SOUTH BEND, IN)
RADIATION SAFETY PROGRAM & PORTABLE NUCLEAR GAUGE AUDIT
February 18, 2011

1. AUDIT HISTORY

Inquiry	Yes	No	Remarks
a. Last audit of this location completed on date <u>February 9, 2010</u>	X		Ninth Audit. Physical audit made at SB office by RSO February 10, 2011. Audit activity occurred over several days there-after and completed February 18, 2011.
b. Were previous audits conducted yearly?	X		Yes, as of August 19, 2008.
c. Were records of previous audits maintained?	X		Yes. Audits maintained on PC and in hard copy form.
d. Were any deficiencies identified during last two audits or two years, whichever is longer?	X		No deficiencies noted by RSO. RSO did note that hard copy files at SB office set up differently than Indianapolis office. Proposed continuity is made in 2011 between two offices.
e. Were corrective actions taken?	X		All matters of previous deficiencies as noted by the NRC during 2008 inspection have been corrected since 2008 and RSP continues to be discussed with NRC through quarterly reports as required by ADR w/NRC August, 2009.

2. ORGANIZATION AND SCOPE OF PROGRAM

Inquiry	Yes	No	Remarks
a. If the mailing address or places of use changed, was the license amended?			N/A
b. If ownership changed or bankruptcy filed, was NRC prior consent obtained or was NRC notified?			N/A
c. If the RSO was changed, was license amended? Does new RSO meet NRC training requirements?			No RSO change.
d. If the designated contact person for NRC changed, was NRC notified?			No contact change at SB office.
e. Does the license authorize all of the NRC-regulated radionuclides contained in gauges possessed?	X		
f-1. Are the gauges as described in the Sealed Source and Device (SSD) Registration Certificate or Sheet? Have copies of (or access to) SSD Certificates?	X		
f-2. Have manufacturer's manuals for operation and maintenance?	X		
g. Are the actual uses of gauges consistent with the authorized uses listed on the license?	X		
h. Is RSO fulfilling his duties?	X		

3. TRAINING AND INSTRUCTIONS TO WORKERS

Inquiry	Yes	No	Remarks
a-1. Were all workers who are likely to exceed 100 mrem/yr instructed per [10 CFR 19.12]?	X		Exposure history of employees has not exceeded 100 mrem/yr. ALARA reviewed and EEI philosophy emphasized to workers.
a-2. Refresher training provided as needed [10 CFR 19.12]?	X		
b. Did each gauge operator attend an approved course prior to using gauges?	X		
c. Are training records maintained for each gauge operator?	X		
d. Did interviews with operators reveal that they know the emergency procedures?	X		Updates with operators performed on a periodic basis throughout the year.
e. Did this audit include observations of operators using the gauge in a field situation? Operating gauge?	X		Use of gauges observed by J. McAlister, Asst. RSO, on continual basis, who received RSO training 1-28-10.
f-1. Performing routine cleaning and lubrication?	X		Routine lubrication, cleaning, and observations of transporting gauges by operators performed by J. McAlister, Asst RSO.
f-2. Transporting gauge?	X		
f-3. Storing gauge?	X		
g. Did the operator demonstrate safe handling and security during transportation, use and storage?	X		Since NRC Inspection of August, 2008, corrective actions implemented and maintained.
h. HAZMAT training provided as required? [49 CFR 172.700, 49 CFR 172.701, CFR 172.702, 49 CFR 172.703, 49 CFR 172.704]	X		J. McAlister up-dated January, 2009, and January 28, 2010 (RSO training). C. Stine & M. Miller up-dated 1-27-10.

4. RADIATION SURVEY INSTRUMENTS

Inquiry	Yes	No	Remarks
a. If the licensee possesses its own survey meter, does it meet the NRC's criteria?	X		EEI (South Bend) possesses a TroxAlert survey meter, Serial #315.
b. If the licensee does not possess a survey meter, are specific plans made to have one available?			N/A
c. Is the survey meter needed for non-routine maintenance calibrated as required [10 CFR 20.1501]?	N/A		No non-routine maintenance performed by EEI. This service provided by InstroTek of North Carolina.
d. Are calibration records maintained [10 CFR 20.2103(a)]?	X		

5. GAUGE INVENTORY

Inquiry	Yes	No	Remarks
a. Is a record kept showing the receipt of each gauge? [10 CFR 30.51(a)(1)]	X		
b. Are all gauges received physically inventoried every six (6) months?	X		Physical inventories have been performed every 6-months as required. Last PI for gauges performed January, 2011.
c. Are records of inventory results with appropriate information maintained?	X		

6.PERSONNEL RADIATION PROTECTION

Inquiry	Yes	No	Remarks
a. Are ALARA considerations incorporated into the radiation protection program? [10 CFR 20.1101(b)]	X		ALARA philosophy in-place and discussed periodically throughout year with gauge operators.
b. Is documentation kept showing that unmonitored users receive $\leq 10\%$ of limit? [10 CFR 20.1502(a)]	X		Surveys made and public dose calculations performed to confirm $< 10\%$ of limit.
c. Did unmonitored users' activities change during the year which could put them over 10% of limit?		X	
d. If yes to c. above, was a new evaluation performed?			N/A
e. Is external dosimetry required (user receiving $> 10\%$ of limit)? And is dosimetry provided to users?	X		
1) Is the dosimetry supplier NVLAP approved? [10 CFR 20.1501(c)]	X		
2) Are the dosimeters exchanged quarterly for film badges and at industry recommended frequency for TLDs?	X		Dosimetry testing has been performed as required.
3) Are dosimetry reports reviewed by the RSO when they are received?	X		Reviewed, signed and dated by RSO. Also reviewed by management.
4) Are the records NRC Forms or equivalent? [10 CFR 20.2104(d), 10 CFR 20.2106(c)]	X		
• NRC-4 "Cumulative Occupational Exposure History" completed?	X		
• NRC-5 "Occupational Exposure Record for a Monitoring Period" completed?	X	N/A	New pregnancy forms completed and filed.
5) If a worker declared her pregnancy, did licensee comply with 10 CFR 20.1208?			
• Were records kept of embryo fetus dose per 10 CFR 20.2106(e)?			N/A. No pregnant employees working with gauges.
f. Are records of exposures, surveys, monitoring and evaluations maintained [10 CFR 20.2102, 10 CFR 20.2103, 10 CFR 20.2106]?	X		

7.PUBLIC DOSE

Inquiry	Yes	No	Remarks
a. Are gauges stored in a manner to keep doses below 100 mrem in a year? [10 CFR 20.1301(a)(1)]	X		
b. Has a survey or evaluation been performed per 10 CFR 20.1501(a)? Have there been any additions or changes to the storage, security or use of surrounding areas that would necessitate a new survey or evaluation?	X	X	Survey performed 2-10-2011 in presence of RSO. Public dose calculations on file.
c. Do unrestricted area radiation levels exceed 2 mrem in any one (1) hour? 10 CFR 20.1301(a)(2)]		X	
d. Are gauges being stored in a manner that would prevent unauthorized use or removal? [10 CFR 20.1801]	X		
e. Records maintained? [10 CFR 20.2103, 10 CFR 20.2107]	X		

8. OPERATING AND EMERGENCY PROCEDURES

Inquiry	Yes	No	Remarks
a. Have operating and emergency procedures been developed?	X		
b. Do they contain the required elements?	X		
c. Does each operator have a current copy (telephone numbers) of the operating and	X		
d. emergency procedures?	X		
e. Did any emergencies occur? If so, and were they handled properly by operator? Were appropriate corrective actions taken?		X	

9. LEAK TESTS

Inquiry	Yes	No	Remarks
a. Was each sealed source leak tested every 6 months or at other prescribed intervals?	X		Leak tests performed yearly and results in individual gauge files. RSO reviews and signs test results. Management also reviews results.
b. Was the leak test performed as described in correspondence with NRC and according to the license?	X		
c. Are records of results retained with the appropriate information included?	X		Leak test results on file in individual gauge files. Additionally, EEI needs to change commentary on RSP regarding frequency of leak testing from 6 mos. to yearly.
d. Were any sources found leaking and if yes, was NRC notified?		X	All test results <185 Bq (0.005 uCi).

10. MAINTENANCE OF GAUGES

Inquiry	Yes	No	Remarks
a. Are manufacturer's procedures followed for routine cleaning and lubrication of gauge?	X		
b. Does the source or source rod remain attached to the gauge during cleaning?	X		
c. Is non-routine maintenance performed where the source or source rod is detached from the gauge? If yes, was it performed according to license requirements (e.g., extent of work, individuals performing the work, procedures, dosimetry, survey instrument, compliance with 10 CFR 20.1301 limits?		X	No non-routine maintenance performed by EEI. If necessary, this type of service provided by InstronTek of Grand Rapids, Michigan.

11. TRANSPORTATION

Inquiry	Yes	No	Remarks
a. DOT-7A or other authorized packages used? [49 CFR 173.415, 49 CFR 173.416(b)]	X		EEL continues to improve security of portable gauges during transportation by purchase of steel "jobsite", bolted to the beds of pickup trucks. 3 boxes at SB office.
b. Package performance test records on file?	X		
c. Special form sources documentation? [49 CFR 173.476(a)]	X		Source certificates filed electronically.
d. Package has 2 labels (ex. Yellow-II) with TI, Nuclide, Activity, and Hazard Class? [49 CFR 172.403, 49 CFR 173.441]	X		On going maintenance (replacement) of labels performed as necessary.
e. Package properly marked? [49 CFR 172.301, 49 CFR 172.304, 49 CFR 172.310, 49 CFR 172.324]	X		
f. Package closed and sealed during transport? [49 CFR 173.475(f)]	X		
g. Shipping papers prepared and used? [49 CFR 172.200(a)]	X		
h. Shipping papers contain proper entries? (Shipping name, Hazard Class, Identification Number (UN Number), Total Quantity, Package Type, :Nuclide, RQ, Radioactive Material, Physical and Chemical Form, Activity, category of label, TI, Shipper's Name, Certification and Signature, Emergency Response Phone Number, Cargo Aircraft Only (if applicable)) [49 CFR 172.200, 49 CFR 172.201, 49 CFR 172.202, 49 CFR 172.203, 49 CFR 172.204, 49 CFR 172.604]	X		
i. Shipping papers within drivers reach and readily accessible during transport? [49 CFR 177.817 (e)]	X		
j. Secured against movement? [49 CFR 177.834]	X		As improvement to security & movement, EEL has purchased another steel locking "jobsite" box to be bolted to bed of pickup truck.
k. Placarded on vehicle, if needed? [49 CFR 172.504]			N/A
l. Proper overpacks, if used? [49 CFR 173.25]			N/A
m. Any incidents reported to DOT? [49 CFR 171.15, 16]		X	

12. AUDITOR'S INDEPENDENT SURVEY MEASUREMENTS (IF MADE)

Inquiry	Yes	No	Remarks
a. Describe the type, location and results of measurements. Do any radiation levels exceed regulatory limits?		X	Based on survey with TroxAlert survey meter 2-10-11, areas within 25 ft of gauge storage room indicated no excess levels of radiation.

13.NOTIFICATION AND REPORTS

Inquiry	Yes	No	Remarks
a. Was any radioactive material lost or stolen? Were reports made? [10 CFR 20.2201, 10 CFR 30.50]		X	
b. Did any reportable incidents occur? Were reports made? [10 CFR 20.2202, 10 CFR 30.50]		X	
c. Did any overexposures and high radiation levels occur? Reported? [10 CFR 20.2203, 10 CFR 30.50]		X	
d. If any events (as described in items a through c above) did occur, what was root cause? Were corrective actions appropriate?			N/A
e. Is the licensee aware of telephone number for NRC Emergency Operations Center? [(301) 816-5100]	X		Posting on Bulletin Board.

14.POSTING AND LABELING

Inquiry	Yes	No	Remarks
a. NRC-3 "Notice to Workers" posted? [10 CFR 19.11]	X		Posting on Bulletin Board.
b. NRC regs., license documents posted or a notice posted? [10 CFR 19.11, 10 CFR 21.6]	X		
c. Other posting and labeling? [10 CFR 20.1902, 10 CFR 20-1904]	X		

15.RECORD KEEPING FOR DECOMMISSIONING

Inquiry	Yes	No	Remarks
a. Records kept of information important to decommissioning? [10 CFR 30.35(g)]	X		
b. Records include all information outlined in [10 CFR 30.35(g)]?	X		

16.BULLETINS AND INFORMATION NOTICES

Inquiry	Yes	No	Remarks
a. NRC Bulletins, NRC Information Notices, NMSS Newsletters, received?	X		All correspondence from NRC maintained in files at Indianapolis office.
b. Appropriate training and action taken in response?	X		

17.SPECIAL LICENSE CONDITIONS OR ISSUES

Inquiry	Yes	No	Remarks
a. Did auditor review special license conditions or other issues (e.g., non-routine maintenance)?			N/A

18.DEFICIENCIES IDENTIFIED IN AUDIT; CORRECTIVE ACTIONS

Inquiry	Yes	No	Remarks
a. Summarize problems/deficiencies identified during audit.			N/A
b. If problems/deficiencies identified in this audit, describe corrective actions planned or taken. Are corrective actions planned or taken at ALL licensed locations (not just location audited)?	X		N/A
c. Provide any other recommendations for improvement.			Overall radiation safety program has been administered more diligently including the monitoring of deadlines using available software.

19.EVALUATION OF OTHER FACTORS

Inquiry	Yes	No	Remarks
a. Senior licensee management is appropriately involved with the radiation protection program and/or Radiation Safety Officer (RSO) oversight?	X		Management involvement with RSP continues to be more than in the past. Quarterly, bi-yearly and yearly correspondence as a means of checks and balances continues between management and RSO. This includes the requirements of a Confirmatory Order (CO) as a result of the Alternative Dispute Resolution (ADR) with the NRC, August 2009. The CO requires special activities and correspondence with the NRC by EEI over the course of two years. These activities and correspondence are required of both management and the RSO. To-date, all requirements of the CO have been met by EEI.
b. RSO has sufficient time to perform his/her radiation safety duties?	X		
c. Licensee has sufficient staff to support the radiation protection program?	X		

Audit performed by Angela S. Holt, RSO

Route To: RO RDO KM

**CERTIFICATES OF CALIBRATION
TROXALERT PORTABLE SURVEY METERS
2011**



Troxler Electronic Laboratories, Inc.

3008 Cornwallis Rd., P.O. Box 12057

Research Triangle Park, NC 27709

Tel: (877) 876-9537 Fax: (919) 485-2250

License: NC 032-0182-1

Certificate of Calibration

TroxAlert

Model: 3105 *Serial number:* 61677
Reference: 17073 *Max scale reading:* 100

Calibration source: Cs-137 *Source serial no.* S564
Calibration energy: 662 keV *Source distance:* 54.7

<i>Instrument Scale</i>	<i>Delivered (mem/hr)</i>	<i>Measured (mem/hr)</i>	<i>Correction Factor*</i>
0 - 1.0	0.2	0.24	0.83
	0.8	0.96	
1.0 - 10	2	1.6	1.11
	8	8.2	
10 - 100	20	16	1.07
	80	90	

** Correction factor = Delivered/Measured*

Calibrated to accuracy of +/- 20% using calibration standards traceable to the National Institute of Standards and Technology. Troxler is authorized to calibrate survey instruments under North Carolina license number 032-0182-1.

Calibrated by: S. Thomas

Date: 02/28/2011

Initials:

Next Due Date: 02/28/2012



Troxler Electronic Laboratories, Inc.
3008 Cornwell Rd., P.O. Box 12067
Research Triangle Park, NC 27709
Tel: (377) 376-9537 Fax: (919) 485-2250
License: NC 032-0182-1

Certificate of Calibration

TroxAlert

<i>Model:</i>	3105	<i>Serial number:</i>	315
<i>Reference:</i>	16740	<i>Max scale reading:</i>	50
<i>Calibration source:</i>	Cs-137	<i>Source serial no.</i>	S664
<i>Calibration energy:</i>	662 keV	<i>Source distance:</i>	76.5

<i>Instrument Scale</i>	<i>Delivered (mrem/hr)</i>	<i>Measured (mrem/hr)</i>	<i>Correction Factor *</i>
0 - 0.5	0.1	0.12	0.83
	0.4	0.40	
0.5 - 5	1	0.8	1.15
	4	3.8	
5 - 50	10	9	1.02
	40	40	

* Correction factor = Delivered / Measured

Calibrated to accuracy of $\pm 2.0\%$ using calibration standards traceable to the National Institute of Standards and Technology. Troxler is authorized to calibrate survey instruments under North Carolina license number 032-0182-1.

Calibrated by: S. Thomas

Date: 02/04/2011

Initials:

Next Due Date: 02/04/2012

**INSTROTEK, INC. AUDIT OF
EARTH EXPLORATION, INC.
JANUARY 21, 2011**

January 21, 2011

Earth Exploration, Inc.
Christopher Loyd, RSO
7770 West New York Street
Indianapolis, IN 46214-2988

2011

Dear Chris,

Thank you for choosing InstroTek, Inc. to perform the Annual Audit of Radiation Protective Program for Earth Exploration, Inc.

We recognize the effort you have put into this program and the corrective actions you have taken over the years to improve your program. Listed below are our recommendations and comments based on my review of your Radiation Safety Program:

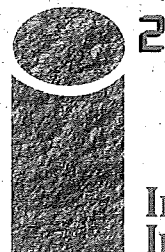
- There were two employees needing to sign EEI's agreement form "Working Safely with Nuclear Gauges". This was completed and forms sent to me. See attached documents in this package.
- The two survey meters will need to be re-calibrated in February. This needs to be performed annually and certificates filed appropriately. EEI has maintained yearly calibrations of these meters for the past two years.
- Any gauge not being removed from storage does not have to be leak tested per License requirement 13C unless it has been more than 10 years. The gauges would need to be tested before being decommissioned or used again. Due to decayed Californium moisture source EEI has one gauge (No1) that has been out of service for several years. However they have continued to leak test this gauge on either an annual or bi-annual frequency.

Attached to this letter is the check list we used for review of your program. Please review our comments in this letter as well as the check list and call us if you have any further questions or concerns.

Sincerely,



Steve James
Service Manager



InstroTek
Inc.

Annual Audit of Radiation Protection Program

Earth Exploration, Inc.
7770 West New York Street
Indianapolis, IN 46214-2988

Company Conducting the Audit: InstroTek, Inc.

Location of Audit: Earth Exploration, Inc.

Facility RSO: Christopher Loyd

1- Inventory

- First six month inventory reviewed and audited X (Yes) (No)
- Second six month inventory reviewed and audited X (Yes) (No)
- Materials in Inventory meet license requirements X (Yes) (No)
- Gauges under license leak tested (every 6 months) X (Yes) (No)
- Records kept for at least three years X (Yes) (No)

Comments: Per 3400 SS&D released by Troxler in April of 2007, all 3400 series gauges can be leak tested every 12 months. This excludes the model 3411. Any gauge not being removed from storage does not need to be leaked tested per License item 13C requirements

2- Training

- Employee training certificate on file X (Yes) (No)
- Employee Transportation Certificate Current X (Yes) (No)
- Employee Safety Training Checklist on file X (Yes) (No)
- Records kept for at least three years X (Yes) (No)
- Employees read Radiation Safety Plan X (Yes) (No)
- Employees trained in handling of gauges X (Yes) (No)
- Employees trained on securing gauges during transportation X (Yes) (No)
- Employees trained on procedures for:
 - o Stolen gauges X (Yes) (No)
 - o Gauges in accident X (Yes) (No)
 - o Sources Lodged in material X (Yes) (No)

Comments: 2 Employees were needing to sign EEI's agreement form "Working Safely with Nuclear Gauges training". Completed on 1/24/2011 see attached documents

3- Personnel Monitoring

- Quarterly or monthly reports on file X (Yes) (No)
- Reports appropriately posted X (Yes) (No)

- List of employees reviewed due to significant variation in exposure or due to pregnancy:

Comments: 2nd qtr 2010 South Bend area badge had high readings. Condition was discussed with South Bend employees and continues to be monitored with no further high reading noted. It was reported to NRC on quarterly report.

4- Possession and license review

- Possession kept within limits ☒ (Yes) ☐ (No)
- Review license for any required corrections/update ☒ (Yes) ☐ (No)

Comments: _____

5- Radiation Survey

- Survey meter in calibration ☒ (Yes) ☐ (No)
 - Area surveyed ☒ (Yes) ☐ (No)
- Max reading and location: Max @ .006mRem in front of an area badge, established in a part of the soil laboratory that is a part-time workstation/location.

Comments: The survey meters are coming due in February for calibration. Chris is aware of this and will be sending them in. EEI has maintained yearly calibration of these meters for the past two years.

6- Logs

- Gauge shipping/receiving (in/out) log accurate ☒ (Yes) ☐ (No)
- Gauge transfer file for each gauge in order ☒ (Yes) ☐ (No)
- Amendment license paperwork in order ☒ (Yes) ☐ (No)
- Amended licenses on file ☒ (Yes) ☐ (No)
- License application on file ☒ (Yes) ☐ (No)
- Current license on file ☒ (Yes) ☐ (No)
- Radiation safety plan material current and reviewed ☒ (Yes) ☐ (No)
- Special Form Certificate for all gauge models on File ☒ (Yes) ☐ (No)
- Special form certificates current ☒ (Yes) ☐ (No)
- Leak Test Paper work on File ☒ (Yes) ☐ (No)
- Transfer statement for all disposed gauges on file ☒ (Yes) ☐ (No)
- Annual audit reports on file ☒ (Yes) ☐ (No)
- Personnel monitoring reports (3 years) on file ☒ (Yes) ☐ (No)
- Proper labeling on gauge case ☒ (Yes) ☐ (No)
- Proper labeling on gauges ☒ (Yes) ☐ (No)

Comments: Radiation safety plan revised on 3/8/2010 to change phone numbers.

7- Repair and Service

- Gauges maintained according to manufacturers recommendations ☒ (Yes) ☐ (No)
- Calibrations current ☒ (Yes) ☐ (No)
Note: Only utilizing gauges that are current on calibrations
- Non-routine maintenance conducted by: Dan Troutman

8- Interviews

- Employees interviewed for improvements to the radiation safety program
☒ (Yes) ☐ (No)

Comments: RSO Chris Loyd maintains a clear avenue of communications to all of his technicians on a monthly basis regarding to Earth Exploration's Radiation Safety Plan.

9- Communications:

- Findings communicated to all employees ☒ (Yes) ☐ (No)

Date

Communication format: Memo
Date

Meeting ☒ Quarterly
Date

Audit Date: 1/21/2010

Conducted by: Steve James
InstroTek, Inc.

Steve James

Rev 1. December 16, 2009



7770 West New York Street
Indianapolis, IN 46214-2988
(317)273-1690
(317)273-2250 (FAX)

I hereby acknowledge receipt of the booklet entitled "Working Safety with Nuclear Gauges" provided by the U.S. Nuclear Regulatory Commission. I have read the information, understand the content and agree to follow the stated guidelines for proper use, transportation and emergency procedures.

Agreed to this 24TH day of JANUARY, 20 11.

By [Signature]

Printed Name LEWIS KING

c: Employee
Personnel File



7770 West New York Street
Indianapolis, IN 46214-2988
(317)273-1690
(317)273-2250 (FAX)

I hereby acknowledge receipt of the booklet entitled "Working Safety with Nuclear Gauges" provided by the U.S. Nuclear Regulatory Commission. I have read the information, understand the content and agree to follow the stated guidelines for proper use, transportation and emergency procedures.

Agreed to this 21 day of JANUARY, 20 11.

By [Signature]

Printed Name TOM SAWYER

c: Employee
Personnel File