



**UNITED STATES  
NUCLEAR REGULATORY COMMISSION**  
REGION I  
2100 RENAISSANCE BOULEVARD, SUITE 100  
KING OF PRUSSIA, PA 19406-2713

April 7, 2016

Docket No. 03038888  
EA-16-045

License No. 38-35284-01

Thomas E. Lent  
President & CEO  
Thielsch Engineering Inc.  
195 Frances Avenue  
Cranston, RI 02910

**SUBJECT: NRC INSPECTION REPORT NO. 03038888/2016001, THIELSCH  
ENGINEERING INC., CRANSTON, RHODE ISLAND**

Dear Mr. Lent:

On February 10, 2016, with continuing in-office review through March 30, 2016, John Miller and Leo Wardrobe of this office conducted a reactive and initial inspection at the above address in response to a deficiency report issued by the U.S. Navy on January 20, 2016, and reported to the NRC on January 25, 2016. The deficiency occurred at the licensee's temporary job site located at the U.S. Naval Base located in Newport, Rhode Island when an authorized user (AU) did not properly secure a portable gauge when it was not under the control or constant surveillance of an AU. As a result, U.S. Navy safety personnel at the temporary job site discovered the portable gauge was unattended and not properly secured. Our review corroborated the deficiencies detailed in deficiency report (14-C-5226 Incident 01) issued by U.S. Navy safety personnel.

The inspection also reviewed overall conduct of your licensed activities as they relate to radiation safety and to compliance with the Commission's regulations and the license conditions. The inspection consisted of observations by the inspectors, interviews with personnel, and a selective examination of representative records. The inspectors discussed the preliminary inspection findings with you, and members of your staff, Wendy Kerkhoff and Michael Pernini, at the conclusion of the on-site portion of the inspection. A final exit meeting was conducted (telephonically) with Wendy Kerkhoff and you on March 30, 2016. The enclosed report presents the results of this inspection.

Based on the results of this inspection, three apparent violations were identified and are described in the enclosed report. Two of the apparent violations are being considered for escalated enforcement action in accordance with the NRC Enforcement Policy. The current Enforcement Policy is included on the NRC's Web site at <http://nrc.gov/about-nrc/enforcement/enforce-pol.html>.

The apparent violations being considered for escalated enforcement involved the failure to control and maintain constant surveillance of licensed material that is in a controlled or unrestricted area and is not in storage as required by 10 CFR 20.1802 and the failure to use a minimum of two independent physical controls that form tangible barriers to secure a portable gauge from unauthorized removal, whenever the portable gauge was not under the control and

constant surveillance of the licensee as required by 10 CFR 30.34(i). One additional violation involved the failure to maintain a lock on a portable nuclear gauge or to maintain the gauge inside a locked container designed to prevent unauthorized and or accidental removal of the sealed source from its shielded position when not under the direct surveillance of an authorized user as required by License Condition 16 of NRC License Number 38-35284-01.

You took appropriate corrective actions following the issuance of the U.S. Navy deficiency report that included: (a) requiring the AU involved with the incident to repeat portable gauge training required of all new portable gauge users; (b) disciplining the affected AU by issuing a written warning; (c) removing the AU as the primary field technician for the project; and (d) conducting in-house training on January 27, 2016, with all portable gauge users to review the severity of the incident and to reinstruct the portable gauge users on the importance of properly securing the portable gauge and travel procedures.

The circumstances surrounding these apparent violations, the significance of the issues, and the need for lasting and effective corrective action were discussed with members of your staff at the inspection exit meeting on March 30, 2016. As a result, it may not be necessary to conduct a pre-decisional enforcement conference (PEC) in order to enable the NRC to make an enforcement decision. In addition, since your facility has not been the subject of escalated enforcement actions within the last two years or the last two inspections, and based on our understanding of your corrective actions, a civil penalty may not be warranted in this case, in accordance with Section 2.3.4 of the Enforcement Policy.

Before the NRC makes its enforcement decision, we are providing you an opportunity to either (1) respond to the apparent violations in writing, (2) request a PEC, or (3) accept the violations as characterized in this letter and its enclosure (in which case the NRC will proceed with its enforcement decision). Please contact Monica Ford, Acting Chief, Commercial, Industrial, R&D, and Academic Branch at (610) 337-5214 **within 10 days** of the date of this letter to notify the NRC whether you are interested in providing a written response, attending a PEC, or accepting the violations.

If you choose to provide a written response, it should be sent to the NRC within 30 days of the date of this letter. Your response may reference or include previously docketed correspondence. It should be clearly marked as a "Response to Apparent Violations in Inspection Report No. 03038888/2016001; EA 2016-045" and sent to the U.S. Nuclear Regulatory Commission, ATTN: Document Control Desk, Washington, DC 20555-0001 with a copy to the Regional Administrator, Region I, 2100 Renaissance Boulevard, Suite 100, King of Prussia, PA 19406.

If you choose to request a PEC, the meeting should be held in our office in King of Prussia, PA within 30 days of the date of this letter. The PEC will afford you the opportunity to provide your perspective on the apparent violations and any other information that you believe the NRC should take into consideration before making an enforcement decision. The topics discussed during the conference may include the following: information to determine whether the violations occurred, information to determine the significance of the violations, information related to the identification of the violations, and information related to any corrective actions taken or planned to be taken. The guidance in NRC Information Notice 96-28, "Suggested Guidance Relating to Development and Implementation of Corrective Action," is included on the NRC's Web site at:

<http://www.nrc.gov/reading-rm/doc-collections/gen-comm/info-notices/1996/in96028.html>, may be helpful. If a PEC is held, it will be open for public observation and the NRC will issue a press release to announce the conference time and date.

Please be advised that the number and characterization of apparent violations described in the enclosed inspection report may change as a result of further NRC review. You will be advised by separate correspondence of the results of our deliberations on this matter.

Current NRC regulations and guidance are included on the NRC's website at [www.nrc.gov](http://www.nrc.gov); select **Nuclear Materials; Med, Ind, & Academic Uses**; then **Regulations, Guidance and Communications**. The current Enforcement Policy is included on the NRC's website at [www.nrc.gov](http://www.nrc.gov); select **About NRC, Organizations & Functions; Office of Enforcement; Enforcement documents**; then **Enforcement Policy (Under 'Related Information')**. You may also obtain these documents by contacting the Government Printing Office (GPO) toll-free at 1-866-512-1800. The GPO is open from 8:00 a.m. to 5:30 p.m. EST, Monday through Friday (except Federal holidays). 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.

In accordance with 10 CFR 2.390 of the NRC's "Rules of Practice," a copy of this letter, its enclosure, and your response, if you choose to provide one, will be made available electronically for public inspection in the NRC Public Document Room or from the NRC document system (ADAMS), accessible from the NRC Web site at <http://nrc.gov/reading-rm/adams.html>. To the extent possible, your response should not include any personal privacy, proprietary, or safeguards information so that it can be made available to the Public without redaction.

Sincerely,

*/RA/*

James M. Trapp, Director  
Division of Nuclear Materials Safety

Enclosure:  
Inspection Report No. 03038888/2016001

cc w/Enclosure: Seema Dixit, State of  
Rhode Island

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Sincerely,

*/RA/*

James M. Trapp, Director  
Division of Nuclear Materials Safety

Enclosure:  
Inspection Report No. 03038888/2016001

cc w/Enclosure: Seema Dixit, State of  
Rhode Island

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DATE	03/31/16		04/01/16	04/01/16	04/07/16

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## EXECUTIVE SUMMARY

Thielsch Engineering, Inc.  
NRC Inspection Report No. 03038888/2016001

The licensee is an engineering consulting company. The license authorizes possession and use of Troxler Model 3400 and Humboldt Scientific Model 5001 series portable moisture/density gauges anywhere within NRC jurisdiction. The NRC conducted a reactive and initial inspection on February 10, 2016, at the licensee's facility located in Cranston, Rhode Island in response to a deficiency report issued by the U.S. Navy on January 20, 2016, and reported to the NRC on January 25, 2016. The event occurred at the licensee's temporary job site located at the U.S. Naval Base located in Newport, Rhode Island when an authorized user (AU) did not properly secure a portable gauge when it was not under the control or constant surveillance of an AU. As a result, safety staff at the temporary job site discovered the portable gauge was unattended and:

1. The licensee did not maintain control and constant surveillance of licensed material that was in a controlled or unrestricted area.
2. The licensee did not use a minimum of two independent physical controls that form tangible barriers to secure the portable gauge from unauthorized removal, whenever the portable gauge was not under the control and constant surveillance of the licensee.
3. The licensee did not have a lock on the portable gauge or the gauge was not inside a locked container designed to prevent unauthorized or accidental removal of the sealed source from its shielded position when not under the direct surveillance of the licensee.

Based on the results of this inspection, the NRC identified three apparent violations of NRC requirements. These violations included: (1) the failure to control and maintain constant surveillance of licensed material that is in a controlled or unrestricted area and is not in storage as required by 10 CFR 20.1802; (2) the failure to use a minimum of two independent physical controls that form tangible barriers to secure a portable gauge from unauthorized removal, whenever the portable gauge was not under the control and constant surveillance of the licensee as required by 10 CFR 30.34(i); and (3) the failure to maintain a lock on a portable nuclear gauge or to maintain the gauge inside a locked container designed to prevent unauthorized and or accidental removal of the sealed source from its shielded position when not under the direct surveillance of an authorized user as required by License Condition 16 of NRC License Number 38-35284-01.

The licensee took the following actions after issuance of the deficiency report by the U.S. Navy: (a) the AU involved with the incident was required to repeat portable gauge training required of all new portable gauge users; (b) disciplinary action consisting of a written warning was given to the affected AU by his supervisor; and (c) the AU was replaced as the primary field technician for this project. As a long-term corrective action, management conducted an in-house training on January 27, 2016, with all portable gauge users to review the severity of the incident and reinstruct the portable gauge users on the importance of properly securing the portable gauge and travel procedures.

## **REPORT DETAILS**

### **I. Organization and Scope of the Program**

a. Inspection Scope

The inspectors used the Inspection Procedure (IP) 87124 to perform the inspection.

b. Observations and Findings

Thielsch Engineering, Inc. was issued a new NRC license on December 1, 2015, and is authorized under NRC License No. 38-35284-01 to use sealed sources containing americium-241 and cesium-137 in Troxler Models 3400 series and Humboldt Scientific Model 5001 series portable moisture-density gauge(s) for measuring physical properties of materials. The licensee possesses seven portable gauges. The license authorizes use of the gauges at the licensee's temporary job sites anywhere within NRC jurisdiction. Since the issuance of the NRC license, the only work performed in NRC jurisdiction has been at the temporary jobsite located at the Newport, Rhode Island Naval Base. The license did not authorize storage of gauges anywhere within NRC jurisdiction. The licensee maintains a radioactive materials license from the State of Rhode Island that authorizes storage of these gauges at the licensee's facility in Cranston, Rhode Island. There are 12 authorized users (AUs). The licensee appointed a Radiation Safety Officer (RSO) to implement its radiation safety program.

c. Conclusions

No violations were identified.

### **II. Management Oversight of the Program**

a. Inspection Scope

The inspectors' review of management's oversight of the program included interviews with licensee personnel and a review of licensee records associated with the program.

b. Observations and Findings

The inspectors discussed the program with the RSO and determined that the RSO was actively involved in the implementation of the licensee's radiation safety program and had the required authority to ensure that licensed activities were conducted safely and in full compliance with the regulatory requirements. Since this is a new NRC license the annual audit was not due. The licensee stated that they would perform their annual audit in conjunction with the audit required for their possession of a State of Rhode Island materials license.

c. Conclusions

No violations were identified.

### III. Review of U.S. Navy Deficiency Report 14-C-5226

a. Inspection Scope

The inspectors reviewed the circumstances pertaining to the deficiency at the Naval Base at New Port, Rhode Island on January 20, 2016.

b. Observations and Findings

On January 20, 2016, a deficiency report was issued by U.S. Navy safety personnel at the Newport, Rhode Island Naval base and reported to NRC Region I personnel on January 25, 2016. The deficiency report stated that a portable gauge was discovered unattended by site safety personnel that did not have a minimum of two independent physical controls that form tangible barriers to secure a portable gauge from unauthorized removal whenever the portable gauges were not under the control and constant surveillance of the licensee and did not have a lock on the portable gauge or was inside a locked container designed to prevent unauthorized or accidental removal of the sealed source from its shielded position. The gauge was a Troxler Electronic Laboratories Model 3400 series and contains an 8 millicurie (mCi) cesium-137 source and a 40 mCi americium/beryllium source. The sources were in their shielded position at the time of the incident.

On February 10, 2016, the inspectors went to the licensee's facilities, located in Cranston, Rhode Island, to corroborate the events described in the deficiency report issued by the U.S. Navy safety personnel. The inspectors interviewed the affected AU and management personnel.

The inspectors discussed the incident with the AU who was using the gauge on January 20, 2016. The AU stated at the end of the work day he had left the portable gauge on the bed of his pick-up truck and the gauge did not have a minimum of two independent physical controls that form tangible barriers to secure a portable gauge from unauthorized removal whenever the portable gauge is not under the control and constant surveillance of the licensee (10 CFR 20.1802 and 10 CFR 30.34(i)) and in fact the licensee left the gauge unattended with no independent controls or barriers. The AU admitted that he did not have a lock on the portable gauge or the gauge was not inside a locked container to prevent unauthorized or accidental removal of the sealed source from its shielded position (License Condition 16 of NRC License 38-35284-01). He stated that he went inside the temporary jobsite office trailer to get a signature on paperwork from the site supervisor. During the time the AU was inside the trailer, Navy site safety personnel arrived and observed the portable gauge was unattended and not properly secured.

The AU indicated that normally when he is on a jobsite he maintains constant control and surveillance of the licensed material. He stated that on January 20, 2016, he had a lapse in judgement and he left the gauge unattended and the source was not locked/secured while it was in the fully shielded position. He added that while he was having his paperwork signed in the trailer, Navy site safety personnel located him and he immediately secured the portable gauge properly in the back of his pick-up truck. The

AU was informed until further notice all moisture/density testing performed by the licensee at that temporary jobsite was suspended until further notice. The inspectors completed their interview with the AU with a series of safety and regulatory questions and he demonstrated a working knowledge of operating and emergency procedures as well as DOT requirements.

The inspectors interviewed another licensee AU who also had done portable gauge work at the Newport, Rhode Island Navy Base. He also exhibited a working knowledge of his operating and emergency procedures as well as DOT requirements.

The inspectors also reviewed other aspects of the radiation safety program. The licensee had a calibrated survey meter as required by their license. Dosimetry records through December 19, 2015, were reviewed and there were no exposures above the regulatory limit. The source in the portable gauge that was used at the Navy Base was last leak tested on November 17, 2015, and the source wasn't leaking.

c. Conclusions

Three apparent violations of NRC regulations were identified: (1) the failure to control and maintain constant surveillance of licensed material that is in a controlled or unrestricted area and is not in storage as required by 10 CFR 20.1802; (2) the failure to use a minimum of two independent physical controls that form tangible barriers to secure a portable gauge from unauthorized removal, whenever the portable gauge was not under the control and constant surveillance of the licensee as required by 10 CFR 30.34(i); and (3) the failure to maintain a lock on a portable nuclear gauge or to maintain the gauge inside a locked container designed to prevent unauthorized and or accidental removal of the sealed source from its shielded position when not under the direct surveillance of an authorized user as required by License Condition 16 of NRC License Number 38-35284-01.

The licensee took the following actions after issuance of the deficiency report by the U.S. Navy: (a) the AU involved with the incident was required to repeat portable gauge training required of all new portable gauge users; (b) disciplinary action consisting of a written warning was given to the affected AU by his supervisor; and (c) the AU was replaced as the primary field technician for this project. As a long-term corrective action, management conducted an in-house training on January 27, 2016, with all portable gauge users to review the severity of the incident and reinstruct the portable gauge users on the importance of properly securing the portable gauge and travel procedures.

#### **IV. Material Use, Transportation and Security**

a. Inspection Scope

The inspectors reviewed the licensee's records and discussed the implementation of its radiation safety procedures with the RSO, including the procedures for accountability of licensed material; transportation of the gauges; the security of the portable gauges; and training of AUs.

b. Observations and Findings

As part of the review of the event discussed in Section III, the inspectors also reviewed the licensee's overall radiation safety program and implementation of approved procedures, leak test records, dosimetry records and transportation documents.

The licensee maintained training records of each AU and the records included the documentation of initial and periodic HAZMAT training of each AU. From a review of these records, the inspectors determined that the licensee's outside consultant provided the required training to AUs.

The AUs transported the gauges to job sites in Thielsch Engineering, Inc. vehicles. The inspectors reviewed copies of the documents that AUs carried while transporting the gauges to and from job sites and noted that the documents included the shipping papers containing the required information, operating and emergency procedures, a copy of the license, leak test records, and the training certificate of the AU. These documents were kept within easy reach of the AU. The transport containers of the gauges were appropriately labeled. The inspectors discussed with the AU who had used the gauge at the U.S. Naval Base Newport, Rhode Island location his training and understanding of the licensee's procedures and the associated regulatory requirements. The inspectors determined that the AU was provided the appropriate training in the use of the gauge, the security requirements, and the licensee's operating and emergency procedures. The AU was wearing his own dosimeter and he confirmed that the dosimeter was exchanged each quarter.

c. Conclusions

No violations were identified.

## **V. Exit Meeting**

On February 10, 2016, at the end of the on-site inspection, the inspectors met with the licensee's management and briefly described the preliminary findings of the inspection and explained the NRC's Enforcement Policy. The licensee reiterated its commitment to continue to abide by all regulatory requirements.

On March 30, 2016, the inspectors discussed the inspection findings via telephone with the licensee. The licensee acknowledged the findings and stated that all AUs had been made aware of the event and had been provided additional training regarding the security of gauges while transporting to job sites and using the gauges at job sites.

## **PARTIAL LIST OF PERSONS CONTACTED**

### Licensee

#\*Wendy Kerkhoff, Manager-Construction Testing Services

#Mike Pernini, RSO/Radiographer

#\*Thomas Lent, President/CEO

Jin Tian Zhu, AU/Project Manager

John Ross, AU

# - present at the site debriefing

\* - participating on the telephone exit conference

## **INSPECTION PROCEDURES USED**

NRC Inspection Procedure 87124, "Fixed and Portable Gauge Programs"

## **ITEMS OPEN, CLOSED, DISCUSSED**

Based on the results of the inspection, the NRC identified three apparent violations of NRC requirements. These violations included: (1) the failure to control and maintain constant surveillance of licensed material that is in a controlled or unrestricted area and is not in storage as required by 10 CFR 20.1802; (2) the failure to use a minimum of two independent physical controls that form tangible barriers to secure a portable gauge from unauthorized removal, whenever the portable gauge was not under the control and constant surveillance of the licensee as required by 10 CFR 30.34(i); and (3) the failure to maintain a lock on a portable nuclear gauge or to maintain the gauge inside a locked container designed to prevent unauthorized and or accidental removal of the sealed source from its shielded position when not under the direct surveillance of an authorized user as required by License Condition 16 of NRC License Number 38-35284-01.