



### Materials Inspection Record

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|--|--|--|---|---|--|
| 1. Licensee Name:<br>Jacobi Geotechnical Engineering, Inc.   |  | 2. Docket Number(s):<br>030-35293  |   | 3. License Number(s)<br>24-32231-01   |  |
| 4. Report Number(s):<br>2021001  |  |  | 5. Date(s) of Inspection:<br>December 17, 2021 to January 6, 2022 |   |  |
| 6. Inspector(s):<br>Luis Nieves  |  | 7. Program Code(s):<br>03121   | 8. Priority:<br>5   | 9. Inspection Guidance Used:<br>87124   |  |
| 10. Licensee Contact Name(s):<br>Christien Dayton, RSO   |  | 11. Licensee E-mail Address:<br>cdayton@jacobiengineer.com   |   | 12. Licensee Telephone Number(s):<br>636-978-7112   |  |
| 13. Inspection Type:   |  | 14. Locations Inspected:   |   | 15. Next Inspection Date (MM/DD/YYYY):  |  |
| <input type="checkbox"/> Initial<br><input type="checkbox"/> Routine <input checked="" type="checkbox"/> Announced<br><input checked="" type="checkbox"/> Non-Routine <input type="checkbox"/> Unannounced |  | <input checked="" type="checkbox"/> Main Office <input type="checkbox"/> Field Office<br><input type="checkbox"/> Temporary Job Site <input type="checkbox"/> Remote |   | <input type="checkbox"/> Normal <input type="checkbox"/> Extended<br><input type="checkbox"/> Reduced <input checked="" type="checkbox"/> No change |  |

16. Scope and Observations:

This was an announced, reactive inspection of a portable nuclear gauge licensee authorized to use and store portable moisture density gauges at its facility in O'Fallon, Missouri. The purpose of this inspection was to review the circumstances surrounding an incident in which a portable moisture density gauge was damaged on December 3, 2021, at a construction site in nearby Saint Peters, Missouri. The licensee reported the event the same day (EN 55625) and submitted the required 30-day report with all the required information on December 28, 2021.

On December 3, 2021, the licensee had reported the event to the NRC Operations Center about a run-over Humboldt Scientific model 5001EZ moisture density gauge (serial number 3141) that contained a 40-mCi Am-241 source and a 10-mCi Cs-137 source. The licensee was working at a construction site near Mid Rivers Mall Drive and North Saint Peters Parkway in Saint Peters, MO. The licensee gauge user was working the same area with another contractor that was working a skid loader. Both individuals had worked together at other sites and would signal one another when the skid loader was done in one area and the gauge user could test the soil. However around 11:20 am, after working for some time without a problem, the driver of the skid loader and gauge user miscommunicated and the skid loader ran over the gauge, shearing the top of the source rod off. Fortunately, the gauge user was not injured and the cesium source remained in the gauge body having been retracted into the shielded position before the impact. The gauge user immediately cordoned off the area with a perimeter of approximately 15 feet and further use of the skid loader was halted until the integrity of both sources including the cesium source could be determined. The gauge user called the Radiation Safety Officer (RSO) to notify her of the run-over gauge. The RSO called a service provider (RM Wester) and the RSO and a representative of the service provider met at the job site. A survey of the damaged gauge, the immediate work area, and the skid loader identified that neither source was leaking and were intact inside the gauge. The gauge was packaged in its transport container and the service provider took possession of it, transporting it to its nearby facility.

Performance Observations

The inspector, accompanied by the branch chief, interviewed the gauge user and the RSO at the licensee's office and concluded that the licensee, through its gauge user, had maintained adequate control and surveillance of the gauge at all times until the incident and immediately again thereafter. The inspector determined that the gauge user made a reasonable attempt to prevent the incident from occurring by communicating with the contractor skid loader operator. The inspector further determined that the gauge user followed the licensee's operating and emergency procedure following the incident, including securing the scene, creating a perimeter, calling licensee management, and surveying the gauge. The inspector concluded that the licensee's response to the incident was adequate. As

### Materials Inspection Record (Continued)

part of its corrective actions for the event, the licensee discussed the event with all of its gauge users, emphasizing the need to establish and maintain good communications with other workers operating vehicles in the area where a moisture density gauge is being used and re-emphasizing the procedure to follow if a gauge is damaged at a jobsite. The NRC determined that there were no violations of NRC regulatory requirements related to the licensee's use of radioactive material or its response to the incident.

No violations of NRC requirements were identified as a result of this inspection.

EN 55625  
NMED No. 210523 (Closed)

Christine Dayton  
Radiation Safety Officer  
Jacobi Geotechnical Engineering, Inc.  
798 Hoff Road  
O'Fallon, MO 63366

SUBJECT: NRC REACTIVE INSPECTION REPORT NO. 03035293/2021001(DNMS) –  
JACOBI GEOTECHNICAL ENGINEERING, INC.

Dear Ms. Dayton:

On December 17, 2021, an inspector from the U.S. Nuclear Regulatory Commission (NRC) conducted a reactive inspection at your facility in O'Fallon, Missouri, with continued in-office review through January 6, 2022. The purpose of the inspection was to review the circumstances surrounding your report (EN 55625) of a damaged portable moisture/density gauge at a temporary jobsite in Saint Peters, Missouri, on December 3, 2021. The in-office review included a review of your written report, dated December 28, 2021, further describing the incident. Mr. Luis Nieves of my staff presented the findings of this inspection during a final exit meeting via telephone with you on January 6, 2022.

During this inspection, the inspector interviewed you and the gauge user, and reviewed leak tests for the damaged gauge before and after the incident, area surveys after the incident, training records for the gauge user, photographs of the work area, and emergency procedures.

On December 3, 2021, the licensee had reported the event to the NRC Operations Center about a damaged Humboldt Scientific model 5001EZ moisture density gauge (serial number 3141) that contained a 40-mCi Am-241 source and a 10-mCi Cs-137 source. A gauge user for the licensee was working at a construction site near Mid Rivers Mall Drive and North Saint Peters Parkway in Saint Peters, MO. The gauge user was working the same area with another contractor that was operating a skid loader. Both individuals had worked together at other sites and would signal one another when the skid loader was done in one area and the gauge user could test the soil. However around 11:20 am, after working for some time without a problem, the driver of the skid loader and gauge user miscommunicated and the skid loader ran over the gauge, shearing off the top of the cesium-137 source rod. Fortunately, the gauge user was not injured and the cesium source remained in the gauge body having been retracted into the shielded position before the impact. The gauge user immediately cordoned off the area and further use of the skid loader was halted until the integrity of both sources including the cesium source could be determined. The gauge user called the Radiation Safety Officer (RSO) to notify her of the run-over gauge. The RSO called a service provider (RM Wester) and the RSO and a representative of the service provider met at the job site shortly thereafter. A survey of the damaged gauge, the immediate work area, and the skid loader identified that neither source

was leaking and were intact inside the gauge. The gauge was packaged in its transport container and the service provider took possession of it, transporting it to its nearby facility. As part of its corrective action, the licensee discussed the event with all of its gauge users, emphasizing the need to establish and maintain good communications with other workers operating vehicles in the area where a moisture density gauge is being used and re-emphasizing the procedure to follow if a gauge is damaged at a jobsite.

Based on the results of this inspection, the NRC has concluded that no violations of NRC requirements occurred. You are not required to respond to this letter unless the description therein does not accurately reflect your corrective actions or your position. In that case, or if you choose to provide additional information, please submit the information in accordance with the methods described in Title 10 of the *Code of Federal Regulations* (CFR) 30.6(a)(1) and (b)(2).

In accordance with 10 CFR 2.390 of the NRC's "Rules of Practice," a copy of this letter and any response you may provide will be made available electronically for public inspection in the NRC's Public Document Room or from the NRC's Agencywide Documents Access and Management System (ADAMS), accessible from the NRC's website at <http://www.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 publicly available without redaction.

Please feel free to contact Mr. Nieves of my staff if you have any questions regarding this inspection. Mr. Nieves can be reached at 630-829-9571.

Sincerely,

Michael Kunowski, Chief  
Materials Inspection Branch  
Division of Nuclear Materials Safety

Docket No. 030-35293  
License No. 24-32231-01

cc: State of Missouri

In accordance with 10 CFR 2.390 of the NRC's "Rules of Practice," a copy of this letter and any response you may provide will be made available electronically for public inspection in the NRC's Public Document Room or from the NRC's Agencywide Documents Access and Management System (ADAMS), accessible from the NRC's website at <http://www.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 publicly available without redaction.

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Sincerely,

Michael Kunowski, Chief  
Materials Inspection Branch  
Division of Nuclear Materials Safety

Docket No. 030-35293  
License No. 24-32231-01

cc: State of Missouri

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|--------|-----------------------------|-----------------------------|-----------------------------|-----------------------------|
| OFFICE | RIII-DNMS                   | RIII-DNMS                   | RIII-EICS                   | RIII                        |
| NAME   | LNieves                     | MKunowski                   | As Needed                   | As Needed                   |
| DATE   | Click here to enter a date. |

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