



Materials Inspection Record

1. Licensee Name: Hennessey Engineers, Inc.		2. Docket Number(s): 030-31333		3. License Number(s) 21-26066-01	
4. Report Number(s): 2021-001			5. Date(s) of Inspection: May 18, 2021		
6. Inspector(s): Ryan Craffey		7. Program Code(s): 03121		8. Priority: 5	9. Inspection Guidance Used: IP 87124
10. Licensee Contact Name(s): Paul Gluszak - RSO		11. Licensee E-mail Address: phgluszak@hengineers.com		12. Licensee Telephone Number(s): 734-759-1600	
13. Inspection Type: <input checked="" type="checkbox"/> Routine <input type="checkbox"/> Non-Routine <input type="checkbox"/> Initial <input type="checkbox"/> Unannounced		14. Locations Inspected: <input checked="" type="checkbox"/> Main Office <input type="checkbox"/> Field Office <input checked="" type="checkbox"/> Temporary Job Site <input type="checkbox"/> Remote		15. Next Inspection Date (MM/DD/YYYY): 05/18/2026 <input checked="" type="checkbox"/> Normal <input type="checkbox"/> Extended <input type="checkbox"/> Reduced <input type="checkbox"/> No change	

16. Scope and Observations:

This was an announced routine inspection of an engineering and construction testing firm in Southgate, Michigan, authorized to store portable moisture density gauges containing byproduct material at its office and use them for measuring the physical properties of materials at temporary job sites in NRC jurisdiction. At the time of the inspection, four individuals were authorized to use the licensee's gauges, which they did on a near-daily basis on construction projects throughout the Detroit metro area. The head of the licensee's testing department served as RSO.

In accordance with current agency policy during the Covid-19 PHE, this inspection was announced and begun remotely. The inspector interviewed the licensee's RSO via video teleconferencing to discuss the status and oversight of the radiation safety program, and reviewed via email a selection of records including program audits, physical inventories, utilization logs, leak test results, and gauge user training certificates. The inspector also reviewed personnel dosimetry results, and noted that the dose of record for one individual in particular was unusually high for a gauge user; between 2017 and 2020, this individual had received 51, 507, 745, and 813 millirem, respectively.

The inspector discussed these doses with the RSO, who said that he had noted them as well and concluded that the gauge user was receiving these exposures because he was tasked with performing routine maintenance. Since the exposures were unusual even if this were the case, the inspector decided to complete the inspection on-site.

The inspector toured the facility in Southgate to evaluate the licensee's measures for materials security, hazard communication, and exposure control. All licensed material was adequately secured behind at least two barriers. Independent surveys in the vicinity of the gauges and the storage area itself returned no unusual or excessive readings. The inspector interviewed the gauge user in question, who demonstrated adequate knowledge of radiation safety principles and ALARA practices. The inspector observed the gauge user perform routine cleaning and maintenance on one of the licensee's gauges, and later observed as he prepared the gauge for transport to a nearby job site. The inspector accompanied the user to the job site (an Amazon distribution facility under construction just south of the Detroit Metropolitan Airport in Romulus), and observed him perform several density tests. The gauge user operated the gauge with due consideration for minimizing exposure to himself and members of the public, and maintained control and constant surveillance of the gauge at all times. While there, the inspector discussed several emergency scenarios with the gauge user, who demonstrated adequate knowledge of the licensee's emergency procedures as well.

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During the observations and accompanying discussions of routine maintenance, the inspector discovered two factors which, when combined, appeared to explain the gauge user's unusual exposures: he wore his whole-body dosimeter clipped to his wrist watch, as he considered it less likely to fall off there than on his belt or safety vest; and, as part of this routine maintenance, he extended the source rod of each gauge and wiped it off with a rag in his hands. This was contrary to prohibition on handling unshielded source rods per the operating and emergency procedures in NUREG-1556 Vol. 1 Rev. 1 which the licensee committed to use in its renewal application dated December 2, 2015, and as such is a Severity Level IV violation of License Condition 19.A. The inspector concluded that the unusual exposures were an overestimate of whole-body dose, but were in fact reasonable estimates of his extremity dose.

The inspector determined that the root cause of the violation was a lack of awareness of regulatory requirements; the licensee was not aware that it had committed to the operating and emergency procedures provided in the NUREG. As a contributing factor, the operating and emergency procedures which the licensee made available to gauge users did not reiterate the prohibition on handling source rods.

As corrective action, the licensee revised its practices for maintenance to preclude handling unshielded sources, added the model procedures from the NUREG which reiterated the prohibition on handling unshielded sources to all gauge binders, sent a memo to gauge users instructing them to read the revised procedures and reminding them of the prohibition on handling unshielded sources, and committed to include this topic in the next annual refresher training class for gauge users.