

PART I - LICENSE, INSPECTION, INCIDENT/EVENT AND ENFORCEMENT HISTORY

1. AMENDMENTS AND PROGRAM CHANGES SINCE LAST INSPECTION:

No amendments issued since the last routine inspection.

In October 2016, the licensee permanently ceased principal activities at its facility in Warren. The licensee has since relocated engine testing activities (including those involving licensed material) to its facility in Pontiac, though it has not yet resumed principal activities there. The licensee is planning to decommission the Warren facility and then remove the location from the license.

2. INSPECTION AND ENFORCEMENT HISTORY:

During this routine inspection, the NRC also performed a decommissioning inspection at the licensee's facility in Warren. One violation of 10 CFR 30.36(d) was identified for the failure to provide timely notification that the licensee had decided to permanently cease principal activities in Warren, a facility which was not yet suitable for release in accordance with NRC requirements.

The NRC last conducted routine inspections of the licensee's radiation safety program on October 29, 2013, and November 3, 2016. No violations of NRC requirements were identified during either inspection.

3. INCIDENT/EVENT HISTORY:

No open items or events since the last routine inspection.

PART II - INSPECTION DOCUMENTATION

1. ORGANIZATION AND SCOPE OF PROGRAM:

General Motors (GM) was authorized by its NRC Materials License to use a variety of sealed and unsealed byproduct material for research and development and for instrument calibration. The licensee historically used this material to perform engine wear studies using activated engine components and radiolabeled compounds in engine oil at its testing facility in Warren, Michigan. At the time of the inspection, the licensee still possessed a small assortment of calibration and reference sources but had disposed of all other material – including its instrument calibration source – following its relocation of the program from Warren to a new engine testing facility in Pontiac, Michigan. The RSO, based in Pontiac, is currently awaiting approval from licensee management to resume principal activities. The RSO expects to receive that approval upon completion of decommissioning activities in Warren. Although authorized to use licensed material at a third location – the Milford Proving Grounds in Milford, Michigan – the licensee has not done so since long before the last inspection. The licensee does intend to retain this authorized location, however, in case any field testing involving licensed material were to be necessary in the future.

2. SCOPE OF DECOMMISSIONING INSPECTION:

Inspection Procedure(s) Used: 87104

Focus Areas Evaluated: Sections 03.01 and 03.02

On June 21, 2019, the licensee submitted a letter to the NRC concerning the notification of intent to decommission certain buildings and outdoor area under NRC Radioactive Materials License Number 21-0016-04. Prior to the inspection, the inspectors called the licensee to gain additional information. The licensee informed the inspectors that the buildings/outdoor areas were at the Warren facility and that principal activities had ceased. It was the licensee's intent to remediate those buildings/areas to radiation levels that would allow unrestricted release of those areas.

While on site, the inspectors toured the licensee's Warren facility to evaluate the general radiological conditions and potential radiological impacts to the decommissioning characterization and remediation program. According to the licensee, all principal licensed activities ceased at the Warren facility on or about November 2016.

The licensee was authorized for use and storage of large quantities of radioactive material in Warren. Several rooms, the basement, and an outdoor area consisting of separation tanks were visually and radiologically surveyed. Radiological contamination was found in room 196, see section 3 below for details. The radiological survey instruments used by NRC could only detect gamma while the licensee had used beta and alpha nuclides at the site in the past.

During the tour, the NRC noted that a full radiological characterization of the Warren facility had not been completed. During the inspection, the inspectors did not identify any conditions that would explicitly require a Decommissioning Plan pursuant to 10 CFR 30.36(g). However, this does not preclude the possibility that such a plan may be necessary as characterization and/or remediation of the facility continues.

3. SCOPE OF INSPECTION

Inspection Procedure(s) Used: 87126

Focus Areas Evaluated: All

The inspectors toured the facilities in Warren and Pontiac to evaluate the licensee's measures for materials security and accountability, hazard communication and exposure control. The inspectors interviewed the licensee's staff and management to discuss the status of the radiation safety program, and to assess readiness to resume licensed activities. The inspectors also reviewed a selection of records, including radiation safety committee meeting minutes, quarterly laboratory audits, air effluent evaluations, sealed source inventories, radiation safety training materials, and personnel dosimetry reports.

4. INDEPENDENT AND CONFIRMATORY MEASUREMENTS:

The inspectors conducted independent confirmatory surveys using an InSpector 1000 MultiChannel Analyzer (last calibrated on April 22, 2019) and a Ludlum Model 2241-3

survey meter with 2x2 solid-state NaI probe (also calibrated on April 22, 2019) at the Warren facility. Surveys were made of building surfaces, piping, and equipment to determine whether residual contamination under the NRC's regulatory jurisdiction was present at the facility.

In a water pipe underneath a sink in Room 196, the NaI gamma detector noted a count rate above background of approximately 25000 cpm. Using the portable multichannel analyzer, the detector estimated that 4.365 microcuries of Cs-137 and 0.394 microcuries of Co-57 were within the pipe. However, those values do not incorporate distance of the source to detector or shielding of the piping; therefore, it is anticipated the source term is higher.

With that identification of Cs-137 and Co-57 within water piping, the licensee should consider water piping, in at least room 196, and any water traps prior to discharge as radiologically contaminated above NRC regulatory release limits until proven otherwise.

The inspectors also conducted independent surveys using the same instruments at the Pontiac facility. The inspectors found no evidence of residual contamination, nor any readings which would indicate exposures to office employees or members of the public in excess of regulatory limits.

5. VIOLATIONS, NCVs, AND OTHER SAFETY ISSUES

A. Decommissioning notifications

On or about November 2016, the licensee decided to cease principal activities at the facility in Warren, Michigan. On June 21, 2019, the licensee submitted to the NRC a notification of intent to decommission a building and outdoor areas at the Warren facility.

Title 10 of the *Code of Federal Regulations* (CFR) 30.36(d) requires, in part, that licensees provide notification to the NRC in writing within 60 days of any of the following occurrences: (1) The license has expired, (2) The licensee has decided to permanently cease principal activities at the entire site or in any separate building or outdoor area that contains residual radioactivity such that the building or outdoor area is unsuitable for release in accordance with NRC requirements, (3) No principal activities under the license have been conducted for a period of 24 months, or (4) No principal activities have been conducted for a period of 24 months in any separate building or outdoor area that contains residual radioactivity such that the building or outdoor area is unsuitable for release in accordance with NRC requirements.

The licensee explained that they were not aware of the notification requirement in 2016 but that during decommissioning activities of the building, their decommissioning consultant recommended the licensee contact the NRC.

The licensee informed the inspectors that they would notify the NRC of any future decommissioning pursuant to 10 CFR 30.36(d).

B. Unauthorized possession of radium-226

During a review of the licensee's sealed source inventory, the inspectors learned that at some point during the fourth quarter of 2018 or the first quarter of 2019, the

licensee had taken possession of a Pyrotronics Model FES 5 smoke detector (s/n 47113) containing approximately 40 microcuries of radium-226 (Ra-226) sulfate at time of manufacture in June 1961. The RSO stated that other GM staff had brought the device to his attention after discovering it in an older section of the Pontiac facility. The staff requested that he take possession of the device, and, in the interest of ensuring that the device was kept in an environment where its potential hazards (such as the contact dose rate of seven millirem per hour, as measured by the inspectors) were understood and appropriately managed, the RSO agreed. Since then the source had been in secure storage within the licensee's restricted area, pending disposal at an unknown future date.

Although Conditions 6.D and 8.D of GM's license do authorize the possession of discrete sources of Ra-226 in such quantities, the source was not one approved for licensing purposes pursuant to 10 CFR 32.74 or equivalent Agreement State regulations (which govern the manufacture and distribution of sources and devices intended for medical use), as required by Condition 7.D; nor was it used for research and development as defined in 10 CFR 30.4, the only authorized use permitted by Condition 9.D.

The inspectors therefore identified a violation of 10 CFR 30.34(c) for the failure to confine the possession and use of byproduct material to the purposes authorized by the license. The inspectors determined that the root cause of the violation was the lack of awareness of licensing requirements for this source. As corrective action, the licensee: (1) collected and analyzed a leak test of the device and found no evidence of leakage; (2) committed to include this source on future inventories and perform leak tests when required; (3) queried other departments within the organization and identified no other discrete sources of radioactive material which required but lacked specific authorization from the NRC to possess; and (4) submitted a request for authorization to possess the abovementioned source in storage pending disposal at a later date.

Because this violation involved a discrete source of Ra-226, and because the licensee was unaware of the revisions made by the Energy Policy Act of 2005 which subjected such sources to NRC licensing requirements, the NRC considered the criteria in EGM-09-004, "Interim Guidance for Dispositioning Violations of Naturally Occurring and Accelerator-Produced Radioactive Materials (NARM) Requirements," to determine whether enforcement discretion was warranted. In this case, (1) the violation did not result in actual safety, security, or health consequences; (2) the violation was not willful; (3) the licensee was unaware that all discrete sources of radium-226 were now subject to NRC licensing requirements; (4) the licensee took timely and effective corrective action to request NRC approval for possession of this source in storage pending disposal. Therefore, the NRC concluded that discretion was warranted, and did not cite a violation of 10 CFR 30.34(c).

C. Readiness to resume licensed activities

The inspectors noted that all previous isotope protocols, written specifically for use of licensed material at the Warren facility, had administratively expired. The licensee acknowledged that any future use of material in Pontiac would require new protocols written specifically for that facility to be approved by the licensee's radiation safety committee (RSC), which at the time of the inspection continued to meet quarterly.

Once licensed activities have resumed, the NRC should evaluate the RSC's implementation of the approval process and a selection of approved isotope protocols to ensure that the licensee appropriately revised, reviewed, and approved them.

6. PERSONNEL CONTACTED:

- Mahmoud Abd Elhamid – General Manager
 - # Daniel Blossfeld – Radiation Safety Officer
 - Mark Fishiter – Senior Environmental Engineer
 - Sarah Howley – GHD (Decommissioning Consultant)
- # Attended exit meeting on August 12, 2019.

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