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MAWILA

DEPARTMENT OF ENVIRONMENTAL QUALITY
AIR QUALITY DIVISION
ACTIVITY REPORT: Scheduled Inspection

N805549699

FACILITY: IAV Automotive Engineering Inc.		SRN / ID: N8055
LOCATION: 15620 Technology Drive, NORTHVILLE		DISTRICT: Detroit
CITY: NORTHVILLE		COUNTY: WAYNE
CONTACT: Brian Kingsmith , Facilities Manager		ACTIVITY DATE: 07/16/2019
STAFF: Stephen Weis	COMPLIANCE STATUS: Compliance	SOURCE CLASS: SM OPT OUT
SUBJECT: Compliance inspection of the IAV Automotive Engineering, Inc. facility in Northville Township. The IAV facility is scheduled for inspection in FY 2019.		
RESOLVED COMPLAINTS:		

Location:

IAV Automotive Engineering (SRN N8055)
15620 Technology Drive
Northville Township 48168

Date of Activity:

Tuesday, July 16, 2019

Personnel Present:

Steve Weis, EGLE-AQD Detroit Office
Brian Kingsmith, Facilities Manager, IAV
Tory Laimonis, Senior Engineer, IAV
Connor Bacon, General Counsel, IAV

Purpose of Activity

A self-initiated inspection of the IAV Automotive Engineering, Inc. facility (hereinafter "IAV") was conducted on Tuesday, July 16, 2019. The IAV facility is on my list of sources targeted for an inspection during FY 2019. The purpose of this inspection was to determine compliance of operations at the IAV facility with applicable rules, regulations and standards as promulgated by Public Act 451 of 1994 (NREPA, Part 55 Air Pollution Control), with applicable Federal standards, and with the terms and conditions of Permit to Install No. 162-08A.

Facility Site Description

IAV Automotive Engineering, Inc, represents the North American subsidiary of IAV Group Worldwide, an automotive engineering and research company that is based in Germany. According to the company's website (www.iav.com), IAV employs over 7,500 people worldwide. The most recent MAERS report (2018) that was submitted by facility staff indicates that the IAV facility in Northville Township employs 180 people. Staff at this facility work in IAV's Technical/Testing group, which performs testing of automotive engines and engine catalysts, or the Engineering/Design and Energy Management groups, which is engaged in the design of engines and related components.

The IAV Northville facility is located on the east side of Technology Drive, which runs in an arc from Beck Road about ¼ mile north off 5 Mile Road, east and then south out to 5 Mile Road about ¼ mile east of Beck Road. The Permit to Install (PTI) application materials for the initial PTI that was issued to the facility, PTI No. 162-08, includes the following description of the facility:

"The facility site is approximately 4.8 acres in area and will consist of two buildings connected by a covered walkway, parking areas, and an underground fuel tank farm. The two-story front building will consist of an office area; the one-story back building will contain the engine testing area."

The facility was in the planning stages at the time that the PTI application was completed, thus the use of future tense "will" throughout the description. The building was completed consistent with this description. The back

building also contains a maintenance shop and a welding/fabrication area.

The properties in close proximity to the IAV facility feature a mix of commercial and industrial uses. The area to the northeast of 5 Mile and Beck Roads consists of a couple of streets that feature this type of land use that are part of the Northville Technology Park development. Centennial Drive, which is located to the east of the facility, runs north from 5 Mile and features Aisin World Corporation of America – Technical Center of America, Mitsubishi Electric, Meiden America Technical Center, and ZF Group North America facilities. Technology Drive features the IAV facility, SoulBrain MI (producer of electrolyte for lithium-ion batteries) and a relatively new CW Bearing USA facility to the south at 5 Mile, and a recently opened Hella Electronics Corporation North America headquarters building to the west. A building is nearing the completion of its construction directly across the street from IAV that is to house a Tenneco, Inc. automotive facility. There is a residential area (the Northville Hills Golf Club Estates residential subdivision) that is located to the north, northeast and east of the Northville Technology Park properties. The closest residences are located ¼ mile from the IAV facility.

Facility Operations

The IAV facility in Northville is a research and development facility. As referenced in the last section of this report, the front building at the facility serves as an office building that house the Engineering/Design and Energy Management groups at the facility. The back building contains the operations associated with the Technical/Testing Group. The engine testing operations, which are addressed by the facility's PTI, are located in the back building.

There are four engine test cells located in the rear (eastern) portion of the back building. The four test cells are rooms in which automotive engines are operated while specific parameters are monitored. The test cells are fitted with air intake and exhaust systems, and monitoring/analytical equipment is in place while engines are being tested to monitor operating parameters. Monitoring and analytical equipment referred to as an emissions bench is used to monitor the emissions from the engines while they are running as part of a test cycle. The PTI requires that when the engines are firing gasoline or diesel fuel, that a minimum of 95% of the usage of these fuels during testing takes place in engines that are equipped with integrated catalytic converters or other similar control devices. The testing that takes place at the IAV facility has exclusively involved engines fully equipped with control devices, and the facility has been testing diesel-fired engines for the past few years. Each test cell exhausts to the ambient air via a stack, one for each test cell.

Fuel for the engines is stored in three underground storage tanks. Tank No. 1 is a 5,200 gallon capacity dual compartment tank that is used to store and dispense diesel fuel for the diesel engine test cells. Tank No. 2 is a 10,000 gallon capacity dual compartment tank that is used to store and dispense gasoline. Tank No. 3 is a 1,000 gallon capacity tank that is used to store and dispense gasoline. I was told during the site visit that the gasoline tanks have been emptied, and that they have not been used for a few years.

The front portion of the back building is a work area used for maintenance and repair activities associated with the engines.

I was told during the site visit that the facility currently operates two 8-hour shifts Monday through Friday.

Inspection Narrative

I arrived at the facility at 12:52pm. I signed the visitor log in the lobby area, and I was soon met by Brian Kingsmith. Brian and I walked to a conference room in the office area of the facility where we were met by Tory and Connor.

We started the site visit by discussing the operations at the facility. I confirmed that the corporate information presented in the first paragraph of the Facility Description section of this report is accurate. I was told that since my last visit to the facility in 2015, the testing operations have not changed. The fuel is stored in the same underground storage tanks, and the same fuels are being used (almost exclusively diesel fuel, and no usage of the specialty fuels that are described in Special Condition II.1 of the PTI). Brian told me that the gasoline tanks have been empty and not in use for a few years. If the facility does perform a test on a gasoline-fired engine, they fuel the engine with totes or drums of gasoline.

I was told that the engine testing operations occur during two 8-hour shifts, Monday through Friday. All of the testing is performed on engines that are equipped with full catalytic controls.

I asked about the parts washers at the facility, and if the facility utilizes an emergency engine. I was told that the facility has two parts washers; they are Safety Kleen units that are serviced by Safety Kleen. The facility has a Generac diesel-fired emergency engine. IAV staff told me that the unit is sized to provide back-up power to the facility's data servers. The unit operates periodically (IAV staff thought once a month) for readiness checks. Brian told me that Wolverine Services performs maintenance inspections on the engine. I briefly discussed the Federal regulations that apply to some engines of this type. We also discussed the Federal regulation that applies to the gasoline storage tanks. I told IAV staff that I would send them some information about the requirements of these regulations.

We discussed the sulfur content requirements for the diesel fuel that is used at the facility. Brian told me that the facility always uses Marathon ultra-low sulfur diesel fuel, and that they have every incoming load of diesel fuel sampled and analyzed by Paragon Laboratories. Brian was able to show me a scanned copy of the most recently completed fuel analysis, the results of which were shared with IAV via correspondence from Paragon dated July 11, 2019. Brian provided me with a copy of this analysis, and it is attached to this report for reference.

We then discussed the facility's compliance with the PTI. Brian displayed the internal records that are maintained for the test cells on the wall of the conference room. He had the most recent monthly and 12-month rolling records (from June 2019) for CO emission calculations and fuel usage displayed. Brian explained that there are calibrated fuel meters in each test cell that monitor the exact amount of fuel that is being consumed in the engine. He said that these fuel meters are also important to track the amount of fuel use attributable to IAV's various customers for whom they run engine tests. The fuel usage tracking portion of the spreadsheet also has some information associated with Veederroot monitors. These monitors are used on the storage tanks, and they monitor draws from the tanks as well as fuel "drops", or deliveries. I was told that the information from the Veederroot monitors is not as exact as that provided by the fuel meters, but it is kept as an additional tracking mechanism. Tank levels are checked once a week, and the main fuel usage recordkeeping sheet is updated weekly.

In discussing the recordkeeping requirements in section VI of the PTI, Brian described the Fuel Cell Diary that is kept by the Testing group staff. The Diary is used to track the fuel usage during testing, whether the testing is performed with emission controls or "straight pipe", which denotes uncontrolled testing, and the run time of the tests (days and hours).

After discussing the permit, we toured the facility. Our first stop upon entering the testing building was the maintenance area, where we looked at the two parts washers. Both parts washers are Safety Kleen units – the first has a label reading "Aqueous Multi-Purpose", and the other has a label indicating that it is a Model 30 Solvent Parts Washer, Part number 1140. I requested Safety Data Sheets for the materials that are used in the two parts washers. This information is attached to this report for reference.

We then walked outside, along the south wall of the back building, where the emergency engine is located inside of a masonry partition. We opened the access door to the generator unit, and I was able to get some information from the plate affixed to the generator's engine. The unit is rated at 40kW, model number 10115820 100, serial number 2099647, and has a production date of 9/12/2008. There is a non-resettable hour meter on the unit. Brian told me that the display had to be replaced, so the number of hours that was on the old meter is written next to the display. The display reads 27 hours, and "212.5 hours" is written next to it, indicating that the engine has been operated for 239.5 hours since it was installed at the facility. I suggested to IAV staff that they create a simple tracking sheet that logs when the engine operates, and that tracks the reading on the hour meter after the unit has run.

We went back inside of the building, and we walked through the testing area. We walked into Cell #1, which was not in operation at the time. I was told that Cell #1 is a heavy-duty test cell, which the other three test cells are identical. I was able to see the AVL Fuel Mass Flow Meter in place in the test cell. I was shown some of the monitoring equipment, including an emissions bench.

After a brief discussion back in the conference room to summarize the visit, I left the facility at 2:10pm.

Permits/Regulations/Orders/Other

Permit to Install No. 162-08A was issued to IAV via correspondence dated August 13, 2012. The permit addresses the operation of four dynamometer test cells used to test various engines run on gasoline, diesel, and other fuel blends, and it superseded the original PTI (No. 162-08) that was issued to the facility to address the test cells. There is one Flexible Group (FG-TESTCELLS) that contains all of the permit conditions.

The following provides a description of IAV's compliance with the Special Conditions put forth by Permit to Install No. 162-08A:

Condition I.1 (Emission Limits) – IAV is in compliance with this requirement. IAV demonstrated compliance via their recordkeeping spreadsheet, which includes a monthly and 12 month rolling time period CO emission calculation. During the site visit, Brian showed me records up to through June 2019, the most recently completed month. The 12-month rolling CO emission total as of the end of June 2019 is 3.6588593 tons, well under the permit limit for the test cells, which is 34 tpy. A copy of the monthly and 12-month rolling records from January 2018 through June 2019 was provided to me, and they are attached to this report for reference.

Condition II.1 (Material Limits) – This condition limits the total fuel usage in the test cells to 84,800 gallons on a 12-month rolling time period basis, with no more than 2,300 gallons of "low use fuel" (this is defined in the permit condition). The records that were provided for the time period through June 2019 show a 12-month diesel usage of 22,777.5 gallons, and a 12-month gasoline usage of 1,105.747 gallons, for a 12-month rolling total fuel usage of 23,883.24 gallons. IAV did not fire any fuel defined as "low use fuel". IAV is in compliance with this condition. A copy of the monthly and 12-month rolling records for June 2019 is attached to this report for reference.

Condition II.2 (Material Limits) – This condition limits the sulfur content of fuel combusted in the engines being tested to 0.25 percent, by weight, or 2,500 ppm. As mentioned earlier, IAV has all of the incoming loads of fuel analyzed as they are received at the facility. I was provided with a copy of the most recent laboratory analysis results. The analysis indicates that the fuel sample, consisting of diesel fuel, was taken at the IAV facility on July 1, 2019. This analysis indicated a sulfur content of 2.1 ppm, which is in compliance with this permit condition. A copy of the fuel analysis correspondence from Paragon Laboratories to IAV is attached to this report.

Condition IV.1 (Design/Equipment Parameters) – This condition requires that a minimum of 95% of the fuel (both gasoline and diesel) fired in the engine test cells shall be fired in engines that are "... equipped and maintained with an integrated catalytic converter or other similar control device." IAV maintains records (the previously referenced Fuel Cell Diary, and additional records) that track whether engine testing using gasoline and diesel fuels is controlled in this way. As I was told during the site visit, all of the testing at the facility is performed on engines with full catalytic control, and the testing at the facility has involved engines controlled in this way for at least the past couple of years. IAV is in compliance with this condition.

Condition VI.1 and 2 (Monitoring/Recordkeeping) – IAV demonstrated and provided records that keep track of all of the parameters required in Special Condition VI.2a-f. The days of operation and records of whether the engine being tested is equipped with a control device are maintained in the Fuel Cell Diary. The amount of fuel used and the resulting CO emissions calculations are maintained by facility staff. IAV is in compliance with this condition.

Condition VI.3 (Monitoring/Recordkeeping) – This condition requires that records of the lead content of aviation fuel used for testing at IAV be kept. During my last visit to IAV, I was told that the only fuel that would be used at IAV, and classified as aviation fuel, would be JP-8, a military fuel. It was confirmed during this site visit that this fuel has not been used in IAV's test cells.

Condition VI.4 (Monitoring/Recordkeeping) – IAV is in compliance with this condition, as they keep records of the sulfur content of all of the fuel accepted at their facility.

Conditions VIII.1-4 (Stack/Vent Restrictions) – These special conditions put forth parameters (minimum height above ground, maximum diameter) for the stacks that vent each of the four engine test cells. I did not verify these dimensions with the facility. The MAERS report for the facility provides a stack height of 45 feet above grade for all four stacks, a stack diameter of 28 inches for SV-01, and a stack diameter of 20 inches for SV-02, SV-03 and SV-04. These dimensions are in compliance with their associated permit conditions.

IAV is also required to complete and submit a MAERS submittal for their Northville facility. The submittal was reviewed and found to be accurate and complete.

Federal Regulations

There is a **Federal NESHAP** (National Emission Standard for Hazardous Air Pollutants) for Engine Test Cells/Stands, **40 CFR Part 63, Subpart P**. This Subpart applies to owners and operators of engine test cells/stands that are located at a major source of HAP emissions; there is not a separate, so-called area source MACT for the engine test cells/stands source category. During the review of PTI No. 162-08A, AQD's Permit Unit

requested that an air toxics analysis be performed, evaluating the proposed operation of the test cells with regarding to the potential impacts of toxic air contaminants (TACs). All of the modeled impacts of the TACs that were analyzed passed their respective health-base screening levels. In addition, the permit review report for PTI No. 162-08A states that:

“This source is an area source of HAP emissions as is demonstrated by their potential VOC emissions of 1.524 tpy. Subpart P P P P P is the NESHAP for Engine Test Cells/Stands, which only requires compliance from major sources of HAP Emissions. This source will not become a major source of HAP emissions from the application, and is therefore not subject to Subpart P P P P P.”

Thus, the engine test cells at IAV are not subject to Subpart P P P P P.

Storage Tank Regulations

As referenced earlier in this report, the IAV facility has three underground fuel storage tanks used to store the fuel that is fired in the engine test cells. During my last site visit at the facility in 2015, I discussed with the facility contact at the time the possibility that these storage tanks, while not included in PTI No. 162-08A, may still be subject to regulation. I sent an e-mail to the IAV facility contact that summarized the regulations that might apply to the storage tanks. The storage tanks were discussed during this site visit, and I sent the e-mail from 2015 to Brian after the July 16, 2019 site visit for his reference.

In terms of **Federal regulations**, 40 CFR Part 63, Subpart C C C C C (National Emission Standards for Hazardous Air Pollutants for Source Category: Gasoline Dispensing Facilities) applies to the operation of gasoline storage tanks, including those used at the IAV facility. IAV utilizes their gasoline storage tanks to dispense gasoline into motor vehicle engines, in their case test engines. Per the applicability provisions of this regulation, this type of use classifies the IAV facility as a gasoline dispensing facility, or GDF. The IAV facility has a relatively low annual fuel throughput, and Subpart C C C C C puts forth limited requirements on GDFs with a monthly gasoline throughput of less than 10,000 gallons. IAV fuel usage records show current gasoline throughputs of around 200 gallons or less per month, and 1,105 gallons for the 12-month rolling time period through and including June 2019. Facilities with less than 10,000 gallons of monthly throughput do not need to submit an Initial Notification, nor a Notification of Compliance Status, to EPA relating to Subpart C C C C C. IAV, and other facilities with less than 10,000 gallons of monthly gasoline throughput, are required to implement and maintain management practices, as put forth in 40 CFR 63.11116, that prevent handling gasoline in a manner that results in vapor releases to the atmosphere for extended periods of time. Finally, IAV is also required to maintain records of gasoline throughput to demonstrate that their monthly throughput is less than 10,000 gallons. There are no Federal air quality regulations that apply to the diesel fuel storage tanks at the IAV facility. It should be noted that as of the date of the site visit, EGLE-AQD does not have delegated authority for Subpart C C C C C.

In terms of **State regulations**, some of EGLE-AQD's Part 7 rules apply to certain gasoline storage tanks. Specifically, Rule 703 requires that storage tanks at gasoline distribution facilities that were installed after July 1, 1979 and have a storage capacity of greater than 2,000 gallons be equipped with a permanent submerged fill pipe, and such tanks that are located in the metropolitan Detroit area be equipped with a vapor balance system (or an equivalent control system that has been approved by DEQ). Once again, there is not an applicable State air quality regulation that is applicable to the diesel storage tank at IAV. The storage tanks at the IAV facility are exempt from EGLE-AQD permitting requirements per the exemption criteria put forth in Michigan Administrative Rule 284(2)(g)(iii), which exempts storage and handling equipment for gasoline, gasoline blends including ethanol, diesel fuel, or natural gas the exclusively serves dynamometer facilities.

Based on the licensing of the tanks at IAV, the ongoing contract with Superior Environmental, and the relative newness of the tanks at the facility, it has been assumed that the gasoline storage tanks meet the control requirements in the Michigan Administrative Rule 703, and that the management practices put forth in 40 CFR 63.11116 have been implemented and are being maintained.

Engine Generator

The engine at the facility is a Generac, Model 10115820 100, serial number 2099647. I contacted Generac in an effort to obtain a specification sheet for the engine. I was referred Wolverine Power Systems. Brad DeJonge of Wolverine provided me with a specification sheet, obtained using the engine's serial number, which is attached to this report for reference. The specification sheet provides that the engine is EPA Certified/Compliant.

The fuel consumption rate at 100% load is 3.33 gallons per hour. The potential to emit of engines that are used

for only emergency purposes is based on 500 hours per year. Using a NOx emission factor of 515 pounds per 1,000 gallons of fuel, the potential NOx emissions can be estimated as 857.5 pounds per year.

The requirements of 40 CFR Part 63, Subpart ZZZZ (National Emission Standards for Hazardous Air Pollutants for Stationary Reciprocating Internal Combustion Engines) do not appear to apply to the engine. The engine's emergency usage should meet the exemption criteria put forth in 40 CFR 63.6585(f), and 60.6590(c) allows that engines that are subject to 40 CFR Part 60 Subpart IIII can comply with Subpart ZZZZ by meeting the requirements of Subpart IIII.

The engine is subject to the requirements of 40 CFR Part 60 Subpart IIII (Standards of Performance for Stationary Compression Ignition Internal Combustion Engines). 40 CFR 60.4211(c) and (f) put forth some of the basic requirements for an engine that is subject to the regulation; (c) puts forth the emissions requirements, and (f) addresses the operating requirements for emergency engines. It is assumed that the emissions requirements will be met by virtue of the engines being EPA-certified engines; 60.4211(c) states that an engine owner "... must comply by purchasing an engine certified to the emission standards specified in 60.4204(b), or 60.4205(b) or (c), as applicable." 60.4211(f) specifies the allowable operating hours for different scenarios in order for the engine to qualify as an emergency RICE. 60.4214(b) states that there are no notification requirements for emergency RICE.

Compliance Determination

Based upon the results of the July 16, 2019 site visit and subsequent records review, the IAV Engineering, Inc. facility appears to be in compliance with all of the terms and conditions of all applicable permit and regulations. This includes Permit to Install No. 162-08A, and the Federal and State regulations for gasoline storage tanks.

Attachments to this report: a printout of IAV's fuel usage and CO emissions calculation spreadsheet for the period from January 2018 through June 2019; a copy of the most recent fuel analysis that was referenced in the report that shows the measured sulfur content; copies of the Safety Data Sheets for the materials that are used in the facility's two cold cleaners; a copy of the specification sheet for the Generac emergency engine at the facility.

NAME

Steve Wes

DATE

7/29/19

SUPERVISOR

JK