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MAWILL

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

N805529098

FACILITY: iAV Automotive Engineering Inc.		SRN / ID: N8055
LOCATION: 15620 Technology Drive, NORTHVILLE		DISTRICT: Detroit
CITY: NORTHVILLE		COUNTY: WAYNE
CONTACT: Steve Sommers, Engineering Technician		ACTIVITY DATE: 03/06/2015
STAFF: Stephen Weis	COMPLIANCE STATUS: Compliance	SOURCE CLASS: SM OPT OUT
SUBJECT: Compliance inspection of IAV Automotive Engineering, Inc. The IAV facility is scheduled for inspection in FY 2015.		
RESOLVED COMPLAINTS:		

**Location:**

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

**Date of Activity:**

Friday March 6, 2015

**Personnel Present:**

Steve Weis, DEQ-AQD Detroit Office  
Steve Sommers, Engineering Technician of the Test Facility

**Purpose of Activity**

A self-initiated inspection of the IAV Automotive Engineering, Inc. facility (hereinafter "IAV") was conducted on Friday, March 6, 2015. IAV was on my list of sources targeted for an inspection during FY 2015. The purpose of this inspection was to determine compliance of operations at the IAV facility with applicable rules, regulations standards as promulgated by Public Act 451 of 1994 (NREPA, Part 55 Air Pollution Control) and Federal standards. The facility is also subject to the terms and conditions of Permit to Install No. 162-08A.

**Facility Description**

IAV Automotive Engineering, Inc. represents the North American subsidiary of IAV Group Worldwide, an automotive engineering company based in Germany. The company employs almost 4,500 people worldwide. According to the 2014 MAERS report, the IAV facility in Northville Twp. employs 155 people. During my last site visit, I was told that facility staff work in the Technical/Testing group, which performs testing of engines and catalysts for various clients, or the Engineering/Design and Energy Management groups, which is tasked with the design of gasoline and diesel engines.

The IAV facility in Northville is located on Technology Drive, which runs in an arc from Beck Rd., about ¼ mile north of 5 Mile Rd., out to 5 Mile Rd., about ¼ mile east of Beck Rd. Technology Drive is relatively new, and there are only a couple of other businesses along the road. The closest neighbors to the IAV facility are the ZF Group North American Operations building and the Mitsubishi Electric Automotive America facility, both of which are located just east of the IAV facility. There is a residential area (The Northville Hills Golf Club Estates subdivision) to the north and northeast of the IAV facility; the closest residences are ¼ mile away. The physical facility footprint consists of a front portion facing Technology Drive that contains offices, and the back portion that contains the engine testing facility.

**Facility Operations**

The IAV facility is a research and development facility. The operations at the facility that are directly regulated by the Air Quality Division (AQD) are the four engine test cells that are addressed by Permit to Install No. 162-08A. Currently at IAV, the engine test cells are typically operated from Monday through Friday (with occasional additional days scheduled), with two eight hour shifts each day of operation.

**Inspection Narrative**

I arrived at the facility at about 1:40pm, and I was met by Steve Sommers, Engineering Technician for the Test Facility. Steve and I began the site visit by sitting in his office and reviewing the various records that are kept by IAV.

Steve began by showing me the various spreadsheets that are used by IAV to track fuel throughput in the tank farm. Facility staff record the fuel levels in the tanks once per week, while also tracking fuel deliveries to the tanks. IAV has 5 registered storage tanks in the form of 3 underground storage tanks, described as follows:

- 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.

Steve described how these tanks are monitored. All three tanks have Class A, B and C licensing, the same licensing that gas station tanks have. IAV contracts with Superior Environmental to assess their storage tanks for compliance. Steve showed me the Class A and B Underground Storage Tank System Operator licenses that he keeps on file for Superior staff that inspect IAV's storage tanks. In addition, Steve showed me the latest report provided by Don Bloom of DEQ's Storage Tank Unit after an inspection of IAV's tank farm in August of 2014, which indicated that IAV's tanks were in compliance with applicable storage tank regulations.

I mentioned to Steve that there may be a Federal air regulation that applies to the gasoline storage tanks. This regulation is not identified in IAV's air permit (PTI No. 162-08A). I told Steve that I would look into the applicability of this regulation, and send him some information (this matter is discussed in more detail in the section of this report titled "Storage Tank Regulations").

I inquired about the testing of fuels used at the facility. Permit Special Conditions II.2, IV.3 and IV.4 address the sulfur and lead content allowed in the fuel, and require testing of the sulfur and lead content of each fuel delivery at the facility. Steve told me that all loads of fuel that are accepted at the facility for future use in the engine test cells are sampled. This protocol is in place for all types of fuel used at the facility. IAV contracts with Paragon Laboratories, who, in turn, tests fuel samples from IAV for various parameters, including the sulfur content. Special Condition IV.3 requires that all aviation fuel received on site be tested for lead content. Steve told me that no aviation fuel has been used or accepted at the facility. Regarding the sulfur content, Steve showed me correspondence from Paragon related to the analysis performed on the most recent load of diesel fuel received at the facility. Steve told me that IAV uses Marathon No. 2 Ultra-low sulfur diesel fuel in the test cells. The summary of Paragon's analysis of the diesel fuel indicates that the sulfur content of the fuel is 6 ppm, which is well below the limit of 2,500 ppm put forth in Special Condition II.2. Steve attached a copy of the analytical report from Paragon to the 2014 MAERS report; I have attached a copy to this report for reference.

As mentioned earlier, IAV staff checks the level of fuel in the fuel storage tanks once each week, and a record of fuel usage is compiled weekly. Fuel is monitored via a Veeder-Root fuel tank monitor. Fuel usage is logged in a test cell diary every morning, and these diary entries are the basis for the weekly record. The test cell diary is also used to log the operation of each test cell, tracking the run times of the engines. Steve totals the daily fuel usage records into a monthly total each test cell, and is also able to keep track of which storage tank the fuel came from. Steve showed me the spreadsheets that are used to track fuel usage information for the test cells, which is compiled on a monthly and 12-month rolling time period basis, as well as the portion of the spreadsheet that is used to calculate carbon monoxide emissions. We reviewed information for the 2014 calendar year; the 12-month rolling diesel usage was 32,359.33 gallons, and the 12-month rolling gasoline usage was 5,458 gallons.

After completing our discussion about IAV's recordkeeping system, Steve and I proceeded to walk through the portion of the building that contains the test cells. There was no testing going on at the time. We stopped at one of the test cells, and walked along the walkway on top of the cells. There are intake and exhaust pipes leading into and out of the test cells, directing things such as fuel and coolant into the test cells, and directing exhaust out of the cells. We then entered one of the test cells. Steve told me that the air that is vented to each test cell is conditioned for temperature and humidity. There is a separate room within the test cell for the engine that is being tested, and, in the adjacent test cell control room, there are computers used for various engine monitoring and diagnostic purposes adjacent to the engine room.

We left the test cells, and proceeded to the tear-down area, where engines and components are worked on in relation to testing and research and development activities. Steve showed me that all of the automotive products (oil, coolants) and cleaning products used at the facility are accounted for. Steve showed me a book containing Material Safety Data Sheets (MSDS's) that was about 3 inches thick. Steve keeps track of the usage of all of the materials used in this area, from oil to brake cleaners, even Kingsford lighter fluid. IAV uses a Safety Kleen product in this area, as well. I requested a copy of the MSDS for this product, which is attached to this report. A company called Future Environmental collects spent fluids, such as the used Safety Kleen and automotive fluids, as well as the used cleaning mats (or pig mats), which are soiled with oil and cleaners.

Steve and I summarized my visit, and discussed the information that we would still need to exchange via e-mails – I was to send him a listing of the controlled and uncontrolled emission factors for gasoline and diesel engines, as well as information regarding the regulations that would apply to the fuel storage tanks.

I left the facility at 2:50pm.

### Permits/Orders/Regulations

As previously referenced, **Permit to Install No. 162-08A** was issued to IAV via correspondence dated August 13, 2012. This permit superseded Permit to Install No. 162-08. The permit addresses the operation of four dynamometer test cells used to test various engines run on gasoline, diesel, and other fuel blends. 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, Steve and I reviewed the 2014 records; the year end 12 month rolling CO emission total was 11,996.27 lbs., or just under 6 tons. The permit limits the test cells to 34 tons of CO per year (68,000 lbs.).

Condition II.1 – 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 for calendar year 2014 that I reviewed during the site visit showed a 12 month diesel usage of 32,359.33 gallons, and a 12 month gasoline usage of 5,458 gallons, for a 12 month rolling total fuel usage of 37,817.33 gallons. IAV did not fire any fuel defined as "low use fuel". IAV is **in compliance** with this condition. A copy of the fuel usage record for 2014, which was also included with IAV's MAERS submittal, is attached to this report for reference.

Condition II.2 – 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. Steve provided a copy of the most recent analysis that was performed by Paragon Laboratories. The analysis was sent to IAV in a letter dated December 2, 2014, and indicates that the fuel sample, consisting of diesel fuel, was taken at the IAV facility, by Steve, on November 24, 2014. This analysis indicated a sulfur content of 6.0 ppm, which is **well 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 – 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's recordkeeping spreadsheets track whether engine testing using gasoline and diesel fuels is controlled in this way. There is a "catalyst Y/N" field in the records that allows IAV to separately track fuel usage and emission estimates as controlled or uncontrolled. IAV has been testing using strictly diesel fuel for quite some time, and most of the testing involves testing engine performance for compliance with EPA emission standards, which involves the use of control equipment during the test. IAV demonstrated that at least 95% of the diesel testing is performed on engines equipped with a control device. IAV is **in compliance** with this condition.

Condition VI.1 and 2 – IAV demonstrated and provided records that keep track of all of the parameters required in Special Condition VI.2a-f. IAV is **in compliance** with this condition.

Condition VI.3 – 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. I was told that this fuel has not been used in IAV's test cells. IAV is in **compliance**.

Condition VI.4 – IAV is in **compliance** with this condition, as they demonstrated that they keep records of the sulfur content of the fuel accepted at their facility.

Conditions VIII.1-4 – 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.

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 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."

Thus, the engine test cells at IAV are not subject to Subpart 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. I discussed with Steve the possibility that these storage tanks, while not included in PTI No. 162-08A, may still be subject to regulation. I researched the air regulations related to storage tanks, and presented the information that I found to Steve in an e-mail correspondence (a copy of which is attached to this report).

In terms of **Federal regulations**, 40 CFR Part 63, Subpart 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 puts forth limited requirements on GDF's with a monthly gasoline throughput of less than 10,000 gallons. IAV fuel usage records show a gasoline throughput of around 5,500 gallons for the entire 2014 calendar year. 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. 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 DEQ-AQD does not have delegated authority for Subpart C.

In terms of **State regulations**, some of DEQ-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.

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 is 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.

### **Compliance Determination**

Based upon the results of the March 6, 2015 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 copy of the special conditions for PTI 162-08A; a printout of IAV's fuel usage and emissions calculation supplemental information from their Reporting Year 2014 MAERS report; a copy of the fuel analysis that was referenced in the report that shows the measured sulfur content; a copy of the e-mail correspondence relating to the regulatory applicability of the fuel storage tanks at the facility.

NAME Steve Wern DATE 6/24/15 SUPERVISOR JK