DEPARTMENT OF ENVIRONMENTAL QUALITY
AIR QUALITY DIVISION
ACTIVITY REPORT: On-site Inspection

N788656713

FACILITY: Hyundai America Technical Center Inc. (HATCI)		**SRN / ID:** N7886
LOCATION: 6800 GEDDES RD, SUPERIOR TWP		**DISTRICT:** Jackson
CITY: SUPERIOR TWP		**COUNTY:** WASHTENAW
CONTACT: Nancy Smith, M.S. , Senior Safety/Security Engineer EHHS		**ACTIVITY DATE:** 01/19/2021
STAFF: Diane Kavanaugh Vetort	**COMPLIANCE STATUS:** Compliance	**SOURCE CLASS:** MAJOR
SUBJECT: Major Source, FCE/PCE Compliance inspection and records review		
RESOLVED COMPLAINTS:		

N7886 Hyundai-Kia America Technical Center, Inc. (HATCI), Washtenaw County.

Contact: Nancy Smith, M.S., Senior Safety/Security Engineer, office phone (734) 337-2231, Cell (734) 294-2466, email: nsmith@hatci.com

On the morning of Janaury 19, 2021, I conducted a complete, scheduled compliance inspection, announced a short time prior, at the above Hyundai America Technical Center facility (hereinafter HATCI) location in Superior Township. The purpose of the inspection was to determine the facility's compliance status with the applicable federal and state regulations, Act 451, Part 55 Air Pollution Control regulations, the administrative rules and the conditions of HATCI's Renewable Operating Permit (ROP) ROP-MI-N7886-2020.

Prior inspection was conducted on August, 2019. The most recent performance test was of one Engine Test Cell Dynamometer (EU-Dyno4) using gasoline or ethanol blend under controlled and uncontrolled scenarios, conducted on November 12, 2020. HATCI is a Title V Major Source due to having CO emissions greater than 100 tons per year. HATCI submitted 2019 MAERS timely and their ROP Certification/Deviation reports were submitted timely and indicated compliance.

Upon arrival to the site I did not observe any visible emissions or detect any odors. I provided identification at the security /reception desk. I was asked COVID-19 related safety questions and my temperature was taken. I met with Nancy Smith, Senior Environmental, Health & Safety Engineer. We held a pre-inspection conference and she accompanied me during the inspection.

During the pre- inspection conference I went over the general aspects of the inspection and informed Nancy that I needed to observe the permitted equipment and some of the exempt equipment. Due to EGLE AQD protocol during COVID-19 I previously sent an email to Nancy requesting electronic recordkeeping be submitted prior to the inspection date. All records were received timely. HATCI's ROP contains limits based on 12-month rolling periods as determined at the end of each month. I requested records for the previous 12-month period ending December 2020 (most recent complete month).

Nancy provided the following general facility information: HATCI currently employs approximately 150 people at this facility, this is down from 2019. They operate normally 6:30 AM to 5 PM, however 2nd and 3rd shifts do operate for testing. Days of operation are Monday through Friday and less often on weekends. Dynamometer engine testing can run any schedule. Nancy said the test profiles primarily run are the same part-load, developmental, durability and Wide-Open Throttle (WOT). They are permitted to burn gasoline, diesel, and natural gas. The engine testing has been mostly gasoline. Per Nancy, they have not been operating with natural gas.

Nancy informed us that generally operations have been the same with the Chassis and Dynos. I am aware from 2019 inspection that HATCI expanded their electrical and autonomous departments which included new offices, labs and engineer hires.

SIGNIFICANT UPDATES:

1. During the most recent stack testing, the engine dynamometer stacks were found to be 12.4 inches internal diameter and it was noted the permit says 12.0 maximum. Nancy stated HATCI is installing an insert to narrow them to 12.0 to address this. It appears this is an appropriate corrective action.

2. The Chassis dyno change proposed at the time of the 2019 inspection is almost completed. Chassis (EU-VEC1) was a 2 wheel and is now a 4 wheel. This is pending final set up and start up. At the time the project

was reviewed by consultant Barr and it was stated: “As for the Chassis cell 1 project, it’s really an upgrade and not an expansion. It’s basically replacing the 2-wheeler dyno with a 4-wheeler dyno and will not provide significant additional test capability for the lab as a whole.”

3. USTs: New issue, apparently failed leak tests on containment and tank monitors failed. The monitor is obsolete technology. HATCI is in the process of replacing them and refurbishing the entire UST area. Equipment has been ordered. Per Nancy this has no impact on monitoring throughput for air related requirements.

COMPLIANCE INSPECTION

During the inspection we met HATCI staff during portions of the physical inspection: Steven Williams, Technician II, Chassis Dyno lab; and Jeff Hollowell, Senior Technician, Powertrain Engine Dyno lab.

During the facility walk through inspection I observed all or portions of the following: **FG DYNOS** which includes four engine dynamometer test cells EU-Dyno1, EU-Dyno2, EU-Dyno3, EU-Dyno4; **FG-CHASSIS** which includes four Chassis dynamometers EU-VEC1, EU-VEC2, EU-VEC3, EU-MDYNE1; and **FG-UST** underground fuel storage tanks identified as EU-UST#2-3-4, EU-UST#5-6, and EU-UST#7. **FG-GASDISPGACT** gasoline dispensing facilities (GDFs) located at an area source of HAPs subject to federal MACT Subpart (6) C: EU-UST#1, EU-GASAST1, and including the above USTs.

I did not inspect the **FG-NSPS_SI-ICE** covers EU-EMERGEN a NSPS Subpart JJJJ emergency generator. **FG-MACT-ZZZZ-EMERGENCY** covers EU-FIREPUMP a MACT Subpart ZZZZ emergency generator. These are emergency use only and have been inspected several times in the past.

HATCI has installed and is operating other exempt equipment including **FG-COLDCLEANERS**. I did not observe these during today’s inspection.

HATCI ROP contains a **Source Wide Table** (all process equipment source-wide including equipment covered by other permits, grandfathered equipment and exempt equipment) with applicable requirements including emission limits and emission factors (controlled and uncontrolled), for NOx, CO, 1, 3-Butadiene, and Benzene. Most known fuels can be burned including, unleaded gasoline, ethanol blends, diesel, natural gas and hydrogen. Fuels limitation is 230,000 gallons of fuel (total combined usage of all allowed fuels) per 12 month rolling time period as determined at the end of each calendar month. Of these 75,000 gallons uncontrolled fuel is allowed per 12 month period. Wide Open Throttle (WOT) testing is considered uncontrolled. As stated above gasoline remains HATCI's primary engine fuel.

ROP: FG-CHASSIS: EU-VEC1- 3, EU-MDYNE1 (4 enclosed vehicle test stations): These emission units are identified as: EU-VEC1, EU-VEC2, EU-VEC3, and EU-MDYNE1. **Note:** An additional Chassis EU-VEC4 was later installed under permit exemption Rule 285(g) exemption and is not part of this FG. This is the flexible group containing permitted emission units where whole vehicles equipped with Catalytic Converters are tested.

The chassis dyno cells:

VEC: Cell #1 200 hp Manufacture 12-2000 (install 12-15-2005; now replaced with 4 wheel)
Cell #2 300 hp Manufacture 1-2005 (install 3-18-2005)
Cell #3 200 hp X2 Manufacture 3-2007 (install 5-22-2007)
Cell #4 300 hp X2 Manufacture 2-2013

During the inspection we walked first to the Chassis testing area and walked through to observe the test cells. We spoke to Steven Williams, Technician II Chassis Dyno lab. Chassis 1 is the Cell under construction to replace the 2 wheel dyno with a 4 wheel and to upgrade EPA required testing capabilities. I observed the new 4 wheel dyno was installed through the window. HATCI believes it will be completed by the end of this month. Chassis 2 is a 2 wheel dyno and was not operating. Chassis 3 is a 4 wheel dyno and was operating. Chassis 4 is the exempt Chassis and is a 4 wheel dyno and was operating.

The EU-MDYNE1 Chassis dyno is in a separate building behind the main building. HATCI refers to it as the "Mapping Dyno" and I observed in the past that it was not operating, and building was used for storage. Nancy confirmed the status is the same.

FG-CHASSIS special conditions require all vehicles be equipped and maintained with catalytic converter. Also requires a device to monitor and record natural gas usage rate used to fuel vehicles. Required record keeping includes days of operation, and the fuel used for vehicle testing.

Nancy and I walked into the area behind the Chassis rooms where the soak rooms and/or other types of testing (non-fuel burning) are located. Soak Booths/Rooms: two separate booths with an exhaust stack. Basically, cars are parked in these booths and shut off. They measure emissions from them without running emissions are from evaporation or off-gassing. Between these booths and the three chassis rooms there is an open room/area which is climate controlled and they do additional measurement of parked vehicles here. This area has no applicable requirements.

ROP: FG-DYNOS: Engine Test Cells (EU-Dyno1, 2, 3, 4):

We next observed the FG-DYNOS testing area. Nancy introduced me to Jeff Hollowell, Senior Technician Powertrain. I observed operations at Cell 1 and 2 with Jeff. He pointed out each Cell has a separate logbook with the test profiles, operating hours, and all other records required for the emission calculations.

HATCI refers to the Engine Test Cells as ETC#1-4 and uses North and South for engine locations in the cells. Cells 1 and 2 have two dynamometers in each cell. Only one can operate at a time, but it allows them to start the install/prep of another engine while testing. Cell 3 and 4 each has one dynamometer. Past inspection: Cell 3 is used for thermal shock (using water) and WOT. Cell 4 is used for Durability (also considered WOT). Cells 1 & 2 are usually Developmental (low fuel use), Cells 3 & 4 are Durability (higher fuel use).

ETC#1 Cell 1 – operating. Developmental 1.6 liter, 9 point part load test. Controlled gasoline test. Hardware changes, fuel economy test. Two engines were in place however only one can run at a time.

ETC#2 Cell 2 – operating. Developmental 2.2 liter, Dept of Energy gasoline controlled test.

ETC#3 Cell 3 – not operating.

ETC#4 Cell 4 – not operating. Note:This is the Dyno4 where November 2020 testing was conducted.

I have previously observed the fuel cabinets and meters within each Cell. I asked if AVL still does an annual calibration of the fuel cabinets and this was confirmed. Primary meters are AVL but they have different software. During prior inspection I was told there is a Lambda meter on exhaust referred to as a “mass flow meter” also with yearly calibrations. The “Fill-Rite meter” pre the AVL cabinet is less precise but they use this for comparison.

The Engine Dynos:

ETC#1:	AVL: P25-2/0600-2XS-1:	250 kW	(2005)
ETC#2:	AVL: P44-2/0934-2XS-1:	440 kW	(2005)
ETC#3:	AVL: Alpha 20-500 Eddy Current:	500 kW	(2005)
ETC#4:	Meiden Frec Dynamometer:	300kW	(1996) Re-Located from HATCI previous location in (2005)

Each Cell has a Day Tank (in separate room) which feeds to the fuel cabinet in each cell. The fuel metering in each cell is required to track "uncontrolled vs controlled" fuel usage/testing. Each Cell’s logbook has a shift log and every shift they read the meter and log the usage. They zero the meters weekly. During a prior inspection I was told as a precaution the operators also take a screen shot of the ending values at the end of each shift.

FG-DYNOS conditions state the tested engines must be equipped and maintained with a catalytic converter when operating in “controlled mode”. Permit condition requires that each dynamometer be equipped with a fuel usage monitor capable of separately tracking fuel usage for engine testing in controlled and uncontrolled mode where WOT is considered uncontrolled. This was verified by observing the fuel monitor and recordkeeping was obtained. FG-DYNOS requires records of days of operation, type of test performed, and length of test performed daily, quantity of fuel combusted in controlled and uncontrolled modes.

ROOF/STACKS AND UST/AST

I observed the Engine Dyno stacks from outside near the underground storage tanks (USTs). During the 2019 inspection I conducted a roof inspection and the stacks were traced from the process to the roof. requested then contact (Shawn) review their stacks and provide me with a diagram identified with the Chassis, Dynos, and Boilers. It was also suggested that labeling may be helpful.

During today's inspection Nancy and I also went outside behind the facility to observe the areas where the underground and above ground fuel storage tanks are located. The predominant fuel used/stored is gasoline. Some diesel has been used for testing and is used by fleet vehicles. I observed some rust on manhole covers and concrete cracks and this is the area that will be upgraded. I did not observe anything unusual.

Prior to this inspection I was aware of two other fuel storage/use containers being reported and part of recordkeeping but were not included in the ROP under FG-UST and FG-GASDISPGACT. These are: DieselAST2 – small above ground diesel tank, and Chassis Barrel Fuel – fuel in barrels used to directly fuel complete vehicles during chassis testing. The tanks appear to qualify under Rule 284(2) (g) (ii). HATCI is now operating two 1000-gallon gasoline fuel dispensing tanks.

FG-UST#2-3-4, #5-6, #7 Underground Storage Tanks (UST)
HATCI's primary tanks are the USTs. Gasoline fuel is prodominant fuel used for fleet vehicles, Chassis testing, and all Engine Test Cell Dynos. Nancy said they are tracking all fuel usage **by fuel additions made**. This is important for the FG-GASDISPGACT.

FG-GASDISPGACT: EU-UST1, EU-UST#2-3-4, #5-6, #7, and EU-GASAST1
HATCI flexible group includes existing and new /reconstructed GDFs located at an area HAP source that have maximum monthly **gasoline** throughput of one of the following: 1.) Less than 10,000 gallons, 2.) At least 10,000 gallons and no more than 100,000 gallons. The applicable regulation is 40 CFR 60 Subpart CCCCCC (or (6) C). The regulation requires VOC minimization measures during handling/load/unload. Records of monthly throughput are required. Historically, Barr Engineering provided requested information related to compliance. “HATCI average monthly throughput was higher than 10,000 gallons per month in 2014 – 2016, and therefore HATCI began complying with the > 10,000 gallon but less than < 100,000 gallon requirements in the ROP, as they have submerged loading on their storage tanks.”

HATCI records show as of December 2020 the 12-month rolling total throughput was 49,318.86 gallons. No gasoline throughput for December, and the highest monthly throughput was August 2020 at 9,940.24 gallons. HATCI records indicate compliance.

FG-NSPS_SI-ICE: EU-EMERGEN
HATCI currently has one Generac natural gas emergency generator located outdoors on a balcony type roof. This RICE is subject to NSPS Subpart JJJJ and was demonstrated to meet the manufacturer emission certification during the ROP Technical review. HATCI is required to follow recommended maintenance to maintain certification. It is set to automatically run one hour per week for testing. Its purpose is to keep HATCI Michigan & California computer servers operating. A non-resettable hour meter is required, and it is allowed a maximum of 100 hours per calendar year for maintenance/readiness testing. Per Nancy there were no power outages the past year. HATCI records indicate compliance.

HATCI record submittal included the annual Wolverine Power Systems Maintenance Checklist. Some minor work was recommended.

SOURCE WIDE RECORDKEEPING REVIEW:
On January 15, 2021, I received HATCI’s complete record keeping spreadsheet for period January 2020 through December 2020. HATCI Air Records Master.xlsx print out is attached to this report to be placed in AQD files.

Recordkeeping is required monthly including: the days of operation; the load the engine was tested for natural gas testing (condition limits loads to no greater than 90 percent); gallons fuel usage controlled/uncontrolled; natural gas use; monthly & 12 month rolling emission calculations (NOx, CO, 1,3-Butadiene, Benzene); average daily fuel use based on monthly fuel use divided by the number of days operated during the month; daily 1,3-Butadiene emission calculations based on monthly emissions divided by number of day operated during the month; and a record of maximum sulfur content in the diesel fuel for each delivery. HATCI is currently using Barr Engineering Consultants to assist with their record keeping.

HATCI CO emissions for the 12-month rolling period ending December 2020 = **152.71 tons CO**. This is **Compliant** with limit of 224 tons per year.

HATCI NOx emissions for the 12-month rolling period ending December 2020 = **5.72 tons NOx**. This is **Compliant** with limit of 15 tons per year.

HATCI Benzene emissions for the 12-month rolling period ending December 2020 = **0.12 tons Benzene**. This is **Compliant** with limit of 0.263 tons per year.

HATCI 1,3-Butadiene emissions are limited to 5.232 pounds per day (lbs/day). HATCI records show a monthly total and this is divided by the total operating days in the month to obtain the daily average pounds for each month. In December 2020 operated 14 days and monthly emissions = **6.24E-04 tons 1,3-Butadiene**. Daily Average emissions in lbs/day = 4.46E-05. This is **Compliant** with 5.232 lbs/day 1,3-Butadiene emission limit.

HATCI 1,3-Butadiene emissions for the 12-month rolling period ending December 2020 = 0.06015 tons 1,3-Butadiene. This is **Compliant** with limit of 0.109 tons per year.

Fuel Use is reported as gasoline only (during this 12-month period no diesel or natural gas was burned in Engine or Chassis Dynos). As of month, ending December 2020, 12-month rolling was: **60,876 gallons**. This is **Compliant** with 230,000 gallon per year limit. The highest fuel usage was during the month of August 2020 = 11,240 gallons.

Example from HATCI spreadsheet FG-DYNOS **controlled fuel use**: 36.18 gal/mo for December 2020. FG-DYNOS **uncontrolled fuel use**: 525 gal/mo for December 2020. FG-CHASSIS fuel usage: 100.90662 gal/mo for December 2020. Total = 662 gallons.

HATCI records indicate the 12-month rolling **combined fuel use** for ALL DYNOS month ending December 2020 = **60,876 gallons gasoline**. This is **compliant** with permit limit of **230,000 gallons** per 12-month rolling time period as determined at the end of each calendar month.

Of the 230,000 gallons HATCI is not to burn more than a total of **75,000 gallons of uncontrolled** fuel per 12-month rolling time period. HATCI records indicate the 12-month rolling uncontrolled fuel use for month ending December 2020 = **53,280 gallons gasoline**. This is **compliant** with the limit.

NOTE: Records include the small quantity of Diesel fuel that is burned in the Fire Pump and Emergency Generator. Also includes, the small amount of Natural Gas that is burned in other combustion equipment such as boilers and heaters. Include Cooling Tower and Cold cleaners as well.

CLOSING CONFERENCE

I indicated that the facility appeared to be in compliance with the conditions of their ROP and applicable regulations, however it is necessary that I review all the required recordkeeping prior to making this determination. I informed Nancy that a formal inspection report will be prepared and an email with a copy will be sent.

COMPLIANCE SUMMARY

The AQD has determined based on the inspection and information received that HATCI is in substantial compliance with the federal and state applicable requirements of their current ROP and with the applicable exemptions. Related records and correspondence are attached to the report to file. HATCI will report the stack diameter issue identified as a deviation. The corrective action is underway and may be completed by end of February.

COPY OF RECORDKEEPING REQUEST EMAIL 1/13/2021

The AQD is requesting that the following monitoring, recordkeeping and reporting related information be submitted on or before January 19, 2021 (proposed on-site compliance inspection). Due to the current Covid-19 concerns, records will not be reviewed or obtained on-site and are requested to be sent by email. The current ROP MI-ROP-N7886-2020 contains the referenced Tables and permit conditions below. Please provide the requested records as you are now maintaining them. The recordkeeping time period is January 2020 through December 2020 unless otherwise stated.

Source-Wide Conditions

1. **Condition VI.1-3.: Required records for the 12 month rolling time period ending December 2020.**

FG-Dynos

1. **Condition VI.1-2.: Monthly records for the 12 month rolling time period ending December 2020**

FG-Chassis

1. **Condition VI.1-2.: Monthly records for the 12 month rolling time period ending December 2020.**

FG-UST

1. **Condition VI. 1-2.: Monthly records for the 12 month rolling time period ending December 2020.**

FG-GASDISPGACT

1. **Condition VI. 1.: Records of gasoline throughput for the 12 month rolling time period ending December 2020.**

FG-NSPS_SI-ICE

1. **Condition VI. 2-3., 5.: Documentation as indicated or applicable.**

NAME Diane Kavanaugh Vetort DATE 01/27/2021 SUPERVISOR