

DEPARTMENT OF ENVIRONMENTAL QUALITY
AIR QUALITY DIVISION
ACTIVITY REPORT: Self Initiated Inspection

N1127
FY 2018 Insp
SM CMS

N112745219

FACILITY: DENSO INTERNATIONAL AMERICA INC		SRN / ID: N1127
LOCATION: 24777 DENSO DR, SOUTHFIELD		DISTRICT: Southeast Michigan
CITY: SOUTHFIELD		COUNTY: OAKLAND
CONTACT: Robert F. Townsend , Director of Environmental, Safety and Health		ACTIVITY DATE: 06/14/2018
STAFF: Iranna Konanahalli	COMPLIANCE STATUS: Compliance	SOURCE CLASS: SM OPT OUT
SUBJECT: SM CMS FY 2018 inspection of Denso International America, Inc. ("Denso")		
RESOLVED COMPLAINTS:		

Denso International America, Inc. (N1127)
24777 Denso Drive
Southfield, Michigan 48033-5244

NAIC: 541380

Name change: Nippondeso Sales, Inc. (N1127) (In Southfield, sales office opened in 1975) → Denso International America, Inc. (N1127)

Rule 702 VOC BACT: No control.

ROP & MACT Synthetic Minor PTI No. 452-85C (FG-FACILITY, I.1-4 limits: CO < 89 tpy; VOC < 89 tpy; Single HAP < 8.9 tpy; and Aggregate HAPs < 22.4 tpy).

PTI Mods: PTI No. 452-85 dated June 11, 1985 → PTI No. 452-85A dated Oct 11, 2011 (ROP opt-out as result of Apr 19, 2011, VN); PTI No. 452-85A → PTI No. 452-85B dated Sep 13, 2012 (like-for-like [Cell1 500 hp dyno] replacement and software update); and 452-85B → PTI No. 452C dated August 18, 2016 (to allow the replacement of major components in EU-TESTCELL2 such as software, engine control equipment, and other physical equipment; not deemed new test cell for the purpose of this permit but rebuild/reconstruction for Federal Regulations; June 9, 2016, letter from Townsend stated that Cell2 would be modified and three boilers would be installed [336.1282]).

PTI Voids: PTI Nos. 452-85 dated Feb 19, 1988 (voided on Oct 11, 2011); 452-85A dated October 11, 2011 (voided on Sept 13, 2012) PTI No. 452-85B dated Sep 13, 2012 (voided on August 18, 2016).

VN: AQD issued Violation Notice (VN) dated April 19, 2011 for Rule 336.1201 (installed start-stop engines without obtaining a permit). AQD also suggested to obtain an ROP opt-out permit. As a result, Denso revised the permit (PTI No. 452-85 → PTI No. 452-85A)

Emergency generators (5: increased from 3 to 5; November 16, 2016, letter from Robert F. Townsend stated that two additional 1 MW CI RICE Emergency Generators were installed pursuant to Rule 336.1285(2)(g)) may be subject to Area Source NESHAP / MACT ZZZZ or 4Z, Standards of Performance for Stationary Spark Ignition Internal Combustion Engines and National Emission Standards for Hazardous Air Pollutants for Reciprocating Internal Combustion Engines; New Source Performance Standards for Stationary Internal Combustion Engines / Final rule (Page 6674 Federal Register / Vol.

78, No. 20 / Wednesday, January 30, 2013 / Rules and Regulations / Final rule.) AQD has no delegation of these standards and therefore no attempt has been made to evaluate the Denso's compliance with NESHAP / MACT 4 Z. However, compliance with NSPS 4I is deemed to be compliance with NESHAP / MACT 4 Z.

Not subject to (synthetic minor for MACT / not a MACT major source due to Synthetic Minor PTI No. 452-85C): Major Source NESHAP / MACT 5P, 40 CFR Part 63, Subpart P, National Emission Standards for Hazardous Air Pollutants: Engine Test Cells/Stands, (Page 28774, Federal Register / Vol. 68, No. 101 / Tuesday, May 27, 2003 / Rules and Regulations) / Final rule. Principal HAPs emitted are toluene, benzene, mixed xylenes, 1,3-butadiene, etc.

Three (3: one installed in 2006 and two installed in Dec 2016) of five (5) CI RICE emergency generators are subject to NSPS 4I for generators: NSPS IIII or 4I, New Source Standards of Performance for Stationary Compression Ignition (CI) Internal Combustion (IC) Engines, 39154 Federal Register / Vol. 71, No. 132 / Tuesday, July 11, 2006 / Rules and Regulations / Final Rule. Generators 1 and 2 were installed at DIAM in 1988 (manufactured before April 1, 2006) and hence are not subject to NSPS 4I. Three of five CI RICE Diesel Generators are subject to NSPS 4I based upon manufacture date (on or after April 1, 2006). Denso provided corresponding copies of US EPA Certifications for the of CI (Diesel) RICE engines to show that the NSPS 4I emission limits are met.

On June 14, 2018, I conducted a level-2 **SM CMS FY 2018 inspection** of Denso International America, Inc. ("Denso"), fka Nippondeso Sales, Inc., located at 24777 Denso Drive, Southfield, Michigan 48034-5244. The inspection was conducted to determine compliance with the Federal Clean Air Act; Article II, Part 55, Air Pollution Control, of the Natural Resources and Environmental Protection Act, 1994 PA 451; Michigan Department of Environmental Quality, Air Quality Division (MDEQ-AQD) administrative rules; and the ROP opt-out permit.

During the inspection, Mr. Gary Godin (Phone: 248-372-8239; Fax: NA; Cell: 248-789-6597; E-mail: Gary_Godin@denso-diam.com; Mail Code: 4330), Senior Environmental Engineer, and Ms. Faith Forbush (Phone: 248-784-6841; Fax: NA; Cell: NA; E-mail: Faith_Forbush@denso-diam.com; Mail Code: 4330), Specialist, Safety, Health & Environment, assisted me. Also, Ms. Laura Johnston (E-mail: Laura_Johnston@denso-diam.com), student intern, was present.

Mr. Robert Pleva (Phone: 248-784-6811; Fax: NA; Cell: NA; E-mail: Robert_Pleva@denso-diam.com; Mail Code: 4330), CSP, Environmental Engineer, Safety, Health and Environment, transferred to North American Projects Group. Hence, Mr. Pleva has nothing to do with Environmental and Safety issues.

Mr. James M. Laney (Phone: 248-750-3803; Fax: NA; Cell: 248-255-3508; E-mail: James_Laney@denso-diam.com; Mail Code: 6012), Senior Manager, North America Safety, Health & Environmental, was not present during the inspection.

Mr. Robert F. Townsend (Phone: 248-372-8237; Fax: 248-213-2381; Cell: 248-521-4896; E-mail: Robert_townsend@denso-diam.com), VP of Corporate Service, did not participate during the inspection. Ms. Kate Darga (Phone: 248-372-8392; fax: NA; Cell: 248-721-0897; E-mail: Kathryn_Darga@denso-diam.com), Environmental Safety and Health Specialist, was not present.

Mark Poll (Phone: 248-372-8232; fax: 248-213-2551; E-mail: Mark_Poll@denso-diam.com), Environmental Safety and Health Specialist, separated about 2013.

Ms. M. Suzanne Anderson (Ph: 248-372-8693; Fax: 248-213-2551; E-mail: Suzanne_anderson@denso-diam.com; Mail Code: 4300), Corporate Counsel, was not present.

Denso International America (Denso), an American subsidiary of Denso Corporation of Japan, has, at Southfield, 16.5-acres R & D campus. There are three buildings with 244,000 square feet office space. Of 244,000 square feet total office space, 123,000 sq. ft. is dedicated to vehicle component development business. About 2014, Denso purchased two new practically adjacent buildings (20 & 40) that are used only as office space.

At the Southfield campus, Denso conducts research and development (R & D), testing, administrative, sales and marketing and corporate office activities. Manufacturing is not taking place. The Technical Center operations include engineering, design, prototype, testing and calibration of automotive components including emissions controls, fuel systems, air intake systems, ignition systems, alternators, air-conditioning systems, relays, controls, etc.

PTI No. 452-85C Emission Unit Summary

Emission Unit ID	Emission Unit Description (Process Equipment & Control Devices)	Installation Date / Modification Date	Flexible Group ID
EUTESTCELL1	Engine dynamometer test cell with a maximum capacity of 500 HP	2/19/1988/ 10/1/2012	FGTESTCELLS FGFACILITY
EUTESTCELL2	Engine dynamometer test cell with a maximum capacity of 500 HP	2/19/1988/ 08/18/2016	FGTESTCELLS FGFACILITY
Changes to the equipment described in this table are subject to the requirements of R 336.1201, except as allowed by R 336.1278 to R 336.1290.			

PTI No. 452-85C Flexible Group Summary

Flexible Group ID	Flexible Group Description	Associated Emission Unit IDs
FGTESTCELLS	Two engine dynamometer test cells	EUTESTCELL1 EUTESTCELL2
FGFACILITY	All process equipment source-wide including equipment covered by other permits, grand-fathered equipment and exempt equipment.	

PTI No. 452-85C: two chambers (EU-TestCell1 and EU-TestCell2)

On September 13, 2012, AQD approved PTI No. 452-85B for like-for-like replacement of existing dynamometer (Cell1). However, replacement dyno has upgraded software and monitoring capability. All PTI No. 452-85A conditions were transferred PTI No. 452-85B without change. On August 18, 2016, AQD approved PTI No. 452-85C to allow major replacements in Cell2 (upgraded from 250 HP to 500 HP).

Two chambers (Cell1 500 max hp and Cell2 500 (increased from 250 with PTI No. 452-85C) max hp: the max power engine can handle) of engine dynos consisting of one engine per chamber were installed about 1988 per Permit-to-Install No. 452-85 (modification PTI No. 452-85 → PTI No. 452-85A added ROP opt-out conditions). Only requirement of PTI No. 452-85 was that it limited dynos to zero percent opacity. The test cells do not have significant visible emissions potential. During the inspection, dynos were idled. Diesel testing is not done anymore.

An enclosure box was built around Cell-1 engine about February 2014.

Cell1: 500 hp dyno was replaced with one new dyno rated 500 hp with software upgrades. This was deemed like-for-like replacement. The only difference between the new dynamometer and the old dynamometer is software and monitoring capabilities. In September 2012, the permit was revised (PTI No. 452-85A → PTI No. 452-85B).

Cell2: 250 hp dyno was replaced with one new dyno rated 500 hp with software upgrades. In August 2016, the permit was revised (PTI No. 452-85B → PTI No. 452-85C).

Two start-stop engines were installed in Cell1; see Apr 19, 2011, Violation Notice. Subsequently, AQD (Lyn Fiedler) has allowed the start-stop engines installation according Rule 285(2)(g) PTI exemption subject to Rule 278 restrictions. According to Rule 285(2)(g), additional start-stop engines are installed in the start-stop chamber (previously known as Temperature chamber). Start-stop engine program is practically phased out due to maturing of the program (as of June 2018). Separate start-stop chamber is now seldom used.

September 4, 2013, letter – installation of exempt equipment

According to Gary Godin's letter dated September 4, 2013, Denso installed the following equipment / processes:

1. Contamination test bench for hydraulic testing - 283(1)(c).
2. Hydropulse test bench - 283(1)(c). One common smog-hog cartridge filter system for two benches
3. Carbon canister loading test bench - 283(a)(ii) and (iii). On-board vapor recovery unit for cars and trucks to capture gas tank emissions
4. Start-stop test stands for diesel fuel – 285(g). About 900 gallons of diesel will be used. AQD Chief Lynn Fiedler approved this exemption. However, start-stop engine program is practically phased out as of August 2017.

June 9, 2015, letter – installation of exempt equipment

According to Robert Townsend's letter dated June 09, 2015, Denso would be installing the following equipment / processes:

1. Denso would be replacing or modifying Cell2 (EU-TESTCELL2) Dynamometer and PTI application would be submitted.
2. Natural Gas Fired Boiler Nos. 1, 2, 3 would be installed pursuant to 336.1282.
3. Four fume hoods would be installed in Materials Engineering (formerly Production Engineering) Dept. One of four hoods would be moved from Building 2 to Building 40; three are new hoods.

November 16, 2016, letter – installation of exempt equipment

According to Robert Townsend's letter dated November 16, 2016, Denso would be installing the following equipment / processes:

1. Two NSPS 4I CI RICE Emergency Generators (1 MW) for Building Nos. 20 and 40 pursuant to Rule 336.1285(2)(g).

Chassis dynamometers (PTI No. 452-85C, FG-FACILITY)

In addition to the above two dynamometer chambers (Cells 1 & 2), there are emissions chambers (road-worthy, emission-control-equipped vehicles are tested for emissions, anechoic (sound; sometimes parts with no combustion engines) chamber (road-worthy, emission-control-equipped vehicles are tested for noise, vibration and harshness or NVH), climatic test facility consisting of 3 chambers for wind tunnel, environmental drivability chamber test (high [60 °C] and low temperature [-40 °C]) environmental test (temperature). In Emissions Chamber, EPA mobile source testing used to be done but not any more since September 2010. Fully assembled cars that are tested in chassis dynamometers have manufacturer license plates. Cars are equipped with robotic automatic driving systems to obtain programmable, repeatable, consistent driving. US EPA environmental testing is performed.

In the wind tunnel, the dynamometer can simulate wind speeds up to 160 kilometers per hour. A turbine blows air to simulate wind speeds up to 170 kilometers per hour. In wind the tunnel, only climatic tests are performed but not aerodynamic tests.

August 16, 2010, Hyundai letter

In connection with Hyundai America Technical Center, Inc., AQD sought US EPA determination, via December 10, 2008, letter, regarding potential-to-emit (PTE) calculations and permitting of engine and chassis dynamometers. EPA communicated to AQD, via August 16, 2010, letter, its determination that chassis dynamometers were regulated as stationary sources since the vehicles were not put into commerce. AQD Chief Hellwig wrote a letter

dated September 1, 2010, to each known affected source with a copy of US EPA's determination (August 16, 2010, letter to Mr. Hellwig from Ms. Cheryl L. Newton of US EPA Region V).

June 12, 2013, AQD Chief Hellwig e-mail: At this time, AQD will not enforce Rule 336.1201 for chassis dynos. However, AQD will review and issue a construction permit if requested.

PTI Modifications: PTI No. 452-85 → PTI No. 452-85A, PTI No. 452-85A → PTI No. 452-85B and PTI No. 452-85B → PTI No. 452-85C

1. Permit-to-Install No. 452-85 dated Feb 19, 1988, was revised (PTI No. 452-85 → PTI No. 452-85A dated October 11, 2011) to become synthetic minor source for federal Title V or Michigan Renewable Operating Permit (ROP) program. Denso included the chassis dynamometers, the diesel generators, etc., in the ROP opt-out permit. The revision was due to April 19, 2011, VN. Only Special Condition in PTI No. 452-85 was for zero opacity.
2. Cell1 500 hp dyno was replaced with one new dyno rated 500 hp with software upgrades. The replacement was deemed like-for-like replacement with software upgrades. In September 2012, the permit was revised (PTI No. 452-85A dated October 11, 2011 → PTI No. 452-85B dated September 13, 2012).
3. Cell2 250 hp dyno was replaced with one new dyno rated 500 hp with software upgrades. In August 2016, the permit was revised (PTI No. 452-85B dated September 13, 2012 → PTI No. 452-85C dated August 18, 2016).

NG fired Boilers (5)

Initially (before 2016), there were two identical boilers (each less than 5 million BTU per hour design capacity; Cleaver Brooks CBH Packaged Boilers; Model CBH-700-80; Max 15 psi steam; 3.347 million BTU per hour; natural gas only; Built 1986), which are exempt from Rule 336.1201 (Permit-to-Install) pursuant to 336.1282(2)(b) (<< 50 million BTU per hour heat input, natural gas only). The natural gas fired boilers are not subject to NSPS Dc (< 10 million BTU per hour heat input).

In addition, three additional identical boilers (Nos. 1, 2 & 3) were installed in 2016: Cleaver Brooks CHC Packaged Boilers; Model CFC-700-1800, Max 125 psi steam; Max 2.363 million BTU heat input; natural gas only. Please refer to Robert Townsend's letter dated June 09, 2015.

Additional boilers of capacity less than 2 million BTU per hour heat input (natural gas only) also exist. All boilers generate only hot water and not steam.

All boilers are exempt from Rule 336.1201 pursuant to Rule 336.1282(2)(b)(i) (<< 50 million BTU per hour heat input, natural gas only). In addition, all boilers are exempt from NSPS Dc (<< 10 million BTU per hour heat input, natural gas only).

Emergency generators (5)

There are five (increased from 3 to 5 upon installation of two new NSPS 4I CI RICE engines in 2016 for Building Nos. 20 & 40) emergency generators: two existing (installed before 2000) 1 MW Caterpillar Diesel Generators, one (installed 2006) 1 MW Caterpillar Diesel Generator and two (installed 2016 for Buildings 20 & 40) 1 MW Caterpillar Diesel Generators. The generators are exempt from Rule 336.1201 (Permit-to-Install) pursuant to 336.1285(2)(g).

1. Generator 1 (DN 01 Tech Center): Original building (Tech Center) Generator. Generators 1 and 2 were installed at DIAM in 1988. Caterpillar Generator Set Sales Engine Model 3512. Engine Serial No. 24Z07038. Generator Model SR4b07038. Generator Serial No. 2GM00556. 1250 kVA. 1,000 kW (1 MW). 480 Volts. Standby. Non-resettable hours-meter readings = 609 hours (during 08/31/2016 semi-annual test), 623 hours (during 06/14/2017 semi-annual test), 632 hours (09/08/2017), 689 hours (06/11/2018).
2. Generator 2 (DN 10): Building No. 10 Generator. Generators 1 and 2 were installed at DIAM in 1988. Caterpillar Generator Set Sales Engine Model No. 3508. Engine Serial No. 4GM00305. Generator Model SR4B. Generator Serial No. 2GM00719. 1250 kVA. 1,000 kW (1 MW). 480 Volts. Standby. Non-resettable hours-meter readings = 789 hours (during 09/01/2016 semi-annual test), 848 hours (09/08/2017) 1055 hours (06/11/2018).
3. Generator 3 (DN 30): Building No. 30 (NSPS 4I generator. Manufactured after March 2006 and installed in 2006) Generator. Caterpillar Generator Engine Model C-32 ACCERT, Engine Serial No. sxc00536, Generator Model sr4b, Generator Serial No. G5C00240. 1250 kVA. 0.8 PF. 1,000 kW (1 MW). Standby. 480 Volts. Non-resettable hours-meter readings = 432 hours (09/08/2017), 434 hours (06/11/2018).
4. Generator 4 (DN 20): Building No. 20 Generator (NSPS 4I manufactured after March 2006; installed in December 2016): Caterpillar Generator Engine Model No. C-32 & Serial No. PRH06463. Caterpillar Generator ISO8528 Model No. sr4b & Serial No. g1b02123. 1250 kVA. 0.8 PF. 1,000 kW (1 MW). 480 Volts. 1,474 BHP. Compression Ratio = 15. Engine Speed = 1,800 RPM. Standby. Non-resettable hours-meter readings = 42 hours (09/08/2017), 49 hours (06/11/2018).
5. Generator 5 (DN 40): Building No. 40 Generator (NSPS 4I manufactured after March 2006; installed in December 2016): Caterpillar Generator Engine Model No. C-32 & Serial No. PRH06458. Caterpillar Generator ISO8528 Model No. lc6 & Serial No. g1b02124. 1250 kVA. 0.8 PF. 1,000 kW (1 MW). 480 Volts. 1,474 BHP. Compression Ratio = 15. Engine Speed = 1,800 RPM. Standby. Non-resettable hours-meter readings = 57 hours (09/08/2017), 76 hours (06/11/2018).

For all generators, Preventive Maintenance and Load Test reports are available. All engines use only dyed ULSD (15 ppm S Diesel).

US EPA NSPS 4I Certificates:

1. Building No. 30, 2006 NSPS 4I Generator: 1 MW 2006 installed generator: Caterpillar 1,000 kW (1 MW), 0.8 PF, Standby Emergency Generator. Engine Model No. C32. Serial No. G5C00240. AQD received US EPA Certificate No. CPX-NR9-06-02 (Engine Family: 6CPXI32.0ESK) dated Dec 07, 2005, for 1 MW Caterpillar Emergency Generator via September 10, 2014, letter from Mr. Gary Godin.
2. Building Nos. 20 & 40, 2016 NSPS 4I Generators (2): 1 MW 2016 installed generators (2). Caterpillar 1,000 kW (1 MW). 0.8 PF. Standby Emergency Generators. Caterpillar Generator Engine Model No. C-32. Caterpillar Generator ISO8528 Model No. 1000SC2. AQD received US EPA Certificate No. GCPXL32.0NZS-007(Engine Family: GCPXL32.0NZS, Model Year 2016) dated July 10, 2015, for 1 MW Caterpillar Emergency Generator via August 08, 2017, letter from Mr. Robert Pleva.

NSPS 4I requires:

1. Non-resettable hours-meter. See above for readings.
2. ULSD (15 ppm S) Diesel only. Generally ULSD is only fuel available in the market for economic reasons.
3. 500 hrs. / yr. for emergency generator: Only annual (reduced from biannual) testing is performed.
4. 100 hrs. / yr. for maintenance and testing: Only annual (reduced from biannual) testing is performed.
5. US EPA certificate: As stated above AQD received US EPA NSPS 4I Certificates for three engines.
6. Operate in accordance with manufacturer recommendations. Caterpillar performs semi-annual maintenance, which includes inspection of installation (vibration, structural integrity, etc.), cooling system (radiator / heat exchanger, belts, hoses, antifreeze, etc.) starting system, lubrication system (sample oil and change if necessary, etc.) control panels and generator, fuel system, exhaust system, etc. Replace fuel filters, oil filters, lubricating oil filters, coolant filters, if necessary and dispose of waste oil and filters properly.

CEDRI@EPA.GOV Reports (Crystal, Roy [mailto:crystal.roy@epa.gov; **Sent:** Tuesday, March 01, 2016 5:49 PM] **On Behalf Of** R1Assist

Reminder - Emergency Engine Electronic Reports due March 31, 2016. Owners of emergency engines > 100 HP operated or contractually obligated to be available >15 hours/year for emergency demand response or voltage or frequency deviations, or operated for local reliability must submit an annual report electronically through the Compliance and

Emissions Data Reporting Interface (CEDRI) accessed through EPA's Central Data Exchange at <http://www.epa.gov/cdx>. The annual report must cover a range of information on 2015 operations as specified in CEDRI. For CEDRI help you may contact CEDRI@epa.gov.

Denso has not entered into any contractual agreement with a local utility, DTE. Hence, reporting to CEDRI is not required.

PTI Exemption - CI RICE Engines

Fuel usage for Caterpillar Generators is as follows:

1500 kW ≈ 105 gallons per hour diesel (DMC)

1050 kW ≈ 74 gallons per hour diesel

750 kW ≈ 55 gallons per hour diesel

600 kW ≈ 46 gallons per hour diesel

300 kW ≈ 28 gallons per hour diesel

Based upon the above information, assuming 1 MW generator consumes 75 gallons of diesel per hour, knowing 138,000 BTU per gallon of diesel, heat input of 1 MW generator is 10.4 million BTU per hour. Hence, a diesel generator up to 1 MW is exempt from Rule 336.1201 (Permit-to-Install) pursuant to Rule 336.1285(2)(g). It may be noted that some engines convert heat to work more efficiently than others. Recent engine designs have efficiencies up to 40% for heat to shaft work conversion. Converting work to electricity is up to 95% efficient.

RICE MACT 4Z

Emergency generators (5) may be subject to Area Source NESHAP / MACT ZZZZ or 4 Z, Standards of Performance for Stationary Spark Ignition Internal Combustion Engines and National Emission Standards for Hazardous Air Pollutants for Reciprocating Internal Combustion Engines; New Source Performance Standards for Stationary Internal Combustion Engines / Final rule (Page 6674 Federal Register / Vol. 78, No. 20 / Wednesday, January 30, 2013 / Rules and Regulations / Final rule.). AQD has no delegation of these standards and therefore no attempt has been made to evaluate the Denso's compliance with NESHAP / MACT 4 Z. Compliance with NSPS 4I is deemed compliance with MACT 4Z.

RICE MACT 4Z requirements may be summarized as:

1. Change oil and filter: every 500 hours of operation or annually whichever occurs first.
2. Inspect air cleaner: every 1,000 hours of operation or annually whichever occurs first.
3. Inspect all hoses: every 500 hours of operation or annually whichever occurs first.
4. Operate / maintain engine and control devices according to manufacturer's recommendation
5. Install non-resettable hours meter and maintain records

6. Keep maintenance records
7. NSPS Notification not required

Emergency engines:

1. 100 hours per year for maintenance checks and readiness testing
2. 50 hours per year for non-emergency (non-income generating)
3. No hours limit for genuine emergency

CY 2010 Exhaust Modification

Per FY2011 inspection, Denso increased cross sectional area of the test cell's exhaust system and increased fan speed. These actions for increasing exhaust air flow (cfm) will allow better dispersion of the pollutants and the process itself is not modified at this time (CY 2010). Hence, the exhaust system modification is not subject to Rule 336.1201 permit modification. Therefore, it is not necessary to hire a consult to submit a permit modification application. The CY2010 PTI (Rule 336.1201) inquires pertained to this project. The process modification that may happen may require a permit revision. The exhaust system was upgraded in May 2010 by increasing fan speed from 1,050 cfm to 10,000 cfm and diameter from 10 inches to 24 inches.

Vehicle prep

Vehicle prep (preparation) areas are present, where the test vehicles (road-worthy, emission-control-equipped vehicles with manufacturer's plates [M-plates]) are prepared for testing at chassis dynamometers. These vehicles are not put into commerce.

PTI Mod (PTI No. 452-85 → PTI No. 452-85A), engine test cells and Apr 19, 2011, Violation Notice

April 19, 2011, Violation Notice: Please refer to April 19, 2011, Violation Notice. VN was issued for failure to obtain Permit-to-Install for two start-stop test engines installed in the emissions chamber (emissions tests are not done anymore) pursuant to Rule 336.1201.

AQD received VN response letters dated May 10, June 29, July 19 and October 28, 2011. In addition, on January 11, 2012, AQD and Denso personnel along with a consultant (David M. Yanochko of Fishbeck 248-324-2121) met to discuss start-stop engines and PTI exemptions.

AQD issued the violation notice for installing start-stop engines without a permit pursuant to Rule 336.1201. Subsequently, AQD allowed installation of engine test cells pursuant to Rule 336.1285(g) subject to Rule 278 restrictions with attendant record-keeping. The opt-out permit may not be used to satisfy Rule 278 restrictions. Separate Rule 278 records must be

kept. Further, AQD will not be developing General Permit-to-Install for engine test cells at this time.

Denso is using car / truck idling vehicle emission factors to calculate emissions pursuant to Emission Facts EPA-420-F-98-014 dated April 1998. Hence, equivalent or better than motor vehicle controls must be installed for engine test cells. It may be noted that US EPA tests may include warm catalysts and cars equipped with catalytic converters. However, Denso does not control start-stop engine emissions.

The start-stop engines are NOT equipped with catalytic converters due to low exhaust temperatures. The catalytic converters are not effective at low temperatures.

Two start-stop engine test cells were installed in March 2011. Total of 8 engine test cells were installed by Apr 2012. The start-stop engines are test stands and not dynamometers because energy is not absorbed; i.e. there is no load on the engines.

Rule 336.1287(2)(b) paint spray booth – spray cans only

One 4 ft * 4 ft paint spray booth with back filters is present in the Machine Shop. I asked Mr. Godin to install the filters such that they fit, at all times, snug and tight without gaps and holes.

Only spray cans are used; no spray gun. The booth is exempt from Rule 336.1201 (Permit-to-Install) pursuant to Rule 336.1287(2)(b). Paint and solvent usage is tracked and emissions are calculated for FG-Facility.

I asked the painter to install and inspect the filters such that they fit, at all times, snugly without gaps and holes. I also advised the painter duct or painter's tapes may be used to cover gaps / holes.

Fuel laboratory

Vibration testing for fuel pumps, electronics, cyclic corrosion (salt chamber) testing is conducted. In the fuel laboratory, fuel pumps and fuel injectors are tested for performance and durability. Same gasoline is recycled during the testing resulting in a closed loop. There is a hydrocarbon detector in the lab so that alarm will sound when gasoline in the lab's ambient air is detected. The detector is safety device so that hydrocarbon (gasoline vapor) explosion would not occur. There is one cyclic corrosion chamber.

Five (5) 55-gallon carbon canisters and one (1) 100-gallon carbon canister to capture any VOC emissions from a closed loop system in the fuel laboratory are present. In all, there are six (6) carbon canisters. The canisters are changed either by weight gain or color change of a detector. In order ensure safety from explosion, the laboratory is equipped with hydrocarbon vapor detector.

Exhaust air is re-circulated into the lab; therefore, it is a closed loop system with no exhaust to outside ambient air.

One Parts / cold cleaner

One parts / cold cleaner is present. It is a cleaning surface with solvent collection mechanism. The solvent is collected in 5-gallon pail. The parts-cleaner is used for non-production activities: R&D, testing, etc.

No halogenated solvent is used. Mineral spirits is used as cleaning solvent. Each cold-cleaner is subject rule 336.1611 or 336.1707 depending on if it is new or existing. A cold-cleaner is exempt from Rule 336.1201 pursuant to Rule 281(2)(h) or Rule 285(2)(r)(iv). Existing cold cleaners were placed into operation prior to July 1, 1979. New cold cleaners were placed into operation on or after July 1, 1979.

Naphtha (Petroleum Distillate) Solvent:

98-100% VOC. Flash Point (FP) = 125 °F. Boiling Point (BP) = 355 °F. Vapor Pressure (VP) = <5 mm Hg at 68 °F. LEL = 1%

The cold-cleaner is NOT Subject to: NESHAP/ MACT T since solvents containing halogenated compounds are not used.

One Ozzy Juice (aqueous) parts cleaner

One Smart-Washer (Chem-Free Corporation of Norcross, Georgia; Ph: 770-564-5550; www.ChemFree.com), which uses Ozzy Juice SW-4, is present.

Machine Shop

Lathes, cutting, grinding, sanding machines are present. No particulate controls. All emissions are released to in-plant environment. The machines are exempt from Rule 336.1201 (Permit-to-Install) pursuant to Rule 336.1285(2)(l).

Welding Machines

One Tig and one Mig welding machines are present. The welding machines are used on non-production basis with exhaust to outside air.

The machines are exempt from Rule 336.1201 (Permit-to-Install) pursuant to Rule 336.1285(2)(l) or 336.1285(2)(i) (welding)

PTI No. 452-85C compliance determination

PTI No. 452-85C, FG-TESTCELLS

Test cells have practically no visible emissions potential if engines are operated properly (PTI No. 452-85C, FG-TESTCELLS, 1.1 limit: 0 % opacity)

PTI No. 452-85C FG-FACILITY

PTI No. 452-85 → PTI No. 452-85A modification did not review any process equipment but added ROP synthetic minor requirements. PTI No. 452-85A → PTI No. 452-85B mod has identical conditions since it was for like-for-like replacement with software upgrades (Cell 1 500 hp dynamometer). PTI No. 452-85B → PTI No. 452-85C mod allowed replacement of software, engine control equipment, and other physical equipment.

CY2016 = 3,246, CY2016 = 20,967 gallons per year, of liquid fuel was used (PTI No 452-85C, SC FG-FACILITY, II.1 limit: 41,000 gallons per year liquid fuel / year).

CY2016 = 20,504 pounds (10.2522 tons), **CY2017 = 55,825** pounds (27.913 tons) per year CO were emitted (PTI No. 452-85C, SC FG-FACILITY, I.1 & 2 limits: 89 tpy CO & VOC).

CY2016 = 2,560 pounds (1.28 tons), **CY2017 = 7,180** pounds (3.59 tons) per year VOC were emitted (PTI No. 452-85C, SC FG-FACILITY, I.1 & 2 limits: 89 tpy CO & VOC).

CY2016 = 1,049 pounds (0.5246 tons) **CY2017 = 2,932** pounds (1.47 tons) per year total aggregate HAPs were emitted (PTI No. 452-85C, SC FG-FACILITY I.3 & 4 limits: 8.9 tpy single HAP & 22.4 tpy Aggregate HAPs).

All data pertain to **CY 2016-17**. Most CO, VOC and HAPs are emitted due to combustion in internal combustion engines. Principal HAPs emitted are toluene, benzene, mixed xylenes, 1,3-butadiene, etc.

MAERS for a ROP synthetic minor facility

Beginning in July 2012 (MAERS-2011), Denso started submitting annual emissions as required by AQD.

Conclusion

AQD issued April 19, 2011, Violation Notice, for Rule 201. This is a research and development and testing facility with engine & chassis dynamometers and engine test (start-stop) cells. Beginning in July 2012 (MAERS-2011), Denso started submitting annual emissions. NSPS 4I CI RICE Emergency Generators are present. Denso is in compliance with its ROP Synthetic Minor permit and NSPS 4I.

FYI: April 19, 2011, Violation Notice.

**For inspection information, please see: S:\Air Quality
Division\STAFF\IRANNAK\InspInfo\InspInfo-2018\Denso N1127**

NAME



DATE

07/18/2018

SUPERVISOR



