

**NORTH CAROLINA DIVISION OF
AIR QUALITY**

Application Review

Issue Date: xxx/xx/2020

Region: Raleigh Regional Office
County: Nash
NC Facility ID: 6400232
Inspector's Name: Dawn Reddix
Date of Last Inspection: 08/08/2019
Compliance Code: 3 / Compliance - inspection

Facility Data

Applicant (Facility's Name): Consolidated Diesel Company

Facility Address:

Consolidated Diesel Company
9377 US Highway 301 North
Whitakers, NC 27891

SIC: 3519 / Internal Combustion Engines

NAICS: 333618 / Other Engine Equipment Manufacturing

Facility Classification: Before: Title V **After:** Title V

Fee Classification: Before: Title V **After:** Title V

Permit Applicability (this application only)

SIP: 15A NCAC 02D .0503, 02D .0515, 02D .0516, 02D .0521, 02D .0524, 02D .0958, 02D .1100, 02D .1109, 02D .1111, 02D .0530, 15A NCAC 02Q .0317 & 0501(c)(2)

NSPS: Subpart IIII & JJJJ

NESHAP: 112(j) Case-by-Case MACT, MACT Subpart DDDDD, PPPPP, GACT Subpart ZZZZ, JJJJJJ, HHHHHH & CCCCCC

PSD: NA

PSD Avoidance: NO_x & VOC

NC Toxics: (NCGS) 143-215.107(a)(5) (House Bill 952).

112(r): NA

Other:

Contact Data

Application Data

Facility Contact	Authorized Contact	Technical Contact
Gary Keffer, Jr. Director - HS&E (252) 437-9176 9377 US Hwy 301 North Whitakers, NC 27891	John Judd Plant Manager (252) 437-3177 9377 US Hwy 301 North Whitakers, NC 27891	Gary Keffer, Jr. Director - HS&E (252) 437-9176 9377 US Hwy 301 North Whitakers, NC 27891

Application Number: 6400232.19A, 6400232.19B & 6400232.19C

Date Received: 6/22/2020, 10/25/2019 & 12/02/2019

Application Type: Modification, Renewal & Minor

Application Schedule: TV-Significant

Existing Permit Data

Existing Permit Number: 04620/T30

Existing Permit Issue Date: 08/20/2015

Existing Permit Expiration Date: 07/31/2020

Total Actual emissions in TONS/YEAR:

CY	SO2	NOX	VOC	CO	PM10	Total HAP	Largest HAP
2017	8.40	152.07	122.18	33.44	10.00	9.15	2.73 [Xylene (mixed isomers)]
2016	8.91	158.01	109.21	33.81	16.96	6.67	2.11 [Xylene (mixed isomers)]
2015	8.81	167.38	118.89	35.85	17.61	7.19	2.28 [Xylene (mixed isomers)]
2014	8.41	152.39	128.21	32.76	16.78	6.96	2.26 [Xylene (mixed isomers)]
2013	8.41	146.49	113.67	32.14	16.05	6.65	2.15 [Xylene (mixed isomers)]

Review Engineer: Gautam Patnaik

Review Engineer's Signature:

Date: xxx/xx/2020

Comments / Recommendations:

Issue: 04620T31

Permit Issue Date: xxx/xx/2020

Permit Expiration Date: xxx/xx/2025

I. Facility Description.

This facility located in Whitakers, North Carolina, manufactures:

- On-highway (automotive) engines for semi cabs, pick-up trucks, school and public buses, RVs and fire trucks and
- off-highway diesel engines (65-600 brake horsepower) for marine, military vehicles and construction equipment

The products are for more than 530 customers, including: Daimler, Freightliner, Navistar, Blue Bird, Komatsu, Kenworth, Peterbilt, New Flyer and International, using computer integrated machining, new engineering technology center, introduction of marine engines and alternative fuels.

II. Purpose of Application

This review is for several applications which have been combined:

6400232.19A – significant modification to the permit received on 07/05/2019 and an addendum to this application (complete) received on 6/22/2020;

6400232.19B - renewal of this facility's permit received on 10/25/2019; and

6400232.19C – minor modification to the permit received on 12/02/2019

Application # 6400232.19A – For the significant modification to the permit, the facility requested several deletions, additions and modifications to the following sources as mentioned below:

Sources Deleted:

Source ID. Nos.	Source description	Reason for the change	Note
ES-8NDTS through ES-13NDTS	Diesel/biodiesel/natural gas test stands (3.0 MMBtu/hr max. heat input capacity, each)	Deleted. Units never constructed.	
ES-11DTS through ES-17DTS	Diesel/biodiesel test stands (3.0 MMBtu/hr max. heat input capacity, each)	Deleted. Units never constructed.	
ES-1CBP and ES-BBP	Two natural gas/propane fired primary block washers (2 .6 and 3.9 MMBtu/hr maximum heat input capacity, respectively)	Deleted. Units converted to electric power.	
ES-CH	One natural gas/propane-fired primary head washer (1.8 MMBtu/hr maximum heat input capacity)	Deleted. Unit converted to electric power.	
ES-1B and ES-2B	Two watertube-type natural gas/propane fired boilers (12 MMBtu/hr maximum heat input, each)	Deleted. Units converted to electric power.	Replaced by new insignificant source IS-ES-IS1B
ES-3B	One watertube-type natural gas fired boiler (0 .75 MMBtu/hr maximum heat input)	Deleted.	Replaced by new insignificant source IS-ES-3B-2
ES-BH, ES-CBF, ES-1CRP, and ES-1CRF	Four natural gas/propane fired washers (1.8, 0.5, 1.6, and 2.4 MMBtu/hr heat input capacity, respectively)	Deleted. Units converted to electric power.	

Sources Modified or Added:

Source ID. Nos.	Source description	Reason for the change
ES-1DTS, ES-2DTS, ES-3DTS, ES-4DTS, ES-5DTS, ES-6DTS, ES-7DTS, ES-8DTS, ES-9DTS, and ES-10DTS. Applicant requested above sources ID Nos. changed to the Nos., below: ES-1PTS, ES-2PTS, ES-3PTS, ES-4PTS, ES-5PTS, ES-6PTS, ES-7PTS, ES-8PTS, ES-4DTS, ES-5DTS, ES-9DTS, and ES-10DTS	Ten diesel/biodiesel/ gasoline /natural gas engine test stands (3.0 MMBtu/hr maximum heat input capacity, each).	Source description is made to add gasoline as a new fuel source for the engine test stands
ES-1NDTS, ES-2NDTS, ES-3NDTS, ES-4NDTS, ES-5NDTS, ES-6NDTS, and ES-7NDTS	Seven diesel/ gasoline /natural gas engine test stands (3.0 MMBtu/hr maximum heat input capacity, each)	Source description is made to add gasoline as a new fuel source for the engine test stands
IS-ES-IS1B	A steam generating unit consisting of four natural gas-fired boilers with a maximum heat input of 5 million Btu per hour, each).	New insignificant source not subject to GACT JJJJJ (See Section III B. 5., of the review, below)
IS-ES-3B-2	Natural gas-fired boiler with a maximum heat input of 1.2 million Btu per hour).	New insignificant source not subject to GACT JJJJJ (See Section III B. 5., of the review, below)
IS-ES-T1	8,000-gallon gasoline above-ground storage tank	New insignificant source

The potential emissions from each of these sources (ID Nos. IS-ES-IS1B, IS-ES-3B-2 and IS-ES-T1) have less than five tons per year of any criteria pollutants and their potential emissions of hazardous air pollutants (HAPs) are each below 1000 pounds per year and comply with 15A NCAC 2Q .0503(8) as insignificant sources.

The tank (IS-ES-T1) is an 8,000-gallon gasoline above-ground storage tank (rolling 12-month total throughput not to exceed 80,000 gallons) and is subject to **GACT Subpart CCCCCC** – “National Emission Standards for Hazardous Air Pollutants for Source Category: Gasoline Dispensing Facilities.” This regulation establishes national emission limitations and management practices for hazardous air pollutants (HAP) emitted from the loading of gasoline storage tanks at gasoline dispensing facilities (GDF). This subpart also establishes requirements to demonstrate compliance with the emission limitations and management practices.

As per 40 CFR §63.11111(a) this regulation applies to each GDF that is located at an **area source**. The affected source includes each gasoline cargo tank during the delivery of product to a GDF and also includes each storage tank.

Due to the tank size and the rolling 12-month total throughput gasoline limit, monthly tank throughput is expected to be less than 10,000 gallons of gasoline. Therefore, the only applicable requirements for the tank are 40 CFR §63.11115 and 40 CFR §63.11116

Pursuant to 40 CFR §63.11111 the facility must not allow gasoline to be handled in a manner that would result in vapor releases to the atmosphere for extended periods of time. Measures to be taken include, but are not limited to, the following:

Minimize gasoline spills;

Clean up spills as expeditiously as practicable;

Cover all open gasoline containers and all gasoline storage tank fill-pipes with a gasketed seal when not in use;

Minimize gasoline sent to open waste collection systems that collect and transport gasoline to reclamation and recycling devices, such as oil/water separators.

The facility must have records available within 24 hours of a request by DAQ to document gasoline throughput.

The applicant also wanted the changes as listed below:

1. Modify the existing permit to change the status of the facility from a major source of HAP to an area source of HAP by adding new permit conditions to limit emissions of any individual HAP to less than 10 tpy and emissions of total HAPs to less than 25 tpy;
2. Modify the existing permit by removing permit conditions applicable to a major source of HAP and adding permit conditions applicable to an area source of HAP;
3. Add a new permit condition to allow the use of up to 80,000 gallons of gasoline in any 12-month period as a fuel in the engine test stands.

Test stands are subject to 02D .0516, 02D .0521, 02D .1100 and 02Q .0317 (PSD Avoidance).

Note - On 6/22/2020 (completed) an addendum was added to the application to modify the PSD avoidance condition where the annual diesel fuel consumed did not exceed 730,000 gallons (existing) and the amount of gasoline fuel combusted in combustion equipment did not exceed 80,000 gallons per consecutive 12-month period (See Section 2.2 C. 1. a. i., of the modified permit). The facility also had additional monitoring and record keeping requirements (See Section 2.2 C. 1. b., of the modified permit), such that the total NO_x emissions from the facility is less than 250 tpy (See Section III F., of this review).

III. Regulatory Summary

A. Seven diesel generators (ID Nos. ES-2DG, ES-3ADG, and ES-4DG through ES-8DG)

The above seven non-emergency diesel generators (ID Nos. ES-2DG, ES-3ADG, and ES-4DG through ES-8DG) listed in Section 2.1 F., of the permit are subject to 15A NCAC 02D .0516, .02D .0521, 02D .0524 NSPS Subpart IIII and 02D .1111 MACT Subpart ZZZZ - “national emission limitations and operating limitations for hazardous air pollutants (HAP) emitted from stationary reciprocating internal combustion engines (RICE) located at major and **area sources** of HAP emissions.”

The current air permit states that the subsequent performance test frequency for ES-2DG and ES-4DG through ES-8DG is semiannual with conditional annual testing allowed, which is the frequency required for new RICE.

As per the applicant these units are existing RICE as defined by 40 CFR §63.6590(a)(1)(i), and control devices were installed on these units in 2012 and/or 2013 in compliance with 40 CFR §63.6565(a)(1) for existing RICE with a site rating greater than 500 hp. The commencement of construction dates for each of the six diesel generators (ID Nos. ES-2DG and ES-4DG through ES-8DG) are listed below:

Emission Source ID	Year Installed
ES-2DG	1993
ES-4DG	1993
ES-5DG	1993
ES-6DG	1993
ES-7DG	1993
ES-8DG	2001

40 CFR §63.6590(a)(1)(iii) – “For stationary RICE located at an area source of HAP emissions, a stationary RICE is existing if you commenced construction or reconstruction of the stationary RICE before June 12, 2006.” Thus, the six diesel generators (ID Nos. ES-2DG and ES-4DG through ES-8DG) will be considered existing sources.

The applicant requested that the subsequent test frequency for ES-2DG and ES-4DG through ES-8DG changed to every 8,760 hours or 3 years, whichever comes first, in conformance with Table 3 of MACT Subpart ZZZZ.

Table 3 of MACT Subpart ZZZZ requires existing non-emergency, non-black start CI stationary RICE >500 HP that are not limited use stationary RICE comply by limiting or reducing CO emissions and not using a CEMS. The facility shall conduct subsequent performance tests every 8,760 hours or 3 years, whichever comes first.

No physical changes are being made to the seven non-emergency diesel generators (ID Nos. ES-2DG, ES-3ADG, and ES-4DG through ES-8DG) and they will continue to be in compliance with 15A NCAC 02D .0516 and 02D .0521, 02D regulations.

However, 02D .0524 (NSPS Subpart IIII) and 02D .1111 (MACT Subpart ZZZZ) regulations applicable to existing sources (ID Nos. ES-2DG, and ES-4DG through ES-8DG) and new source (as per applicable regulations, ID. No. ES-3ADG) are being updated in the modified permit to conform to applicable regulatory requirements.

Listed below are the existing and new sources and updated applicable regulations along with a few **salient features** of the changes to applicable regulations.

The current permit Section 2.1.F.3., subjects the seven diesel generators (ID Nos. ES-2DG, ES-3ADG, and ES-4DG through ES-8DG) to 15A NCAC 02D .0524: “New Source Performance Standards” NSPS Subpart IIII.

The MACTs applies to existing, new and reconstructed engines, both CI and SI. However, new and reconstructed stationary engines located at any area source meet the requirements of the MACTs by complying with the applicable NSPS, either Subpart IIII for CI engines or Subpart JJJJ for SI engines. Therefore, for area sources, the MACTs applies to only existing sources, or those that were constructed prior to June 12, 2006. Thus, for existing sources (ID Nos. ES-2DG, and ES-4DG through ES-8DG) NSPS Subpart IIII does not apply. Thus Section 2.1.F. 3., of the current permit is removed. Applicability of NSPS Subpart IIII to new source (ID No. ES-3ADG) is addressed below.

MACT Subpart ZZZZ for existing sources (ID Nos. ES-2DG and ES-4DG through ES-8DG)

The MACT Subpart ZZZZ for existing sources (ID Nos. ES-2DG and ES-4DG through ES-8DG) were outdated and replaced in the modified permit (See Section 2.1 F. 3., of the modified permit).

Emissions and Operating Limitations

40 CFR §63.6600(d): for existing non-emergency stationary CI RICE with a site rating of more than 500 brake HP must comply with the emission limitations in Table 2c to this subpart and the operating limitations in Table 2b to this subpart

MACT Subpart ZZZZ Table 2b: for existing CI stationary RICE >500 HP complying with the requirement to limit or reduce the concentration of CO in the stationary RICE exhaust and using an oxidation catalyst, the facility shall “maintain your catalyst so that the pressure drop across the catalyst does not change by more than 2 inches of water from the pressure drop across the catalyst that was measured during the initial performance test and maintain the temperature of your stationary RICE exhaust so that the catalyst inlet temperature is greater than or equal to 450 °F and less than or equal to 1350 °F.”

MACT Subpart ZZZZ Table 2c: for non-emergency, non-black start CI stationary RICE > 500 HP shall limit concentration of CO in the stationary RICE exhaust to 23 ppmvd (parts per million by volume, dry) or less at 15 percent O₂, or reduce CO emissions by 70 percent or more using an oxidation catalyst.

The above requirements are stipulated in Section 2.1 F. 3. h., through j., of the modified permit.

MACT Subpart ZZZZ Table 2c and 40 CFR §63.6625(h): “...existing stationary engine, you must minimize the engine's time spent at idle during startup and minimize the engine's startup time to a period needed for appropriate and safe loading of the engine, not to exceed 30 minutes, after which time the emission standards applicable to all times other than startup in Tables .. 2c, to this subpart apply” (See Section 2.1 F.3. k., of the modified permit)

Testing Requirements

MACT Subpart ZZZZ Table 3: Existing non-emergency, non-black start CI stationary RICE >500 HP that are not limited use stationary RICE shall limit or reduce CO emissions and not using a CEMS conduct subsequent performance **tests every 8,760 hours or 3 years, whichever comes first** (See Section 2.1 F. 3. n. iii., of the modified permit).

40 CFR §63.6620(a) and (b): Applicant must conduct each performance test in Table 4 that applies and does not need to start up the engine solely to conduct the performance test. The test can be conducted when the engine is started up again (Section 2.1 F. 3. n. iv., of the modified permit).

40 CFR §63.6640(b): “If you change your catalyst, you must reestablish the values of the operating parameters measured during the initial performance test. When you reestablish the values of your operating parameters, you must also conduct a performance test to

demonstrate that you are meeting the required emission limitation applicable to your stationary RICE” (See Section 2.1 F. 3. n. vi., of the modified permit).

Monitoring

40 CFR §63.6625(b): “install a continuous parameter monitoring system (CPMS) as specified in Table 5 of this subpart, you must install, operate, and maintain each CPMS according to the requirements.”

40 CFR § 63.6640(a): “must demonstrate **continuous compliance** with each emission limitation, operating limitation, and other requirements in Tables ... that apply to you according to methods specified in Table 6 to this subpart.”

MACT Subpart ZZZZ Table 6: Applicant shall maintain the 4-hour rolling averages within the operating limitations for the catalyst inlet temperature.

All the monitoring requirements are stipulated in Section 2.1 F. 3. o., and p., of the modified permit.

NSPS Subpart IIII for new source (ID No. ES-3ADG)

This new regulation was incorporated into the modified permit (See Section 2.1 F. 4., of the modified permit).

40 CFR §60.4200(a)(2)(i): As per this regulation this rule applies to stationary compression ignition (CI) internal combustion engines (ICE) which were manufactured after April 1, 2006, and are not fire pump engines.

The commencement of construction date for the diesel generator (ID No. ES-3ADG) is listed below:

Emission Source ID	Year Installed
ES-3ADG	2009

Emission Standards

40 CFR §60.4204(b): 2007 model year and later non-emergency stationary CI ICE with a displacement of less than 30 liters per cylinder must comply with the emission standards for new CI engines in 40 CFR §60.4201 for their 2007 model year and later stationary CI ICE, as applicable.

Fuel Requirements

40 CFR § 60.4207(b): “Beginning October 1, 2010, owners and operators of stationary CI ICE subject to this subpart with a displacement of less than 30 liters per cylinder that use diesel fuel must use diesel fuel that meets the requirements of 40 CFR 80.510(b) for nonroad diesel fuel, except that any existing diesel fuel purchased (or otherwise obtained) prior to October 1, 2010, may be used until depleted.”

40 CFR §80.510 sets the standards and marker requirements for nonroad, locomotive, and marine (NRLM) diesel fuel.

40 CFR §80.510(b)(1)(i) sets the maximum sulfur content at 15 ppm; and

40 CFR §80.510(b)(2)(i)&(ii) sets a minimum cetane index of 40 or a maximum aromatic content of 35 volume percent.

(See Section 2.1 F. 4. d., of the modified permit).

Monitoring

40 CFR §60.4209(b): if equipped with a diesel particulate filter, must be installed with a backpressure monitor that notifies the owner or operator when the high backpressure limit of the engine is approached (See Section 2.1 F. 4. f. i., of the modified permit).

Compliance Requirements

40 CFR §60.4206: The applicant must operate and maintain stationary CI ICE that achieve the emission standards over the entire life of the engine.

40 CFR §60.4211(a): The applicant must operate and maintain the stationary CI internal combustion engine and control device according to the manufacturer's emission-related written instructions, change only those emission-related settings that are permitted by the manufacturer and meet the requirements of 40 CFR parts 89 as they apply [Part 89 - Control of Emissions from New and in-Use Nonroad Compression-Ignition Engines].

40 CFR §60.4211(c): Applicant will comply by purchasing an engine certified to the emission standards in Section 2.1 F. 5. c., of the permit. The engine shall be installed and configured according to the manufacturer's emission-related specifications.
(See Section 2.1 F. 4. g., and h., of the modified permit).

Recordkeeping

The applicant shall perform inspections and maintenance on the engine as recommended by the manufacturer. The results of inspection and maintenance shall be maintained in a logbook on-site and made available DAQ.

If using a PM filter, records of any corrective action taken after the backpressure monitor has notified the applicant that the high backpressure limit of the engine is approached

Documentation from the manufacturer that the engine is certified to meet the emission standards.

(See Section 2.1 F. 4. j., of the modified permit).

Reporting

The applicant shall provide a semi-annual summary report of monitoring and recordkeeping activities to DAQ. All instances of noncompliance with the requirements of this permit shall be clearly identified.

(See Section 2.1 F. 4. k., of the modified permit).

MACT Subpart ZZZZ for a (new Non-Emergency, Greater than 500 BHP, with reduce carbon monoxide (CO) emissions, with oxidation catalyst and continuous parameter monitoring system [CPMS]) source ID. No. ES-3ADG).

This regulation is being incorporated into the modified permit for the new non-emergency, greater than 500 BHP, source (ID. No. ES-3ADG).

Applicability

40 CFR §63.6585: Subjects a stationary RICE at a major or **area source** of HAP emissions to this MACT.

40 CFR § 63.6590(a) defines affected source as “an affected source is any existing, new, or reconstructed stationary RICE located at a major or **area source of HAP emissions**, excluding stationary RICE being tested at a stationary RICE test cell/stand.”

40 CFR 63.6590(a)(2)(iii)

(iii) A stationary RICE located at an area source of HAP emissions is new if you commenced construction of the stationary RICE on or after June 12, 2006.

As per the applicant the commencement of construction dates for the two diesel generators (ID Nos. ES-2D ES-3ADG and ES-1NG) are listed below:

Emission Source ID	Year Installed
ES-3ADG*	2009
ES-1NG*	2015

*These emission units will be subject to NSPS requirements only upon designation of the facility as an area source [40 CFR 63.6590(c)(1)].

As per 40 CFR §63.6590(c) “Stationary RICE subject to Regulations under 40 CFR Part 60. An affected source that meets any of the criteria in paragraphs (c)(1) through (7) of this section must meet the requirements of this part by meeting the requirements of 40 CFR part 60 subpart IIII, for compression ignition engines or 40 CFR part 60 subpart JJJJ, for spark ignition engines. No further requirements apply for such engines under this part.” (See Section 2.1 F. 5., of the modified permit).

Note – The One natural gas-fired peak shaving generator (ID Nos. ES-1NG) is already subject to NSPS Subpart JJJJ (for non-emergency IC engines, See Section 2.1 K. 3., of the current permit).

One natural gas-fired peak shaving generator (ID Nos. ES-1NG)

The above source is listed ion Section 2.1 K., of the current permit. This source is already subject to NSPS Subpart JJJJ and GACT Subpart ZZZZ regulations. Because of the change of status of the facility from a major to a minor or area source of HAPs emissions some of the references for the above two regulations have changed and are reflected in the modified permit (See Section 2.1 J 3., and 4., of the modified permit).

B. Sources Subject to 112(j) Case-by-Case MACT, MACT Subpart DDDDD & GACT Subpart JJJJJ

Section 2.2 F., of the current permit lists the following sources that are subject to the Case-by-Case MACT:

- One natural gas fired cleaning and phosphating washer and oven (ID No. ES-1CPO);

- One natural gas-fired paint dry oven (ID No. ES-1PDO);
- One natural gas-fired paint dry oven (ID No. ES-2PDO);
- Two natural gas/propane-fired primary block washers (ID Nos. ES-1CBP and ES-BBP);
- One natural gas/propane-fired primary head washer (ID No. ES-CH);
- Two watertube type natural gas/propane-fired boilers (ID Nos. ES-1B and ES-2B);
- One watertube type natural gas-fired boiler (ID No. ES-3B);
- One natural gas-fired boiler (ID No. ES6); And
- Six natural gas/propane-fired washers (ID Nos. ES-BH, ES-CBF, ES-1CRP, ES-1CRF, ES-1ES, and ES-1EN).

The above sources were subject to 15A NCAC 2D .1109: 112(j) Case-by-Case MACT for Boilers and Process Heaters. However, as per 2.2 F. 1. b., of the permit “Permittee shall comply with this CAA §112(j) standard until May 22, 2019. This regulation is outdated and thus removed from the modified permit.

Section 2.2 E., of the current permit subjects the above sources to 15A NCAC 02D .1111 "Maximum Achievable Control Technology" MACT Subpart DDDDD - “National Emission Standards for Hazardous Air Pollutants for Major Sources: Industrial, Commercial, and Institutional Boilers and Process Heaters.” The initial compliance date for "National Emission Standards for Hazardous Air Pollutants for Industrial, Commercial, and Institutional Boilers and Process Heaters" is May 23, 2019.”

The facility has requested to become a minor source of HAPs emissions and avoid the above MACT as applicable to major source of HAPs emissions (See Section III C., of this review, below, for MACT Avoidance conditions)

Therefore, since the facility has taken limitation to become an area source, the above sources will now be subject to GACT Subpart JJJJJ “National Emission Standards for Hazardous Air Pollutants for Industrial, Commercial, and Institutional Boilers Area Sources.”

Based on the applicant’s response, many of the sources are not subject to GACT Subpart JJJJJ as explained below.

1. Source: One natural gas-fired cleaning and phosphating washer and oven (4.7 million Btu per hour maximum heat input capacity, ID. No. ES-1CPO).

Applicant response – “ES-1CPO is a process heater; natural gas is used to indirectly heat water used in the washer and air used in the dryer. 40 CFR Part 63, Subpart JJJJJ (6J) does not apply to ES-1CPO because 6J applies to certain boilers as defined in 63.11237; the definition of boiler in 6J specifically excludes process heaters. We did not address the question of the whether the washer itself has a stack separate from the combustion unit because we determined this information was not required to determine regulatory applicability or for modeling; the location of the stack used for modeling toxic air pollutants (TAP) is the stack associated with the combustion of the natural gas.”

2. Sources: One natural gas-fired paint dry oven (2.5 million Btu per hour maximum heat input capacity, ID No. ES-1PDO), one natural gas-fired paint dry oven (1.0 million Btu per hour maximum heat input capacity, ID No. ES-2PDO) and One natural gas-fired boiler (0.75 million Btu per hour maximum heat input capacity, ID No. ES6).

Applicant response – “ES-1PDO and ES-2PDO are process heaters; natural gas is used to indirectly heat air used in the paint dry ovens. 40 CFR Part 63, Subpart JJJJJ (6J) does not apply to ES-1PDO or ES-2PDO because 6J applies to certain boilers as defined in 63.11237; the definition of boiler in 6J specifically excludes process heaters. We did not address the question of whether each paint dry oven itself has a stack separate from the combustion unit because we determined this information was not required to determine regulatory applicability or for modeling; the location of the stack used for modeling toxic air pollutants (TAP) is the stack associated with the combustion of the natural gas. Paint operations are not being modified by this permit application; therefore, paint emissions were not included in the modeling demonstration.”

40 CFR §63.11237 specifically exempts “process heaters” and “gas-fired boiler” from being subject to this regulation.

3. Sources: Two natural gas/propane-fired washers (ID Nos. ES-1ES and ES-1EN). These two sources exempted as per definitions in 40 CFR §63.11237 (gas fired).
4. The rest of the other sources:
 - two natural gas/propane-fired primary block washers (ID Nos. ES-1CBP and ES-BBP),
 - one natural gas/propane-fired primary head washer (ID No. ES-CH),
 - two watertube type natural gas/propane-fired boilers (ID Nos. ES-1B and ES-2B),
 - one watertube type natural gas-fired boiler (ID No. ES-3B), and
 - four natural gas/propane-fired washers (ID Nos. ES-BH, ES-CBF, ES-1CRP and ES-1CRF) are all being removed.
5. The steam generating unit consisting of four natural gas-fired boilers with a maximum heat input of 5 million Btu per hour, each (IS-ES-IS1B) and natural gas-fired boiler with a maximum heat input of 1.2 million Btu per hour (IS-ES-3B-2) - these two sources exempted as per definitions in 40 CFR §63.11237 (gas fired).

C. 15A NCAC 2Q. 0317: “Avoidance Conditions” for 15A NCAC 02D .1111: “Maximum Achievable Control Technology (MACT)

The facility is a major source of HAPs emissions and currently subject to Case by Case MACT, MACT subpart DDDDD, subpart MMMM, subpart PPPPP (Only in the description in the source table) and subpart ZZZZ.

The facility has requested to become a minor source of HAPs emissions and avoid all the above MACTs applicable to major source of HAPs emissions. Based on 2017 actual emissions the total facility wide HAPs emissions was 9.15 tons per year and the highest emissions from a single HAP was 2.73 (Xylene (mixed isomers)). However, as a precaution and following with DAQ policy requirements are stipulated in the permit which limits the HAPs emissions from the facility such that hazardous air pollutants from the facility shall be less than:

- i. 10 tons per year of each hazardous air pollutant, and
- ii. 25 tons per year of all hazardous air pollutants combined.

Monitoring/Recordkeeping

To ensure that emissions from the facility are less than the 10/25 tons per year limits, applicant shall maintain monthly consumption records of each material used containing hazardous air pollutants such as:

- i. Material Safety Data Sheets (MSDS) or formulation data for cements, inks, paints, and solvents in

- the manufacturing process,
- ii. Usage of production related cements, inks, paints, solvents, and other production materials containing hazardous air pollutants,
 - iii. Use of the latest AP-42 factors in calculating the HAPs from combustion sources LPG and natural gas-fired hot oil heaters (ID Nos. ES-01 and ES-02) and diesel-fired emergency fire pump (ID No. EFP).
 - iv. Monthly production throughput data necessary to calculate hazardous air pollutant emissions, and
 - v. Monthly hazardous air pollutant emissions calculations and 12-month rolling total hazardous air pollutant emissions calculations by the end of each month for the previous month.

Reporting

The applicant shall submit a semi-annual summary report of monitoring and recordkeeping activities.

These requirements listed above are stipulated in Section 2.2 A. 1., of the modified permit.

D. GACT Subpart HHHHHH - National Emission Standards for Hazardous Air Pollutants: “Paint Stripping and Miscellaneous Surface Coating Operations at Area Sources”

The current sources listed below in the existing permit were subject to MACT Subpart MMMM “National Emission Standards for Hazardous Air Pollutants for Surface Coating of Miscellaneous Metal Parts and Products” because the facility was considered a major source of HAPs.

- one wet basin spray booth (ID No. ES-1SB),
- one touch up spray booth (ID No. ES-2SB) and
- three dry filter spray booths (ID Nos. ES-3SB, ES-4SB, and ES-5SB)

With the facility now becoming a minor source of HAPs emissions, these sources will be evaluated for applicability to GACT Subpart HHHHHH “National Emission Standards for Hazardous Air Pollutants: “Paint Stripping and Miscellaneous Surface Coating Operations at Area Sources.”

As per 40 CFR §63.11169 this subpart establishes national emission standards for hazardous air pollutants (HAP) for area sources involved in:

- i) 40 CFR §63.11169(a): Paint stripping operations that involve the use of chemical strippers that contain methylene chloride (MeCl), Chemical Abstract Service number 75092, in paint removal processes;
- ii) 40 CFR §63.11169(b): Autobody refinishing operations that encompass motor vehicle and mobile equipment spray-applied surface coating operations; and
- iii) 40 CFR §63.11169(c): Spray application of coatings containing compounds of chromium (Cr), lead (Pb), manganese (Mn), nickel (Ni), or cadmium (Cd), collectively referred to as the target HAP to any part or product made of metal or plastic, or combinations of metal and plastic that are not motor vehicles or mobile equipment.

As per the applicant “40 CFR Part 63, Subpart HHHHHH (6H) potentially applies to area sources that use spray coatings that contain Cr, Pb, Mn, Ni, or Cd, or paint strippers that contain methylene chloride [§ 63.11169 (a) and (c)]. The Consolidated Diesel Rocky Mount Engine Plant (RMEP) does not use spray coatings that contain Cr, Pb, Mn, Ni, or Cd, and they do not use paint strippers that contain methylene chloride. Therefore, 40 CFR Part 63 6H is not applicable to the operations at RMEP.”

Thus, none of the above sources will be subject to GACT Subpart HHHHHH.

State-enforceable onlyE. 15A NCAC 02D .1100: Toxic Air Pollutant Emission Limitation and Reporting Requirements

Section 2.2 B., of the permit requires test stands (ID Nos. ES-1DTS through ES-18DTS, ES-1NDTS through ES-13NDTS) and paint booths (ID Nos. ES-1SB through ES-5SB) to comply with 15A NCAC 2D .1100. This compliance is ensured by enforcing emissions limits of air toxic pollutants (TAPs) for the above sources (See the table in Section 2.2 B., of the permit).

Additionally, to ensure compliance the permit imposes certain restrictions as follows:

- i. The total amount of diesel fuel combusted shall not exceed 730,000 gallons per consecutive twelve-month period and not more than 450,000 gallons of diesel fuel shall be combusted in the combination diesel/biodiesel/natural gas-fired engine test stands (ID Nos. ES-1NDTS through ES-13NDTS) per consecutive twelve-month period,
- ii. the total amount of gasoline fuel combusted shall not exceed 80,000 gallons in the test stands (ID Nos. Seven engine test stands (ID Nos. ES-1NDTS, ES-2NDTS, ES-3NDTS, ES-4NDTS, ES-5NDTS, ES-6NDTS, and ES-7NDTS), Twelve engine test stands (ID Nos. ES-1PTS, ES-2PTS, ES-3PTS, ES-4PTS, ES-5PTS, ES-5PTS, ES-7PTS, ES-8PTS, ES-4DTS, ES-5DTS, ES-9DTS, and ES-10DTS) and One engine test stand (ID No. ES-18DTS) per consecutive twelve month period, and
- iii. for the two dry filter-type paint spray booths (ID Nos. ES-3SB and ES-4SB) the exhaust stack heights shall be at least 33 feet above ground level and shall not employ rain caps.

The reporting requirements are as follows:

The applicant shall every quarter report to DAQ the total number of gallons of diesel fuel combusted and the number of gallons of diesel fuel combusted in the combination test stands (ID Nos. ES-1NDTS through ES-13NDTS) for each of the previous fourteen (14) months.

The applicant wanted to remove existing TAPs limits on all engine test stands for acrolein, benzene, 1-3 butadiene, and formaldehyde and provided protocols for the facility-wide air dispersion modeling based on worst-case emission scenarios.

In a memo dated August 23, 2019, Mr. Mark Yoder, Meteorologist at the Air Quality Analysis Branch (AQAB) reviewed this dispersion modeling analysis with the above permit imposed certain restrictions and his findings of the maximum predicted impacts on the percentage of the Acceptable Ambient Level (AAL) for all modeled toxic pollutants are provided in the table below:

Maximum Impacts

Toxic	Averaging Period	% AAL
Acrolein	1-hour	11.2%
Arsenic	Annual	8.1%
Benzene	Annual	32.9%
Beryllium	Annual	2.9%
1,3- Butadiene	Annual	2.2%
Formaldehyde	1-hour	61.3%

Facility-wide air dispersion modeling based on worst-case emission scenarios demonstrates that the emissions of TAPs from the facility will not cause any acceptable ambient level listed in 15A NCAC 02D .1104 to be exceeded beyond the adjacent property boundary.

All engine test stands are a source of acrolein, benzene, 1-3 butadiene, and formaldehyde emissions and the maximum impact was found to be for formaldehyde at 61.3% of the AAL.

The facility has demonstrated that TAPs emissions from all the test stands will always comply with 2D .1100. Thus, the TAPs limits for all the test stands are removed from Section 2.2 B., of the modified permit. However, the TAPs limits for paint booths are not removed.

As per the applicant “TAP emission rate limits on the engine test stands are not required to ensure current or future compliance with acceptable ambient levels (AALs) at 15A NCAC 02D .1104 because dispersion modeling in this permit application is based on existing PSD-avoidance permit limits which also limit the TAP emission rates from the engine test stands.”

The applicant wanted the “730,000 gallons per consecutive twelve month period” limit in Section 2.2 B. 1. b., i., removed since this is based on a PSD avoidance condition. DAQ agrees with this. However, “not more than 450,000 gallons of diesel fuel shall be combusted in the combination diesel/biodiesel/natural gas-fired engine test stands” stays in place in the same section. Also, as per Mr. Yoder’s memo the modeling was done with combustion of 80,000 gal/yr of gasoline this limit gets incorporated into the limits in Section B. 1. b., of the modified permit (See Section B. 1. b., of the modified permit).

The reporting requirements have changed to have the applicant report every quarter to DAQ the total number of gallons of diesel fuel and gasoline combusted in the test stands (ID Nos. ES-1NDTS, ES-2NDTS, ES-3NDTS, ES-4NDTS, ES-5NDTS, ES-6NDTS, ES-7NDTS, ES-1PTS, ES-2PTS, ES-3PTS, ES-4PTS, ES-5PTS, ES-5PTS, ES-7PTS, ES-8PTS, ES-4DTS, ES-5DTS, ES-9DTS, ES-10DTS, and ES-18DTS) for each of the previous fourteen months (See Section 2.2 B. 1. c., of the modified permit).

Note - On 6/22/2020 (completed) an addendum was added to the application to modify the PSD avoidance condition where the annual diesel fuel consumed did not exceed 730,000 gallons (existing) and the amount of gasoline fuel combusted in combustion equipment did not exceed 80,000 gallons per consecutive 12-month period (See Section 2.2 C. 1. a. i., of the modified permit) (See Section III F., of this review, below).

However, none of the changes in the addendum affect the modeling results and restrictions in Section 2.2 B. 1. b., of the modified permit, remain in place.

F. 15A NCAC 02Q. 0317: “Avoidance Conditions” for (Avoidance of 15A NCAC 02D .0530: Prevention of Significant Deterioration)

In order to avoid Prevention of Significant Deterioration (PSD) Section 2.2. C., of the current permit limits the emissions from:

- a) fuel burning equipment (ID Nos. ES-1PDO, ES-2PDO, ES-1DTS through ES-18DTS, ES-1NDTS through ES-13NTDS, ES-2DG, ES-3ADG, ES-4DG through ES-8DG, ES-1NG, ES-1CBP, ES-BBP, ES-CH, ES-1B, ES-2B, ES-3B, ES6, ES-BH, ES-CBF, ES-1CRP, ES-1CRF, ES-1ES and ES-1EN) to emit less than 250 tons per year of NO_x emissions and
- b) Surface coating and rust prevention equipment (ID Nos. ES-1SB through ES-5SB and ES-1RPS) to emit less than 250 tons per year of VOC emissions.

The above NO_x emissions limits are achieved by limiting (as per the current permit):
 (A) the amount of diesel fuel combusted shall be less than 730,000 gallons per year; and
 (B) the natural gas-fired peak shaving generator (ID No. ES-1NG) shall operate no more than 250 hours per year.

As stated above the total amount of diesel fuel combusted shall not exceed 730,000 gallons per consecutive twelve month period, of which no more than 450,000 gallons of diesel fuel shall be combusted in the combination diesel/biodiesel/natural gas-fired engine test stands (ID Nos. ES-1NDTS through ES-13NDTS) per consecutive twelve month period to demonstrate compliance with toxic air pollutants (TAPs) emissions (15A NCAC 02D .1100).

The applicant requested to combust gasoline fuel to the above fuel combustion equipment not to exceed 80,000 gallons per consecutive 12-month period. The NO_x emissions from the above combustion sources is the controlling pollutant.

The table below shows the emissions of criteria pollutants based on the PSD avoidance limits in the current permit and the emissions based on the emissions by the proposed combustion of gasoline (80,000 gal/yr)

Criteria Pollutants	Existing PSD-Avoidance Conditions	Proposed Gasoline Use Only (80,000 gal/yr)
	Emissions (tpy)	Emissions (tpy)
PM	15.6	0.52
PM-10	15.6	0.52
PM-2.5	15.6	0.52

-Table continued on the next page-

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Criteria Pollutants	Existing PSD-Avoidance Conditions	Proposed Gasoline Use Only (80,000 gal/yr)
	Emissions (tpy)	Emissions (tpy)
NO _x	245	8.48
VOC ^b	19.1	15.8
CO	60.3	5.15
SO _x	14.6	0.44

The “existing PSD-Avoidance Conditions” in the table above is based on combustion of all 730,000 gallons of diesel fuel in engine test stands, continuous operation (8,760 hours) of all boilers/ovens/washers and 250 hours of continuous operation of the natural gas-fired peak shaving generator (ID No. ES-1NG) operating no more than 250 hours per year.

VOC emissions from parts washers, and surface coating and other paint operations are not included. All emission factors used the latest emissions factors corresponding to NCDAQ emissions estimation spreadsheets.

The combustion of 730,000 gallons of diesel fuel per year together with 80,000 gallons of gasoline per year crosses the 250 tons per year of NO_x emissions limit. The facility wanted to remain a minor source of PSD and stay within the 250 tons per year NO_x limit, but wanted the flexibility to use gasoline in their combustion sources.

On 6/22/2020 the applicant added an addendum to the application where they proposed:

- (1) federally enforceable permit limits that provide additional restriction on gasoline use in the test stands and on facility-wide diesel use to ensure potential emissions of NO_x are less than 250 tpy, and
- (2) add equations to calculate monthly allowable NO_x emissions from the test stands and other combustion sources where the diesel, gasoline and natural gas are combusted.

To limit NO_x emissions:

- (A) The amount of diesel fuel combusted shall be less than 730,000 gallons per consecutive 12-month period.
- (B) The natural gas-fired peak shaving generator (ID No. ES-1NG) shall operate no more than 250 hours per consecutive 12-month period.
- (C) The amount of gasoline fuel combusted in the above fuel combustion equipment shall be less than 80,000 gallons per consecutive 12-month period.

Monitoring and Record Keeping Requirements

Section 2.2 C. 1. b. i., of the modified permit requires the facility calculate the facility-wide monthly total NO_x emissions using the following equations:

$$NO_{x(TOTAL)} = NO_x A \left[\begin{array}{l} \text{Diesel-fired} \\ \text{peak shaving} \\ \text{generators} \end{array} \right] + NO_x B \left[\begin{array}{l} \text{Natural gas-fired} \\ \text{peak shaving} \\ \text{generator} \end{array} \right] + NO_x C \left[\begin{array}{l} \text{Natural gas-fired} \\ \text{boilers, ovens,} \\ \text{and washers} \end{array} \right] + NO_x D [\text{Test stands}]$$

Where:

$$(A) \ NO_x \left[\begin{array}{l} \text{Diesel-fired} \\ \text{peak shaving} \\ \text{generators} \end{array} \right] = \text{Diesel fuel used (gal)} \times \text{Diesel fuel Heat Input} \left(\frac{\text{Btu}}{\text{gal}} \right) \times \frac{\text{MMBtu}}{10^6 \text{ Btu}} \times \text{EF} \left(\frac{\text{lb NO}_x}{\text{MMBtu}} \right) \times \frac{\text{ton}}{2,000 \text{ lbs}}$$

Where:

$$\text{Diesel fuel Heat Input} \left(\frac{\text{Btu}}{\text{gal}} \right) = 137,000$$

$$NO_x \text{ Emissions Factor (EF)} \left(\frac{\text{lb NO}_x}{\text{MMBtu}} \right) = 3.2^1$$

$$(B) \ NO_x \left[\begin{array}{l} \text{Natural gas-fired} \\ \text{peak shaving} \\ \text{generator} \end{array} \right] = \text{Hours of operation (hrs)} \times \text{Max. Heat Input Rate} \left(\frac{\text{MMBtu}}{\text{hr}} \right) \times \text{EF} \left(\frac{\text{lb NO}_x}{\text{MMBtu}} \right) \times \frac{\text{ton}}{2,000 \text{ lbs}}$$

¹AP-42 - Chapter 3.4, Large Stationary Diesel and All Stationary Dual-fuel Engines (> 600 hp) (revised 10/96)

Where:

$$\text{Natural gas-fired peak shaving generator Max. Heat Input } \left(\frac{\text{MMBtu}}{\text{hr}} \right) = 20$$

$$\text{Natural gas Emission Factor (EF)} \left(\frac{\text{lb NO}_x}{\text{MMBtu}} \right) = 4.08^2$$

$$(C) \text{ NO}_x \left[\begin{array}{l} \text{Natural gas-fired} \\ \text{boilers, ovens,} \\ \text{and washers} \end{array} \right] = \text{Natural gas used (ft}^3) \times \text{Natural gas Heat Input } \left(\frac{\text{Btu}}{\text{ft}^3} \right) \times \frac{\text{MMBtu}}{10^6 \text{ Btu}} \times \text{EF}$$

$$\left(\frac{\text{lb NO}_x}{\text{MMBtu}} \right) \times \frac{\text{ton}}{2,000 \text{ lbs}}$$

Where:

$$\text{Natural gas Heat Input } \left(\frac{\text{Btu}}{\text{ft}^3} \right) = 1,020$$

$$\text{Natural gas Emission Factor (EF)} \left(\frac{\text{lb NO}_x}{\text{MMBtu}} \right) = 0.098^3$$

$$(D) \text{ NO}_x [\text{Test stands}] = \text{Diesel fuel used (gal)} \times \text{Diesel fuel Heat Input } \left(\frac{\text{Btu}}{\text{gal}} \right) \times \frac{\text{MMBtu}}{10^6 \text{ Btu}} \times \text{EF}_{\text{Diesel fuel}}$$

$$\left(\frac{\text{lb NO}_x}{\text{MMBtu}} \right) \times \frac{\text{ton}}{2,000 \text{ lbs}}$$

$$+ \text{Natural gas used (ft}^3) \times \text{Natural gas Heat Input } \left(\frac{\text{Btu}}{\text{ft}^3} \right) \times$$

$$\frac{\text{MMBtu}}{10^6 \text{ Btu}} \times \text{EF}_{\text{Natural gas}} \left(\frac{\text{lb NO}_x}{\text{MMBtu}} \right) \times \frac{\text{ton}}{2,000 \text{ lbs}}$$

$$+ \text{Gasoline used (gal)} \times \text{Gasoline Heat Input } \left(\frac{\text{Btu}}{\text{gal}} \right) \times \frac{\text{MMBtu}}{10^6 \text{ Btu}} \times \text{EF}_{\text{Gasoline}}$$

$$\left(\frac{\text{lb NO}_x}{\text{MMBtu}} \right) \times \frac{\text{ton}}{2,000 \text{ lbs}}$$

Where:

$$\text{Diesel fuel Heat Input } \left(\frac{\text{Btu}}{\text{gal}} \right) = 137,000$$

$$\text{EF}_{\text{Diesel fuel}} \left(\frac{\text{lb NO}_x}{\text{MMBtu}} \right) = 4.41^4$$

$$\text{Natural gas Heat Input } \left(\frac{\text{Btu}}{\text{ft}^3} \right) = 1,020$$

$$\text{EF}_{\text{Natural gas}} \left(\frac{\text{lb NO}_x}{\text{MMBtu}} \right) = 4.08$$

² Emission factors taken from AP-42, Chapter 3.2, Natural Gas-fired Reciprocating Engines, Table 3.2-2, Uncontrolled Emission Factors for 4-Stroke Lean-burn Engines. The facility manufactures and tests 4-stroke engines. Emission factors for NO_x emission are based on a load of 90 - 105%.

³ Emission factors taken from AP-42, Chapter 1.4, Natural Gas Combustion, Table 1.4-1 (Small boilers < 100 MMBtu/hr), Table 1.4-2 (Note - to convert units from lb/10⁶ ft³ to lb/MMBtu, divide by the natural gas heat content value of 1,020 MMBtu/10⁶ ft³).

⁴ For small diesel and gasoline engines (<= 600 hp), emission factors are from AP-42 Chapter 3.3, Gasoline and Diesel Industrial Engines (revised 10/96).

$$\text{Gasoline Heat Input} \left(\frac{\text{Btu}}{\text{gal}} \right) = 130,000$$

$$\text{EF}_{\text{Gasoline}} \left(\frac{\text{lb NO}_x}{\text{MMBtu}} \right) = 1.63^5$$

Sample calculations for gasoline and diesel usage for the boilers, burners, ovens, ES-1NG and engine test stands are given below:

1. Boilers, burners, and ovens

The calculation of facility-wide NO_x emissions assumes the boilers, burners, and ovens operate continuously (8,760 hours/year) at their maximum heat input rating. Therefore, NO_x emissions from these sources are calculated as follows:

$$\text{NO}_x \left[\begin{array}{l} \text{Natural gas-fired} \\ \text{boilers, ovens,} \\ \text{and washers (tons/yr)} \end{array} \right] = \text{Maximum Heat Input} \left(\frac{\text{MMBtu}}{\text{hr}} \right) \times \frac{8,760 \text{ hrs}}{\text{yr}} \times \text{EF} \left(\frac{\text{lb NO}_x}{\text{MMBtu}} \right) \times \frac{\text{ton}}{2,000 \text{ lbs}}$$

$$\text{Maximum Heat Input} \left(\frac{\text{MMBtu}}{\text{hr}} \right) = 33.15 \text{ (all boilers, burners, and ovens)}$$

$$\text{EF} \left(\frac{\text{lb NO}_x}{\text{MMBtu}} \right) = 0.098$$

$$\text{NO}_x \left[\begin{array}{l} \text{Natural gas-fired} \\ \text{boilers, ovens,} \\ \text{and washers (tons/yr)} \end{array} \right] = 33.15 \left(\frac{\text{MMBtu}}{\text{hr}} \right) \times \frac{8,760 \text{ hrs}}{\text{yr}} \times 0.098 \left(\frac{\text{lb NO}_x}{\text{MMBtu}} \right) \times \frac{\text{ton}}{2,000 \text{ lb}} = \mathbf{14.2 \frac{\text{tons}}{\text{yr}}}$$

2. ES-1NG

The calculation of facility-wide NO_x emissions assumes ES-1NG (the natural gas peak shaving generator) operates the maximum annual hours allowed by the existing air permit and at its maximum fuel input. Therefore, NO_x emissions from ES-1NG are calculated as follows:

$$\text{NO}_x \text{ [1NG (tons/yr)]} = \text{Maximum Heat Input} \left(\frac{\text{MMBtu}}{\text{hr}} \right) \times \left(\begin{array}{l} \text{Max. Allowable} \\ \text{Operating Hours} \\ \text{(hrs/yr)} \end{array} \right) \times \text{EF} \left(\frac{\text{lb NO}_x}{\text{MMBtu}} \right) \times \frac{\text{ton}}{2,000 \text{ lbs}}$$

$$\text{Maximum Heat Input} \left(\frac{\text{MMBtu}}{\text{hr}} \right) = 20$$

$$\left(\begin{array}{l} \text{Max. Allowable} \\ \text{Operating Hours} \\ \text{(hrs/yr)} \end{array} \right) = 250$$

$$\text{EF} \left(\frac{\text{lb NO}_x}{\text{MMBtu}} \right) = 4.08$$

$$\text{NO}_x \text{ [1NG (tons/yr)]} = 20 \left(\frac{\text{MMBtu}}{\text{hr}} \right) \times \frac{250 \text{ hrs}}{\text{yr}} \times 4.08 \left(\frac{\text{lb NO}_x}{\text{MMBtu}} \right) \times \frac{\text{ton}}{2,000 \text{ lbs}} = \mathbf{10.2 \frac{\text{tons}}{\text{yr}}}$$

⁵ For small diesel and gasoline engines (<= 600 hp), emission factors are from AP-42 Chapter 3.3, Gasoline and Diesel Industrial Engines (revised 10/96).

3. Engine test stands

NO_x emissions from the use of diesel fuel and gasoline in the engine test stands are calculated using the following equation:

$$\text{NO}_x \left[\begin{array}{c} \text{Test} \\ \text{stands} \\ \left(\frac{\text{tons}}{\text{yr}} \right) \end{array} \right] = \text{Diesel fuel used (gal/yr)} \times \text{Diesel fuel Heat Input} \left(\frac{\text{Btu}}{\text{gal}} \right) \times \frac{\text{MMBtu}}{10^6 \text{ Btu}} \times \\ \text{EF}_{\text{Diesel fuel}} \left(\frac{\text{lb NO}_x}{\text{MMBtu}} \right) \times \frac{\text{ton}}{2,000 \text{ lbs}} \\ + \\ \text{Gasoline used (gal/yr)} \times \text{Gasoline Heat Input} \left(\frac{\text{Btu}}{\text{gal}} \right) \times \frac{\text{MMBtu}}{10^6 \text{ Btu}} \times \\ \text{EF}_{\text{Gasoline}} \left(\frac{\text{lb NO}_x}{\text{MMBtu}} \right) \times \frac{\text{ton}}{2,000 \text{ lbs}}$$

where:

$$\text{Diesel fuel Heat Input} \left(\frac{\text{Btu}}{\text{gal}} \right) = 137,000$$

$$\text{EF}_{\text{Diesel fuel}} \left(\frac{\text{lb NO}_x}{\text{MMBtu}} \right) = 4.41$$

$$\text{Gasoline Heat Input} \left(\frac{\text{Btu}}{\text{gal}} \right) = 130,000$$

$$\text{EF}_{\text{Gasoline}} \left(\frac{\text{lb NO}_x}{\text{MMBtu}} \right) = 1.63$$

4. NO_x Emissions Calculations – Example 1

For this example, no natural gas is combusted in the test stands and the amount of gasoline and diesel combusted in the test stands are **47,000 and 730,000 gallons per year**, respectively.

Using the equations above, (“3. Engine test stands”) to calculate NO_x emissions from gasoline and diesel in the engine test stands:

$$\text{NO}_x \left[\begin{array}{c} \text{Test} \\ \text{stands} \\ \left(\frac{\text{tons}}{\text{yr}} \right) \end{array} \right]_{\text{Diesel}} = 730,000 \text{ (gal/yr)} \times 137,000 \left(\frac{\text{Btu}}{\text{gal}} \right) \times \frac{\text{MMBtu}}{10^6 \text{ Btu}} \times 4.41 \left(\frac{\text{lb NO}_x}{\text{MMBtu}} \right) \times \frac{\text{ton}}{2,000 \text{ lb}} = \mathbf{220.5}$$

$$\text{NO}_x \left[\begin{array}{c} \text{Test} \\ \text{stands} \\ \left(\frac{\text{tons}}{\text{yr}} \right) \end{array} \right]_{\text{Gasoline}} = 47,000 \text{ (gal/yr)} \times 130,000 \left(\frac{\text{Btu}}{\text{gal}} \right) \times \frac{\text{MMBtu}}{10^6 \text{ Btu}} \times 1.63 \left(\frac{\text{lb NO}_x}{\text{MMBtu}} \right) \times \frac{\text{ton}}{2,000 \text{ lb}} = \mathbf{4.98}$$

$$\text{NO}_x (\text{TOTAL}) = \text{NO}_x [\text{ING}] + \text{NO}_x \left[\begin{array}{c} \text{Natural gas-fired} \\ \text{boilers, ovens,} \\ \text{and washers} \end{array} \right] + \text{NO}_x [\text{Test stands}]$$

$$= 10.2 + 14.2 + 220.5 + 4.98 = \mathbf{249.9 \text{ tpy}}$$

5. NO_x Emissions Calculations – Example 2

For this example, no natural gas is combusted in the test stands and the amount of gasoline and diesel combusted in the test stands are 80,000 **and 718,427 gallons per year**, respectively.

Using the equations above, (“3. Engine test stands”) to calculate NO_x emissions from gasoline and diesel in the engine test stands:

$$\text{NO}_x \left[\begin{array}{c} \text{Test} \\ \text{stands} \\ \text{(tons/yr)} \end{array} \right]_{\text{Diesel}} = 718,427 \text{ (gal/yr)} \times 137,000 \left(\frac{\text{Btu}}{\text{gal}} \right) \times \frac{\text{MMBtu}}{10^6 \text{ Btu}} \times 4.41 \left(\frac{\text{lb NO}_x}{\text{MMBtu}} \right) \times \frac{\text{ton}}{2,000 \text{ lb}} = 217.0$$

$$\text{NO}_x \left[\begin{array}{c} \text{Test} \\ \text{stands} \\ \text{(tons/yr)} \end{array} \right]_{\text{Gasoline}} = 80,000 \text{ (gal/yr)} \times 130,000 \left(\frac{\text{Btu}}{\text{gal}} \right) \times \frac{\text{MMBtu}}{10^6 \text{ Btu}} \times 1.63 \left(\frac{\text{lb NO}_x}{\text{MMBtu}} \right) \times \frac{\text{ton}}{2,000 \text{ lb}} = 8.48$$

$$\begin{aligned} \text{NO}_x (\text{TOTAL}) &= \text{NO}_x [\text{1 NG}] + \text{NO}_x \left[\begin{array}{c} \text{Natural gas-fired} \\ \text{boilers, ovens,} \\ \text{and washers} \end{array} \right] + \text{NO}_x [\text{Test stands}] \\ &= 10.2 + 14.2 + 217.0 + 8.48 = \mathbf{249.9 \text{ tpy}} \end{aligned}$$

Based on the empirical equation (where no natural gas is combusted in the test stands) and Section 2.2 C. 1. b. i., of the modified permit, the sample calculations demonstrates when using **80,000** gallons per year of **gasoline** and less than **730,000** gallons per year of **diesel** fuel the potential NO_x emissions does not exceed 250 tons per year.

6. NO_x Emissions Calculations – Example 3

For historical look back purposes the facility used a two-year baseline from May 2018 to April 2020 and the annual fuel used in terms of gallons and cubic feet and hours of operation of sources are as mentioned in the table below:

Year	Month	Total diesel used in test stands (gallons)	Total natural gas used in test stands (ft ³)	Total diesel fuel used in peak shaving generators (gallons)	Total hours of operation for peak shaving generator (ES-1NG) (hrs)	Total natural gas used in boilers, ovens and washers (ft ³)
2018	May	48,367	310,000	0	0	648,000
	June	55,637	252,000	1,301	0	2,015,000
	July	43,520	99,000	0	0	1,694,000
	August	35,296	92,000	0	0	1,984,400
	September	33,689	265,000	0	0	1,717,000
	October	46,583	126,000	0	0	4,325,400
	November	26,067	239,000	0	0	7,366,800
	December	36,496	408,000	7,500	11	9,005,097
2019	January	38,841	805,000	0	4	10,416,408
	February	31,275	749,000	0	0	8,847,200
	March	35,181	683,000	0	0	9,345,600
	April	41,818	413,000	0	0	3,651,300
	May	44,017	232,000	3,555	15	2,002,505

	June	33,252	564,000	9,284	25	1,693,275
	July	37,471	1,327,000	24,618	39	1,106,453
	August	35,426	450,000	7,069	13	1,481,251
	September	27,208	168,000	1,871	2	1,495,554
	October	45,425	359,000	2,134	0	2,321,000
	November	31,756	469,000	243	0	6,934,300
	December	35,975	689,000	0	0	7,408,300
2020	January	38,616	530,000	0	0	8,390,000
	February	30,143	650,000	39	0	7,376,000
	March	26,137	639,000	189	0	4,945,300
	April	19,606	559,000	0	0	2,356,000
2 Year totals		877,802	11,077,000	57,803	109	108,526,143
Baseline average		438,901	5,538,500	28,902	54.5	54,263,072

The average annual usage is as follows:

Diesel-fired peak shaving generators: diesel fuel used (gal) = 28,902;

Natural gas-fired peak shaving generator (ES-1NG): hours of operation (hrs) = 54.5;

Natural gas-fired boilers, ovens, and washers: natural gas used (ft³) = 54,263,072;

Test stands:

Total Diesel fuel used (gal) = 438,901; and

Total Natural gas used (gal) = 5,538,500.

Using the above annual usage the and Section 2.2 C. 1. b. i., of the modified permit the NO_x emissions was calculated as follows:

$$\begin{aligned}
 \text{i. NO}_x \left[\begin{array}{l} \text{Diesel-fired} \\ \text{peak shaving} \\ \text{generators} \end{array} \right] &= 28,902 \text{ gal} \times 137,000 \left(\frac{\text{Btu}}{\text{gal}} \right) \times \frac{\text{MMBtu}}{10^6 \text{ Btu}} \times 3.2 \left(\frac{\text{lb NO}_x}{\text{MMBtu}} \right) \times \frac{\text{ton}}{2,000 \text{ lb}} \\
 &= \mathbf{6.34 \text{ tons}}
 \end{aligned}$$

$$\begin{aligned}
 \text{ii. NO}_x \left[\begin{array}{l} \text{Natural gas-fired} \\ \text{peak shaving} \\ \text{generator} \end{array} \right] &= 54.5 \text{ (hrs)} \times 20 \left(\frac{\text{MMBtu}}{\text{hr}} \right) \times 4.08 \left(\frac{\text{lb NO}_x}{\text{MMBtu}} \right) \times \frac{\text{ton}}{2,000 \text{ lb}} \\
 &= \mathbf{2.22 \text{ tons}}
 \end{aligned}$$

$$\begin{aligned}
 \text{iii. NO}_x \left[\begin{array}{l} \text{Natural gas-fired} \\ \text{boilers, ovens,} \\ \text{and washers} \end{array} \right] &= 54,263,072 \text{ (ft}^3\text{)} \times 1,020 \left(\frac{\text{Btu}}{\text{ft}^3} \right) \times \frac{\text{MMBtu}}{10^6 \text{ Btu}} \times 0.098 \left(\frac{\text{lb NO}_x}{\text{MMBtu}} \right) \times \frac{\text{ton}}{2,000 \text{ lb}} \\
 &= \mathbf{2.71 \text{ tons}}
 \end{aligned}$$

$$\begin{aligned}
 \text{iv. NO}_x \left[\text{Test stands} \right] &= 438,901 \text{ (gal)} \times 137,000 \left(\frac{\text{Btu}}{\text{gal}} \right) \times \frac{\text{MMBtu}}{10^6 \text{ Btu}} \times 4.41 \left(\frac{\text{lb NO}_x}{\text{MMBtu}} \right) \times \frac{\text{ton}}{2,000 \text{ lb}} \\
 &+ 5,538,500 \text{ (ft}^3\text{)} \times 1,020 \left(\frac{\text{Btu}}{\text{ft}^3} \right) \times \frac{\text{MMBtu}}{10^6 \text{ Btu}} \times 4.08 \left(\frac{\text{lb NO}_x}{\text{MMBtu}} \right) \times \frac{\text{ton}}{2,000 \text{ lb}} \\
 &= 132.6 + 11.5 = \mathbf{144 \text{ tons}}
 \end{aligned}$$

Baseline Average NO_x Emissions = 6.34 + 2.22 + 2.71 + 144 = **155 tons**

The applicant contends “the baseline average NO_x emissions are significantly less than the existing facility-wide NO_x limit of 250 tpy; therefore, the facility has sufficient remaining capacity in the facility-wide NO_x cap to accommodate **flexible use of diesel fuel, gasoline, and natural gas in all engine test stands.**”

G. Application # 6400232.19C – minor modification to the permit.

As per Section II A)., of this review above, the B) seven diesel generators (ID Nos. ES-2DG, ES-3ADG, and ES-4DG through ES-8DG) are being classified from new to existing sources and the testing frequency for ES-2DG and ES-4DG through ES-8DG is changed to every 8,760 hours or 3 years, whichever comes first, in conformance with Table 3 of MACT Subpart ZZZZ.

The applicant filed this minor modification on 12/02/2019 to ensure that facility complies with the testing frequency before the modified permit (Air Quality Permit No. 04620T31) for applications #s (6400232.19A – significant modification to the permit and 6400232.19B - renewal of this facility's permit) was issued.

This application (6400232.19C) along with the application for significant modification (6400232.19A) will be incorporated into the renewal application (6400232.19B).

The effective date of the permit will be the permit issuance date and not 60 days following the issuance date since the minor modification is being incorporated into the renewal.

H. Application # 6400232.19B - Renewal of this facility's Permit

i. Application Chronology:

The permit for the facility was last renewed on 2015 (Application Number # 6400232.15A) with the issuance of Air Quality Permit 04620T30 on August 20, 2015 with an expiration date of July 31, 2020. There has been no other modification to the permit since then.

ii. Purpose of Application:

This permitting action is a renewal of an existing Title V permit pursuant to 15A NCAC 2Q .0513. The existing Air Quality Permit No. 04620T30 was issued on August 20, 2015, and expires on July 31, 2020. The renewal application (Application # 6400232.19B) was received on October 25, 2019, or at least nine months prior to the expiration date. Therefore, the existing permit shall not expire until the renewal permit has been issued or denied. All terms and conditions of the existing permit shall remain in effect until the renewal permit has been issued or denied.

ii. This renewal will also require a review of the following regulations that the sources at this facility are subject to.

The facility is currently subject to the following regulations and any changes to their regulatory applicability is noted below:

a. 15A NCAC 2D .0503 "Particulates from Fuel Burning Indirect Heat Exchangers;"

15A NCAC 2D .0503 applies to:

One natural gas-fired cleaning and phosphating washer and oven (ID No. ES-1CPO);

Two natural gas-fired paint dry ovens (ID No. ES-1PDO and ES-2PDO);

Washers:

- Two natural gas/propane-fired primary block washers (ID Nos. ES-1CBP and ES-BBP);

- One natural gas/propane-fired primary head washer (ID No. ES-CH);

Boilers:

- Two watertube type natural gas/propane-fired boilers (ID Nos. ES-1B and ES-2B);
 - One watertube type natural gas-fired boiler (ID No. ES-3B);
 - One natural gas-fired boiler (ID No. ES6); and
- Six natural gas/propane-fired washers (ID Nos. ES-BH, ES-CBF, ES-1CRP, ES-1CRF, ES-1ES, and ES-1EN)

There is no change to the type of fuel or maximum heat capacity of the above sources, thus there is no change to the emission limits, testing, monitoring, record keeping and reporting requirements for these sources to comply with this regulation.

- b. 15A NCAC 2D .0515 "Particulates from Miscellaneous Industrial Processes;"
- c. 15A NCAC 2D .0516 "Sulfur Dioxide from Combustion Sources;"
- d. 15A NCAC 2D .0521 "Control of Visible Emissions;"

The applicant shall establish "normal" for these eight diesel/biodiesel/**gasoline**/natural gas engine test stands (ID Nos. ES-1PTS, ES-2PTS, ES-3PTS, ES-4PTS, ES-5PTS, ES-5PTS, ES-7PTS and ES-8PTS) in the first 30 days following the effective date of the beginning operation (See Section 2.1 E. 2. c., of the modified permit).

- e. 15A NCAC 2D .0524 "New Source Performance Standards" (40 CFR Part 60 Subparts IIII, JJJJ);
- f. 15A NCAC 2D .0958 "Work Practices for Sources of Volatile Organic Compounds;"

Section 2.2 A. 1., of the current permit subjects the VOCs emissions sources for the entire facility to this regulation. However, on November 1, 2016, amendments to 15A NCAC 02D .0902 were finalized to narrow applicability of work practice standards in 15A NCAC 02D .0958 from statewide to the maintenance area for the 1997 8-hour ozone standard. This change is being made primarily because the abundance of biogenic VOC emissions in North Carolina results in ozone formation being limited by the amount of available nitrogen oxides (NO_x) emissions. Provisions of the Clean Air Act require VOC requirements previously implemented in an ozone nonattainment area prior to re-designation remain in place. However, facilities outside the maintenance area counties for the 1997 8-hour ozone standard would no longer be required to comply with the work practice standards in 15A NCAC 02D .0958.

Effective November 1, 2016, 15A NCAC 02D .0958 is applicable only to following counties/areas in NC:

- (1) Cabarrus County;
- (2) Gaston County;
- (3) Lincoln County;
- (4) Mecklenburg County;
- (5) Rowan County;
- (6) Union County; and

(7) Davidson Township and Coddle Creek Township in Iredell County.

Since the facility is located in Nash County the 15A. NCAC 02D .0958 regulation is removed in the modified permit.

- g. 15A NCAC 2D .1100 "Control of Toxic Air Pollutants;"

(See Section III. E., of the review, above, address this issue)

- h. 15A NCAC 2D .1109 "112(j) Case-by-Case Maximum Achievable Control Technology;"
112(j) Case-by-Case MACT is outdated and thus, requirements for this regulation have been removed from the permit.

- i. 15A NCAC 2D .1111 "Maximum Achievable Control Technology" (40 CFR Part 63 Subparts MMMM, ZZZZ, PPPPP, DDDDD and JJJJJ);

See Section III. B., of the review, above, address all these issues related to 112(j) Case-by-Case MACT, MACT Subpart DDDDD & GACT Subpart JJJJJ)

(See Section III. A., of the review, above, address all applicability of MACT Subpart ZZZZ & NSPS Subpart IIII for the seven diesel generators, ID Nos. ES-2DG, ES-3ADG, and ES-4DG through ES-8DG)

(See Section III. D., of the review, above, address the applicability of GACT Subpart HHHHHH)

MACT subpart PPPPP is only in the description in the source table with a foot note "As per 40 CFR 63.9285, all engine test cells are subject to MACT Subpart PPPPP. However, according to 40 CFR 63.9290(b), "existing affected sources" do not have to meet the requirements of the MACT. All of the test stands at this facility are considered "existing affected sources"."
This reference to MACT subpart PPPPP is removed in the modified permit.

- j. 15A NCAC 2Q .0317 "Avoidance Conditions" (PSD Avoidance [VOC, NOx]);

(See Section III. F., of the review, above, address the PSD avoidance issue)

- k. The natural gas-fired peak shaving generator (ID Nos. ES-1NG) is currently subject to NSPS Subpart JJJJ and MACT subpart ZZZZ. There are no changes to the emission limit, monitoring, record keeping and reporting requirements due to the change of the facility status from a major source to an area source of HAPs emissions.

The modified permit is updated to reflect the most current stipulations for all applicable regulations as noted above.

IV. Application Processing Schedule, NSPS, NESHAPS/MACT, PSD, Attainment Status, 12(r), Air Toxics (NCGS) 143-215.107(a)(5) (House Bill 952), CAM, Permit Shield for Nonapplicable Requirements and Compliance Status:

Application Processing Schedule

The changes to the PSD avoidance condition regarding NO_x emissions (See Section III F., of this review, above and Section 2.2 C. 1., of the modified permit) where changes made to the fuel usage, monitoring, record keeping and reporting requirements will contravene the existing limits and conditions. Thus, the significant modification (application # 6400232.19A) will be processed as a Significant 15A NCAC 02Q .0501(c)(2) modification (one step)., i.e., it will be subject to a 30 day public notice and 45 day EPA review. This also, fulfills the requirements for the renewal (application # 6400232.19B).

Both these applications (App # 6400232.19A, significant modification and App # 6400232.19C, minor modification) will be incorporated into (App # 6400232.19B, renewal).

NSPS

Sources at this facility are subject to NSPS Subpart IIII “Standards of Performance for Stationary Compression Ignition Internal Combustion Engines,” (See the “Regulatory Summary” in Section III A., of this review, above) and NSPS subpart JJJJ “Standards of Performance for Stationary Spark Ignition Internal Combustion Engines.”

NESHAP/MACT

Sources at this facility are subject to GACT Subpart ZZZZ “national emission limitations and operating limitations for hazardous air pollutants (HAP) emitted from stationary reciprocating internal combustion engines (RICE) located at major and area sources of HAP emissions” (See Section III. A., of the review, above and Section 2.1 F. 4. & 6., of the modified permit).

The insignificant sources (ID. Nos. IS-ES-IS1B and IS-ES-3B-2) are not subject to GACT Subpart JJJJJ “National Emission Standards for Hazardous Air Pollutants for Industrial, Commercial, and Institutional Boilers Area Sources” (See Section III B. 5., of the review, above). The tank (IS-ES-T1) is subject to GACT Subpart CCCCC.

Attainment Status and Increments

This facility is located in Nash County, which is currently designated as an attainment area. The minor source baseline dates for this County have been triggered for PM₁₀ and SO₂ emissions increases. There are no hourly emission increases of these pollutants due to this renewal.

However, the following table calculates the PM₁₀ and SO₂ hourly emission increment associated with modifications and changes requested in the Title V permit application. After construction of the new engine test stands is complete, there will be a total of 11 engine test stands used for production.

Incremental Change in Hourly Pollutant Rate:

Source Description	Emission Source ID	Max. Hourly Fuel Input (MMBTU/hr)	PM-10 (lb/hr)	SO ₂ (lb/hr)
Equipment Added				
Engine Test Stands ¹	TBD	3.0	0.93	0.87
	TBD	3.0	0.93	0.87
Natural gas-fired steam generating unit	ES-IS1B ²	20	1.02E-02	1.18E-02

Source Description	Emission Source ID	Max. Hourly Fuel Input (MMBTU/hr)	PM-10 (lb/hr)	SO2 (lb/hr)
Natural gas-fired boiler	ES-3B-2 ³	1.12	5.71E-04	6.59E-04
Subtotal			1.87	1.75
Equipment Deleted				
Watertube-type natural gas/propane fired boiler	ES-1B ²	12	6.12E-03	7.06E-03
Watertube-type natural gas/propane fired boiler	ES-2B ²	12	6.12E-03	7.06E-03
Watertube-type natural gas fired boiler	ES-3B ³	0.75	3.83E-04	4.41E-04
Natural gas/propane fired primary block washer	ES-CBP ⁴	2.6	1.33E-03	1.53E-03
Natural gas/propane fired primary block washer	ES-BBP ⁴	3.9	1.99E-03	2.29E-03
Natural gas/propane-fired primary head washer	ES-CH ⁴	1.8	9.18E-04	1.06E-03
Natural gas/propane fired washer	ES-BH ⁴	1.8	9.18E-04	1.06E-03
Natural gas/propane fired washer	ES-CBF ⁴	0.5	2.55E-04	2.94E-04
Natural gas/propane fired washer	ES-CRP ⁴	1.6	8.16E-04	9.41E-04
Natural gas/propane fired washer	ES-1CRF ⁴	2.4	1.22E-03	1.41E-03
Subtotal			1.851	1.729
Total (Added - Deleted)			0.020	.023

¹ Engine test stands (ID Nos. ES. -8NDTS through ES-13NDTS, and ES-11DTS through ES-17DTS), are not included because these units were never constructed. After construction of the new engine test stands is complete, there will be a total of 11 engine test stands used for production.

² (ID Nos. ES-1B and ES-2B) were replaced by (ID No. ES-IS1B).

³ (ID No. ES-3B) was replaced by (ID No. ES-3B-2).

⁴ Units converted to electric power.

Summary of Emission Factors used (lb/MMBtu):

Emission Source	PM-10	SO2
Engine test stands	0.31	0.29
Boilers	5.10E-04	5.88E-04

¹See Application No. 6400232.19A, Form A, Attachment 3 of 12.

112(r)

This facility is not subject to Section 112(r) of the Clean Air Act requirements because it does not store any of the regulated substances in quantities above the thresholds in this rule.

CAM

The Compliance Assurance Monitoring (CAM) Rule (40 CFR Part 64) applies to pollutant-specific emissions units (PSEU) that are pre-control major sources and use a control device to comply with an emissions limit. None of the sources at this facility are subject to a CAM plan.

Compliance with Toxics - (NCGS) 143-215.107(a)(5) (House Bill 952)

Toxic Air Pollutant Emissions

Facility-wide air dispersion modeling based on worst-case emission scenarios demonstrated that the emissions of TAPs from the facility were below the Acceptable Ambient Levels (AAL) (See Section III. E., of the review, above). Thus, this modification/renewal will not increase any toxic air pollutant emissions to the environment that will present an unacceptable risk to human health and thus comply with North Carolina General Statute (NCGS) 143-215.107(a)(5) (House Bill 952).

Permit Shield for Nonapplicable Requirements

As per 15A NCAC 02Q .0512(a)(1)(B) “the Director, in acting on the permit application or revision, determines in writing that other requirements specifically identified are not applicable to the source and the permit includes that determination or a concise summary thereof” and because of the 15A NCAC 02Q. 0317 “Avoidance Conditions” for 15A NCAC 2D .1111: “Maximum Achievable Control Technology (MACT) (See Section III C., of this review, above, and Section 2.2 A. 1., of the modified permit). The below mentioned MACTs are included in the shield:

- MACT Subpart DDDDD - “National Emission Standards for Hazardous Air Pollutants for Major Sources: Industrial, Commercial, and Institutional Boilers and Process Heaters,”
- MACT Subpart MMMM - “National Emission Standards for Hazardous Air Pollutants for Surface Coating of Miscellaneous Metal Parts and Products,” and
- MACT subpart PPPPP – “National Emission Standards for Hazardous Air Pollutants for Engine Test Cells/Stands.”

GACT/MACT HHHHHH – “National Emission Standards for Hazardous Air Pollutants: Paint Stripping and Miscellaneous Surface Coating Operations at Area Sources” is not included since this regulation also applies to Area sources.

This permit shield does not apply to future modifications or changes in the method of operation as long as the 02Q. 0317 “MACT Avoidance Conditions” (Section 2.2 A. 1., of the modified permit) is in place.

This permit shield is incorporated in Section 2.3 of the modified permit.

Compliance Status

Per the latest inspection performed on August 8, 2019 by Dawn Reddix of the Raleigh Regional Office, the facility appeared to be in compliance.

V. Consistency Determination, Comments, and Recommendations

A zoning consistency determination was not required for renewal (6400232.19B) and the minor modification (6400232.19C) since no new emissions sources being added, but required for the significant modification (6400232.19A).

The applicant did provide this Determination by providing notification to Nash County Planning and Inspections. This notification was provided to Mr. Adam Tyson, Nash County Planning Director, and received by them on 6/3/2020.

A professional engineer's seal was required for the significant modification (6400232.19A). This was provided by Mr. Chris Bagley, P.E., on 6/22/2020. Mr. Bagley is a registered professional engineer for the State of North Carolina and his P. E., seal number is 038748.

The Regional Office, the applicant, and the SSCB (Stationary Source Compliance Branch) were provided a copy of the modified draft permit for this application for their comments and their comments were taken into consideration.

The applicant made the following comments:

- Insignificant sources the natural gas-fired boilers (ID Nos. IS-ES-IS1B and IS-ES-3B-2) were exempted from GACT subpart JJJJJ since they gas fired.
- Summarized comments - for new stationary engines located at any area source meet the requirements of the MACTs by complying with the applicable NSPS Subpart IIII for CI engines and Subpart JJJJ for SI engines. Therefore, for existing sources (ID Nos. ES-2DG, and ES-4DG through ES-8DG) NSPS Subpart IIII does not apply.
- Updated several regulatory references for MACT Subpart ZZZZ (for existing sources ID Nos. ES-2DG and ES-4DG through ES-8DG) and NSPS Subpart JJJJ (for new source the natural gas-fired peak shaving generator (ID Nos. ES-1NG, in Section 2.1 K., of the current permit).
- Remove two natural gas/propane-fired primary block washers (ID Nos. ES-1CBP and ES-BBP) and one natural gas/propane-fired primary head washer (ID No. ES-CH) (listed in Section 2.1 G., of the current permit).
- Remove two watertube type natural gas/propane-fired boilers (ID Nos. ES-1B and ES-2B) and one watertube type natural gas-fired boiler (ID No. ES-3B) (listed in Section 2.1 H., of the current permit).
- Remove four natural gas/propane-fired washers (ID Nos. ES-BH, ES-CBF, ES-1CRP and ES-1CRF) (listed in Section 2.1 J., of the current permit).
- The applicant clarified that the 450,000 gallons per year diesel fuel limit to demonstrate compliance with toxics does not apply all the engine test stands, but to the following seven test stands (ID Nos. ES-1NDTS, ES-2NDTS, ES-3NDTS, ES-4NDTS, ES-5NDTS, ES-6NDTS, and ES-7NDTS).

- The fuel burning combustion equipment listed in Section 2.2 C., of the modified permit has been corrected to reflect the sources that were removed and are listed as:(ID Nos. ES-1PDO, ES-2PDO, ES-1DTS through ES-8PTS, ES-4DTS, ES-5DTS, ES-9DTS, ES-10DTS, ES-18DTS, ES-1NDTS through ES-13NTDS7NTDS, ES-2DG, ES-3ADG, ES-4DG through ES-8DG, ES-1NG, ES-1CBP, ES-BBP, ES-CH, ES-1B, ES-2B, ES-3B, ES6, ES-BH, ES-CBF, ES-1CRP, ES-1CRF, ES-1ES and ES-1EN).
- Requested the addition of several MACTs to the Permit Shield for Non-applicable Requirements in Section 2.3 of the modified permit:

MACT Subpart HHHHHH - “National Emission Standards for Hazardous Air Pollutants: Paint Stripping and Miscellaneous Surface Coating Operations at Area Sources” is not applicable to ES-1SB through ES-5SB, and ES-1RPS because the facility uses no target HAP containing coating, as defined at 40 CFR §63.11180;

MACT Subpart JJJJJJ – “National Emission Standards for Hazardous Air Pollutants for Industrial, Commercial, and Institutional Boilers Area Sources” because each gas-fired boiler, as defined by 40 CFR §63.11237, is exempt from this subpart pursuant to 40 CFR §63.11195(e);

MACT Subpart XXXXXX – “National Emission Standards for Hazardous Air Pollutants Area Source Standards for Nine Metal Fabrication and Finishing Source Categories” is not applicable to ES-1SB through ES-5SB, and ES-1RPS because the facility does not conduct spray painting operations using material containing metal fabrication or finishing metal HAP (MFHAP), as defined in 40 CFR §63.11522.

All those comments and requests by the applicant have been approved and accounted for in this review and modified permit.

The SSCB did not have comments.

The Regional Office comments were received on 8/7/2020 and in discussion on 8/11/2020 with the regional office staff Mary Fontana & Dawn Reddix the following major points were discussed:

- 1) Address deleted, added & modified sources in the summary table;
- 2) For the table for summary of limits and standards for the emission sources removed MACT avoidance requirements references if the sources are not subject to MACT;
- 3) Add PSD avoidance to several combustion sources that were omitted;
- 4) Section 2.2 C., of the modified permit the sources should be listed in Permit Order. This was done;
- 5) To a question of regarding certification or testing of four-cycle, lean burn, natural gas-fired peak shaving generator (ID Nos. ES-1NG) subject to GACT ZZZZ and NSPS JJJJ.

As per Section 2.1 J 3. d., of the modified permit the initial performance test was conducted on July 1, 2014., and the applicant shall conduct a subsequent performance test every 8,760 hours of engine operation or 3 calendar years, whichever comes first. As per current permit Air Quality Permit No. 04620T30 the summary of changes table states “Updated the stipulation for NSPS Subpart JJJJ to reflect the fact that ES-1NG is not a certified engine.”

VI. Miscellaneous

- The responsible official in the draft permit matches the information on IBEAM.
- The facility address matches the information on IBEAM.
- All the regulatory references to 15A NCAC 02Q and 15A NCAC 02D have been verified.
- Every instance of the word “assure” has been changed to “ensure” in the modified permit.
- Removed all references from the bottom of the permitted sources table that no longer apply.
- Removed word “Subpart” from the permit sources table (i.e., NSPS Subpart IIII, etc.).
- All old testing requirements have been deleted.
- Updated language from the shell for regulations (example 15A NCAC 02D .0515, .0521, .0516, etc., See Section III a., through j., of this review, above).
- Updated General Conditions.

VII. Permit Modification/Changes

Table of changes made in Air Quality Permit No. 04620T31

Page(s)	Section	Description of Change(s)
Cover letter		Change in name of Responsible Officer for this facility
Insignificant activities list	Steam generating unit (IS-ES-IS1B, natural gas-fired boiler (IS-ES-3B-2 and above-ground gasoline storage tank (IS-ES-T1).	These new sources were added
ES-8NDTS through ES-13NDTS	Units never constructed.	Diesel/biodiesel/natural gas test stands (3.0 MMBtu/hr max. heat input capacity, each)
3 through 5	table of summary of all permitted emission sources	Renumbered the reference pages
3 through 6	Permitted emission sources and associated air pollution control devices table	Removed all reference to Case by Case MACT; MACT DDDDD and MACT PTTTT.
3 through 6	Permitted emission sources and associated air pollution control devices table	Removed word "Subpart" from the permit sources table
5	Permitted emission sources and associated air pollution control devices table	diesel-fired generator (ES-3ADG subject to MACT ZZZZ and NSPS IIII)
5	2.1 A.	Added reference to 2Q .0317 MACT Avoidance
7	2.1 B.	Added reference to 2Q .0317 MACT Avoidance
8	2.1 C.	Added reference to 2Q .0317 MACT Avoidance
10	2.1 D.	Added reference to 2Q .0317 MACT Avoidance
12	2.1 E.	Added reference to 2Q .0317 MACT Avoidance
13	2.1 E. 2. c.,	Establish "normal" for these eight diesel/biodiesel/gasoline/natural gas engine test stands (ID Nos. ES-1PTS, ES-2PTS, ES-3PTS, ES-4PTS, ES-5PTS, ES-5PTS, ES-7PTS and ES-8PTS) in the first 30 days following the effective date of the beginning of operation.
14	2.1 F.	Added reference to 2Q .0317 MACT Avoidance
15 through 19	2.1 F. 3.,	Added Subpart ZZZZ (for existing sources ID Nos. ES-2DG and ES-4DG through ES-8DG)
16	2.1 F. 3. n. iii.,	For the six existing diesel generators (ID Nos. ES-2DG and ES-4DG through ES-8DG) conduct subsequent performance tests every 8,760 hours or 3 years, whichever comes first.
19 to 20	2.1 F. 4.,	Applicability of NSPS Subpart IIII for new non-emergency engine (ID No. ES-3ADG).
20	2.1 F. 5.,	Applicability of MACT Subpart ZZZZ for new non-emergency engine (ID No. ES-3ADG).
21	2.1 G.	Added reference to 2Q .0317 MACT Avoidance
23	2.1 H.	Added reference to 2Q .0317 MACT Avoidance
24	2.1 I.	Added reference to 2Q .0317 MACT Avoidance
25	2.1 J.	Added reference to 2Q .0317 MACT Avoidance
27	2.1 J. 4.,	Applicability of MACT Subpart ZZZZ for new natural gas-fired peak shaving generator (ID Nos. ES-1NG)
28	2.2 A.	2Q .0317 MACT avoidance limits.
29	2.2 B.	Remove toxics limits for some sources

Page(s)	Section	Description of Change(s)
30 to 31	2.2 C. 1.,	New PSD avoidance limits for gasoline and diesel fuel usage.
30 to 31	2.2 C. 1. b., through d.,	New monitoring and record keeping requirements for gasoline and diesel fuel usage
33	2.3	Permit Shield for Non-applicable Requirements
34 through 42	General Conditions	Updated to current revision
Sources from previous permit (Permit No. 04620T30) that were removed		
ES-8NDTS through ES-13NDTS	Units never constructed.	Diesel/biodiesel/natural gas test stands (3.0 MMBtu/hr max. heat input capacity, each)
ES-11DTS through ES-17DTS	Units never constructed.	Diesel/biodiesel/natural gas test stands (3.0 MMBtu/hr max. heat input capacity, each)
ES-1CBP and ES-BBP	Units converted to electric power.	Two natural gas/propane fired primary block washers (2 .6 and 3.9 MMBtu/hr maximum heat input capacity, respectively)
ES-CH	Unit converted to electric power.	One natural gas/propane-fired primary head washer (1.8 MMBtu/hr maximum heat input capacity)
ES-1B and ES-2B	Units converted to electric power.	Two watertube-type natural gas/propane fired boilers (12 MMBtu/hr maximum heat input, each)
ES-3B	Replaced by new insignificant source IS-ES-3B-2	Two watertube-type natural gas/propane fired boilers (12 MMBtu/hr maximum heat input, each)
ES-BH, ES-CBF, ES-1CRP, and ES-1CRF	Units converted to electric power.	Four natural gas/propane fired washers (1.8, 0.5, 1.6, and 2.4 MMBtu/hr heat input capacity, respectively)
Sources Modified from previous permit (Permit No. 04620T30)		
ES-1DTS, ES-2DTS, ES-3DTS, ES-4DTS, ES-5DTS, ES-6DTS, ES-7DTS, ES-8DTS, ES-9DTS, and ES-10DTS.		These sources were modified to burn gasoline as a new fuel. Applicant also, requested above sources ID Nos. changed to the Nos., below: ES-1PTS, ES-2PTS, ES-3PTS, ES-4PTS, ES-5PTS, ES-6PTS, ES-7PTS, ES-8PTS, ES-4DTS, ES-5DTS, ES-9DTS, and ES-10DTS
ES-1NDTS, ES-2NDTS, ES-3NDTS, ES-NDTS, ES-5NDTS, ES-6NDTS, and ES-7NDTS		These sources were modified to burn gasoline as a new fuel.