UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
Region 4
Atlanta, Georgia

Preliminary Determination & Statement of Basis

Outer Continental Shelf Air Permit OCS-EPA-R4007

for

Eni US Operating Company Incorporated
Holy Cross Drilling Project: Lloyd Ridge 411

August 31, 2011

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ABBREVIATIONS AND ACRONYMS

AP-42	AP-42 Compilation of Air Pollutant Emissions Factors
AQRV	Air Quality Related Values
BACT	Best Available Control Technology
BOEMRE	Bureau of Ocean Energy Management, Regulation and Enforcement
CAA	Clean Air Act
CFR	Code of Federal Regulations
CO	Carbon Monoxide
CO_2e	Carbon Dioxide Equivalent
m^3	Cubic Meters
DEWT	Diesel Engines with Turbochargers
EPA	United States Environmental Protection Agency
ESA	Endangered Species Act
GHG	Greenhouse Gas
ha	Hectare
HAP	Hazardous Air Pollutants
HFO	Heavy Fuel Oil
hp	Horsepower
IC	Internal Combustion
IMO	International Maritime Organization
kPa	kilopascals
LNE	Low NO_x Engine
MSA	Magnuson-Stevens Fishery Conservation and Management Act
NAAQS	National Ambient Air Quality Standards
NESHAP	National Emission Standards for Hazardous Air Pollutants
NO_2	Nitrogen Dioxide
NOAA	National Oceanic and Atmospheric Administration
NO_x	Oxides of Nitrogen
NSPS	New Source Performance Standards
NSR	New Source Review
OCS	Outer Continental Shelf
OCSLA	Outer Continental Shelf Lands Act
part 55	40 CFR part 55
Pathfinder	Transocean *Pathfinder* drillship
PM	Particulate matter
$PM_{2.5}$	Particulate matter with an aerodynamic diameter less than 2.5 microns
PM_{10}	Particulate matter with an aerodynamic diameter less than ten microns
ppmw	Parts per million by weight
PSD	Prevention of Significant Deterioration
PTE	Potential to Emit
RBLC	RACT/BACT/LAER Clearinghouse
rpm	revolutions per minute
SER	Significant emission rate
SO_2	Sulfur dioxide
Support Vessels	Work Boat, Crew Boat and Anchor Handling Boat
TPY	Tons Per Year
VOC	Volatile Organic Compound

1. Introduction:

Eni US Operating Co., Incorporated ("Eni") has applied for a Clean Air Act (CAA) Outer Continental Shelf (OCS) air permit pursuant to section 328 of the Clean Air Act from the United States Environmental Protection Agency (EPA) Region 4 for their proposed mobilization and operation of the Transocean *Pathfinder* drillship and support vessels at Lloyd Ridge Lease Block 411 in the Gulf of Mexico. The exploratory drilling activity, known as that Holy Cross Drilling Project, will consist of two phases: the initial drilling phase and the well-completion phase. The operation will last no more than 150 days, and based on applicable permitting regulations, qualifies as a "temporary source" for preconstruction permitting purposes.

The EPA Region 4 is the agency responsible for implementing and enforcing CAA requirements for OCS sources in the Gulf of Mexico east of 87'30" (87.5).[1] The EPA has completed review of the application and supplemental materials and proposes to issue Permit No. OCS-EPA-R4007 to Eni for an exploratory natural gas drilling project subject to the terms and conditions described in the permit. The draft permit incorporates the applicable requirements from the federal Prevention of Significant Deterioration preconstruction and title V operating permit programs, New Source Performance Standards (NSPS), and National Emission Standards for Hazardous Air Pollutants (NESHAP), as required by the OCS Air Quality Regulations at 40 CFR part 55.

This document serves as a fact sheet, preliminary determination and statement of basis for the draft permit. It provides an overview of the project, a summary of the applicable requirements, the legal and factual basis for the draft permit conditions, and the EPA's analysis of key aspects of the application and permit, such as the best available control technology (BACT) analysis and Class I area impact analysis. Additional and more detailed information can be found in the draft permit accompanying this document, as well as in the application and administrative record for this project.[2]

2. Applicant Information:

2.1 Applicant Name and Address

Eni US Operating Co., Incorporated
1201 Louisiana, Suite 3500
Houston, Texas 77002

2.2 Facility Location

Eni proposes to drill for natural gas in Lloyd Ridge (Lease Block 411) located in the OCS waters of the Gulf of Mexico east of longitude 87.5. The drill site is located at latitude 27' 35" and longitude 87' 12", or approximately 154 miles southeast of the mouth of the Mississippi River and 189 miles south of the nearest Florida coast.

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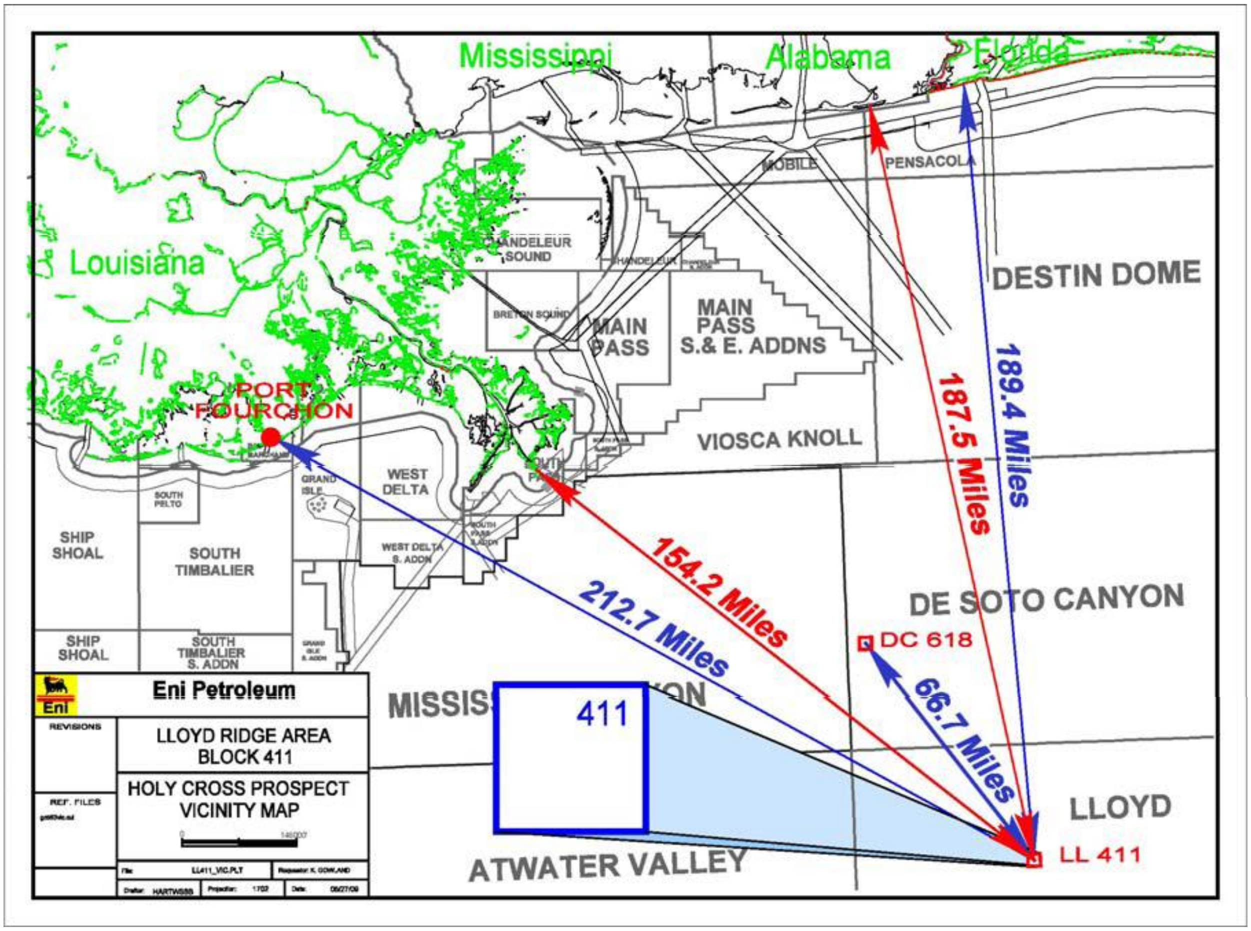
[1] *See* CAA § 328. The Bureau of Ocean Energy Management, Regulation and Enforcement has jurisdiction for Clean Air Act implementation west of 87'30".

[2] The procedures governing the issuance of both OCS and PSD permits are set forth at 40 CFR part 124, subparts A and C. *See* 40 CFR §§ 55.6(a)(3) and 124.1. Accordingly, EPA has followed the procedures of 40 CFR part 124 in issuing this draft permit. This Preliminary Determination describes the derivation of the permit conditions and the reasons for them as provided in 40 CFR § 124.7, and also serves as a Fact Sheet as provided in 40 CFR § 124.8 and statement of basis required by 40 CFR § 71.7(a)(5).



Source: Eni August 2010 Application

3. Proposed Project:

Eni proposes to operate the *Pathfinder* deepwater drilling vessel and the associated support vessels to perform exploratory drilling activities for up to150 days at Lloyd Ridge Lease Block 411 in the Gulf of Mexico. Eni is applying for an OCS air permit that will incorporate Prevention of Significant Deterioration (PSD) preconstruction and title V operating permit program requirements.
The operation will last a maximum of two years, and based on applicable permitting regulations, is a "temporary source" for PSD permitting purposes.

The drilling vessel is a dynamically positioned drillship that is designed for operation in deep water. As a dynamically positioned drillship, the *Pathfinder* maintains its position over the desired location by using computer-controlled thruster propellers. Therefore, anchors are not needed in order to maintain its position.

Air pollutant emissions generated from the Holy Cross Drilling Project will include carbon monoxide (CO), oxides of nitrogen (NO_x), particulate matter (PM), particulate matter with an aerodynamic diameter less than 2.5 microns ($PM_{2.5}$), particulate matter with an aerodynamic diameter less than 10 microns (PM_{10}), sulfur dioxide (SO_2) and volatile organic compounds (VOC) (known as criteria pollutants), as well as other regulated air pollutants, including greenhouse gas (GHG) pollutants. VOC and NO_x are the measured precursors for the criteria pollutant ozone, and NO_x and SO_2 are measured precursors for $PM_{2.5}$. These emissions are primarily released from the combustion of diesel fuel in the engines which produce power for the thrusters to hold the dynamically positioned drillship in place, operate the drilling equipment, and stabilize the marine drilling risers. Emissions from fuel storage tanks, and activities, such as cementing the well and pumping heavy lubricating muds, will also contribute to the total amount of pollutants emitted. Based on emissions estimates, and the applicable permitting thresholds, the project is considered to have significant emissions of NO_x (as the measured pollutant for the criteria pollutants nitrogen dioxide and ozone, and as a precursor to $PM_{2.5}$), CO, GHG, PM/PM_{10}/$PM_{2.5}$, and VOC (as the measured pollutant for the criteria pollutant ozone), and is subject to the CAA’s title I, part C, PSD preconstruction permit program and the CAA’s title V operating permit program as a result of these emissions.

Eni will complete the project in two phases. The *Pathfinder* and associated support vessels will conduct the initial drilling phase and the well-completion phase. During the initial drilling phase the diesel engines of the drillship power the drilling of several holes in the sea floor. This first phase will take approximately 90 days. If necessary, the completion phase will result in the installation of a sub-sea well head and production tubing on the sea floor. A completion program typically takes 60 days and requires much less energy.

The main generator engines onboard the *Pathfinder* include three Wärtsilä 18V32 LNE diesel engines with a rated power output of approximately 9,910 horsepower (hp) each and three Wärtsilä 12V32 LNE diesel engines with a rated power output of approximately 6,610 hp each. The *Pathfinder* will operate with a maximum of two of each type of main propulsion diesel electric generators. In addition the drillship will include: two crane Caterpillar engines with a rated power output of approximately 525 hp, two crane Caterpillar engines with a rated power output of approximately 500 hp, a 9.6 MMBtu/hr diesel boiler, and emergency equipment. The emissions from all diesel engines will be controlled using turbochargers with aftercoolers, injection timing retard, and high injection pressure. Emissions will be further controlled using good combustion practices.

A combination of crew boats and supply boats (support vessels) will support the drillship. The support vessels will transport personnel, supplies, and fuel to the drillship, as required, during the entire duration of the exploratory drilling project. The anchor handling boat will act as a work boat or support vessel, but will not be used to set anchors while on site. The support vessels will be used interchangeably depending on availability, and therefore it is not known which specific vessel will be available when drilling commences. To accommodate this uncertainty, Eni selected the largest support vessel (based on total engine rating), the *Max Chouest*, and calculated the emissions based on the worst-case scenario.

The support vessel (the *Max Chouest*) engines will be rated at approximately 15,200 hp for the two main propulsion engines, and two 1,500 hp and one 1,200 hp thruster engine. The support vessel also includes one 402 hp and three 2011.5 hp generator engines.

4. Legal Authority and Regulatory Applicability:

4.1 EPA Jurisdiction

The 1990 CAA Amendments transferred authority for implementation of the CAA for sources subject to the Outer Continental Shelf Lands Act (OCSLA) from the Minerals Management Service (now the Bureau of Ocean Energy Management, Regulation and Enforcement (BOEMRE)) to the EPA for all areas of the OCS, with the exception of the Gulf of Mexico, west of 87.5 degrees longitude. Section

328(a)(1) of the CAA requires the EPA to establish requirements to control air pollution from OCS sources east of 87.5 degrees longitude, in order to attain and maintain federal and state ambient air quality standards and to comply with the provisions of part C (Prevention of Significant Deterioration) of title I of the CAA.

4.2 OCS Air Regulations

The OCS Air Regulations at 40 CFR part 55 implement section 328 of the CAA and establish the air pollution control requirements for OCS sources and the procedures for implementation and enforcement of these requirements. The regulations define "OCS source" by incorporating and interpreting the statutory definition of OCS source:

OCS source means any equipment, activity, or facility which:

> (1) Emits or has the potential to emit any air pollutant;
> (2) Is regulated or authorized under the OCSLA (43 U.S.C. §1331 et seq.); and
> (3) Is located on the OCS or in or on waters above the OCS.

This definition shall include vessels only when they are:

> (1) Permanently or temporarily attached to the seabed and erected thereon and used for the purpose of exploring, developing or producing resources there from, within the meaning of section 4(a)(I) of OCSLA (43 U.S.C. §1331 et seq.); or
> (2) Physically attached to an OCS facility, in which case only the stationary source aspects of the vessels will be regulated [40 CFR § 55.2; *see also* CAA § 328(a)(4)(C), 42 U.S.C. § 7627].

Section 328 and part 55 distinguish between OCS sources located within 25 miles of a state's seaward boundary and those located beyond 25 miles of a state's seaward boundary [CAA § 328(a)(1); 40 CFR §§ 55.3(b) and (c)]. In this case, Eni is seeking a permit for an exploratory drilling operation that will be conducted exclusively beyond 25 miles of any state's seaward boundary.

The OCS Air Regulations set forth the federal CAA requirements that apply to OCS sources. Sources located beyond 25 miles of a state's seaward boundaries are subject to the NSPS (40 CFR part 60); the PSD preconstruction program (40 CFR § 52.21) if the OCS source is also a major stationary source or a major modification to a major stationary source; standards promulgated under Section 112 of the CAA if rationally related to the attainment and maintenance of federal and state ambient air quality standards or the requirements of part C of title I of the CAA; and the title V operating permit program (40 CFR part 71). *See* 40 CFR §§ 55.13(a), (c), (d)(2), (e), and (f)(2), respectively. The applicability of these requirements to Eni's Holy Cross Drilling Project is discussed below.

The OCS regulations also contain provisions relating to monitoring, reporting, inspections, compliance, and enforcement. *See* 40 CFR §§ 55.8 and 55.9. Sections 55.8(a) and (b) authorize the EPA to require monitoring, reporting and inspections for OCS sources and provide that all monitoring, reporting, inspection and compliance requirements of the CAA apply to OCS sources. These provisions, along with the provisions of the applicable substantive programs listed above, provide authority for the monitoring, recordkeeping, reporting and other compliance assurance measures included in this draft permit.

4.3 Prevention of Significant Deterioration (PSD)

The PSD program, as set forth at 40 CFR § 52.21, is incorporated by reference into the OCS Air Regulations at 40 CFR § 55.13(d)(2), and is applicable to major OCS sources such as this proposed project. The objective of the PSD program is to prevent significant adverse environmental impact from air emissions by a proposed new or modified source. The PSD program limits degradation of air quality to that which is not considered "significant." The PSD program requires an assessment of air quality impacts of the proposed project, and also requires the utilization of BACT as determined on a case-by-case basis taking into account energy, environmental and economic impacts, and other costs.

Under the PSD regulations, a stationary source is "major" if, among other things, it emits or has the potential to emit (PTE) 100 ton per year (TPY) or more of a "regulated New Source Review (NSR) pollutant" as defined in 40 CFR § 52.21(b)(50) and is "subject to regulation" as defined in 40 CFR § 52.21(b)(49) and the stationary source is one of a named list of source categories. In addition to the preceding criteria, any stationary source is also considered a major stationary source if it emits or has the potential to emit 250 TPY or more of a regulated NSR pollutant [40 CFR § 52.21(b)(l)]. "Potential to emit" is defined as the maximum capacity of a source to emit a pollutant under its physical and operational design. "Any physical or operational limitation on the capacity of the source to emit a pollutant, including air pollution control equipment and restrictions on hours of operation or on the type or amount of material combusted, stored or processed, shall be treated as part of its design if the limitation or the effect it would have on emissions is enforceable." *See* 40 CFR § 52.21(b)(4).

In the case of "potential emissions" from OCS sources, 40 CFR part 55 defines the term similarly and provides that:

> Pursuant to section 328 of the Act, emissions from vessels servicing or associated with an OCS source shall be considered direct emissions from such a source while at the source, and while enroute to or from the source when within 25 miles of the source, and shall be included in the "potential to emit" for an OCS source. This definition does not alter or affect the use of this term for any other purposes under 40 CFR §§ 55.13 or 55.14 of this part, except that vessel emissions must be included in the "potential to emit" as used in 40 CFR §§ 55.13 or 55.14 of this part. (40 CFR § 55.2).

Thus, emissions from vessels servicing or associated with an OCS source that are within 25 miles of the OCS source are considered in determining the "potential to emit" or "potential emissions" of the OCS source for purposes of applying the PSD regulations. Emissions from such associated vessels are therefore counted in determining whether the OCS source is required to obtain a PSD permit, as well as in determining the pollutants for which BACT is required. Drillships and other vessels contain many emission sources that otherwise meet the definition of "nonroad engine" as defined in section 216(10) of the Clean Air Act. However, based on the specific requirements of CAA section 328, emissions from these otherwise nonroad engines on drillships and subject support vessels are considered as "potential emissions" from the OCS source. Similarly, nonroad engines that are part of the OCS source are subject to regulation as stationary sources.

Also, beginning on January 2, 2011, greenhouse gases (GHGs) became subject to regulation under the PSD major source permitting program as a regulated NSR pollutant when emitted in amounts greater than certain applicability thresholds. GHGs are a single air pollutant defined in 40 CFR 52.21(b)(49)(i) as the aggregate group of the following six gases:

- Carbon dioxide (CO_2);
- Nitrous oxide (N_2O);
- Methane (CH_4);
- Hydrofluorocarbons (HFCs);
- Perfluorocarbons (PFCs); and
- Sulfur hexafluoride (SF_6).

Due to the nature of GHGs and their incorporation into the definition of "subject to regulation," the determination of whether a source is emitting GHGs in an amount that triggers PSD applicability involves a calculation of the source's CO_2-equivalent (CO_2e) emissions as well as its GHG mass emissions. Specifically, when determining the applicability of PSD to GHGs, there is a two-part applicability process that evaluates both:

- The sum of the CO_2e emissions in TPY of the six GHGs, in order to determine whether the source's emissions are a regulated NSR pollutant; and, if so;
- The sum of the mass emissions in TPY of the six GHGs, in order to determine if there is a major source or major modification of such emissions.

For PSD permits issued on or after July 1, 2011, PSD applies to the GHG emissions from a proposed new source if either of the following are true: (1) the source is subject to PSD for another pollutant and the potential to emit GHGs is greater than or equal to 75,000 TPY on a CO_2e basis and greater than zero TPY on a mass basis; or (2) the potential emissions of GHGs from the new source would be equal to or greater than 100,000 TPY on a CO_2e basis and equal to and greater than 100/250 TPY on a mass basis.

Table 1 lists the PTE for each regulated NSR pollutant from the project, as well as the significant emission rate (SER) for each regulated NSR pollutant. Section 5 contains information on the conditions used to determine PTE for the project. The pollutant emissions were calculated as tons per 150 days (maximum allowable operation in a year).

Table 1 - Potential to Emit for Regulated NSR Pollutants

Pollutant	Potential to Emit, TPY	Significant Emission Rate, TPY	PSD Review Required
CO	482.25	100	Yes
NO_x[1]	2,055.37	40	Yes
VOC[2]	74.35	40	Yes
PM	61.92	25	Yes
PM_{10}	36.73	15	Yes
$PM_{2.5}$	35.71	10	Yes
SO_2[3]	0.91	40	No
H_2SO_4	0.03	7	No
GHGs (CO_2e)	98,953.25	75,000 (subject to regulation threshold)	Yes

[1]NO_x is a measured pollutant for the criteria pollutants ozone and NO_2 and a precursor for $PM_{2.5}$.
[2] VOC is a measured pollutant for the criteria pollutant ozone.
[3] SO_2 is a precursor for the criteria pollutant $PM_{2.5}$.

Because exploration drilling programs are not included in the list of source categories subject to a 100 TPY applicability threshold, the requirements of the PSD program apply if the project PTE is at least 250 TPY. From Table 1, it is evident that Eni is a major PSD source because emissions of NO_x and CO exceed the major source applicability threshold of 250 TPY. The PSD review is required for PM, PM_{10}, $PM_{2.5}$, NO_x (both as the measured pollutant for NO_2 and ozone and as a precursor to $PM_{2.5}$), CO, GHGs and VOC (as the measured pollutant for ozone), because emissions of these pollutants exceed their associated PSD significant emission rates. Section 8 contains a discussion of the BACT analysis. Section 9 discusses the applicable provisions of the air quality impact analysis.

4.4 Title V

The requirements of the title V operating permit program, as set forth at 40 CFR part 71, apply to major OCS sources located beyond 25 miles of any state's seaward boundary. Because the PTE for this project is greater than 100 TPY for NO_x and CO, it is considered a major source under title V and part 71, and Eni must apply for an operating permit as provided in 40 CFR § 71.5(a)(1)(i) within 12 months of first becoming an OCS source on its lease blocks. The OCS permit application submitted by Eni seeks to obtain a title V operating permit in accordance with 40 CFR § 55.13(f)(2) and 40 CFR part 71 concurrently with the OCS preconstruction permit. Part 71 forms are included in Section 4 of Eni's application submitted in May 2010 and updated in Attachment D in Eni's application submitted in August 2010. The draft permit includes requirements necessary to meet the requirements of the applicable title V operating permit program. For example, the draft permit will include requirements for submittal of annual compliance certifications and annual fee payments, based on actual emissions, as well as monitoring, recordkeeping and reporting requirements.

4.5 New Source Performance Standards (NSPS)

An OCS source must comply with any NSPS applicable to its source category. *See* 40 CFR § 55.l3(c). In addition, per 40 CFR § 52.21(j)(1), the PSD regulations require each major stationary source or major modification to meet applicable NSPS. A specific NSPS subpart applies to a source based on source category, equipment capacity, and the date when the equipment commenced construction or modification.

NSPS, 40 CFR part 60, subpart K, applies to petroleum liquids tanks with a capacity of greater than 40,000 gallons and that commence construction or modification after March 8, 1974, and prior to May 19, 1978, or have a capacity greater than 40,000 gallons but less than 65,000 gallons and commence construction or modification after June 11, 1973, and prior to May 19, 1978. All storage tanks on the drillship were constructed in 1998; therefore, all storage tanks are exempt from subpart K based on construction dates.

NSPS, 40 CFR part 60, subpart Ka, applies to petroleum liquids tanks with a capacity of greater than 40,000 gallons that are used to store petroleum liquids and for which construction is commenced after May 18, 1978, and prior to July 23, 1984. All storage tanks on the drillship were constructed in 1998; therefore, all storage tanks are exempt from subpart Ka based on their construction dates.

NSPS, 40 CFR part 60, subpart Kb, applies to each storage vessel with a capacity greater than or equal to 75 cubic meters (m^3) that is used to store volatile organic liquids for which construction, reconstruction, or modification is commenced after July 23, 1984. This subpart does not apply to storage vessels with a capacity greater than or equal to 151 m^3 storing a liquid with a maximum true vapor pressure less than 3.5 kilopascals (kPa) or with a capacity greater than or equal to 75 m^3 but less than 151 m^3 storing a liquid with a maximum true vapor pressure less than 15.0 kPa. As Table 2 shows, all storage tanks on the drillship are exempt from subpart Kb based on operating pressure being less than 3.5 kPa (0.5 psia) or capacity being less than 75 m^3.

Table 2 – *Pathfinder* Petroleum Storage Tanks

Tanks	Description	Volume (m^3)	Vapor Pressure (psia)	Pressure (kPa)
DR-TA-01	No.1 HFO (heavy fuel oil) storage tank STBD (starboard side)	2,311.70	0.022	0.15
DR-TA-02	No.1 HFO storage tank PORT (port side)	2,311.70	0.022	0.15
DR-TA-03	HFO service tank STBD	107.4	0.022	0.15
DR-TA-04	HFO service tank PORT	107.4	0.022	0.15
DR-TA-05	HFO settler tank STBD	117.8	0.022	0.15
DR-TA-06	HFO settler tank PORT	117.8	0.022	0.15
DR-TA-07	No.1 Forward diesel oil storage tank	524.7	0.022	0.15
DR-TA-08	Diesel oil storage tank STBD	107.4	0.022	0.15
DR-TA-09	Diesel oil storage tank PORT	107.4	0.022	0.15
DR-TA-10	Diesel oil service tank STBD	26.9	0.022	0.15
DR-TA-11	Diesel oil service tank PORT	26.9	0.022	0.15
DR-TA-12	Emergency generator fuel tank	0.57	0.022	0.15
DR-TA-13	Diesel fire pump tank	0.19	0.022	0.15
DR-TA-14	Crane engine tank #1	0.15	0.022	0.15
DR-TA-15	Crane engine tank #2	0.15	0.022	0.15
DR-TA-16	Crane engine tank #3	0.15	0.022	0.15

DR-TA-17	Crane engine tank #4	0.15	0.022	0.15
DR-TA-18	Jet A-1 Tank	3.75	0.145	1.00
DR-TA-19	Lube oil settling tank PORT	57	0.00019	0.0013
DR-TA-20	Lube oil settling tank STBD	47.5	0.00019	0.0013
DR-TA-21	Lube oil storage tank PORT	41.9	0.00019	0.0013
DR-TA-22	Lube oil storage tank STBD	41.9	0.00019	0.0013
DR-TA-23	Sep. bilge oil tank	21.9	0.00019	0.0013
DR-TA-24	Base oil tank	524.7	0.022	0.15

4.5.1 NSPS, 40 CFR Part 60, subpart IIII

NSPS, 40 CFR part 60, subpart IIII, applies to stationary compression-ignition internal combustion engines that commence construction after July 11, 2005 and were manufactured after April 1, 2006. Eni's two Caterpillar 3406 crane engines, DR-CE-03 and DR-CE-04, were manufactured in 2008 and are therefore subject to 40 CFR part 60, subpart IIII. These are the only engines on the *Pathfinder* manufactured after April 1, 2006. To comply with 40 CFR part 60, subpart IIII, engines DR-CE-03 and DR-CE-04 need to meet the certification requirements for non-road engines set forth at 40 CFR 89, or the certification requirements for marine compression-ignition engines set forth at 40 CFR 94, or meet the manufacturer standards for replacement engines in parts 89 or 94. However, engines DR-CE-03 and DR-CE-04 were constructed to MARPOL Annex VI standards and are not EPA-certified.

The OCS regulations at 40 CFR § 55.7 allow the administrator to exempt a source from a control technology requirement if "the administrator or the delegated agency finds that compliance with the control technology requirement is technically infeasible or will cause an unreasonable threat to health and safety." If a request for an exemption is granted, the applicant must comply with substitute control requirements as close in stringency to the original requirement as possible and must offset the difference between the original requirement and the substitute requirements. Sources located beyond 25 miles from a state's seaward boundary must consult with the EPA to identify suitable emissions reductions. *See* 40 CFR § 55.7.

In a letter to the EPA dated August 17, 2011, Eni requested an exemption, pursuant to 40 CFR § 55.7, from 40 CFR part 60 subpart IIII, for engines DR-CE-03 and DR-CE-04. These engines provide power for the *Pathfinder's* Seatrax model cranes and are located in a housing unit below deck. To comply with 40 CFR part 60 subpart IIII, Eni would have to replace these engines with engines that meet EPA's Tier III certification standard or engines that are certified by the manufacturer to be replacement engines for the older equipment. At present, however, there are no compliant engines available as replacements for these cranes. While Caterpillar does manufacture a Tier III-compliant crane engine, it is currently not approved for offshore use on these type vessels. In addition, these Tier III engines are not readily compatible with the cranes that are onboard the *Pathfinder*, and replacing the current models with a Tier III compliant model would require significant redesign of the ship and the cranes. The EPA independently verified this information with Seatrax, Transocean, Caterpillar, and ABS, the underwriter that determines the seaworthiness of such vessels. Thus, the EPA has determined that at this time, Eni's compliance with the control technology requirement of 40 CFR part 60, subpart IIII is technically infeasible with respect to engines DR-CE-03 and DR-CE-04. Based on that determination, EPA proposes to grant Eni's request for an exemption. Since there are no other alternatives, the EPA determined that the next most stringent standards are the MARPOL IMO certified DR-CE-03 and DR-CE-04 crane engines. The emissions are incorporated into the draft permit in Condition 6.5.3.

In addition to complying with a substitute requirement, in accordance with 40 CFR § 55.7(e)(3) Eni must obtain emission reductions of a sufficient quantity to offset the estimated emissions resulting from the exemption of engines DR-CE-03 and DR-CE-04 from 40 CFR part 60 subpart IIII. The crane engines qualify as category 1, commercial marine engines under 40 CFR part 94. The applicable emission standards are found in 40 CFR part 94.8 Table A-1. EPA calculated the difference in emissions that would be achieved by compliance with 40 CFR part 94 emission standards versus the estimated emissions from the available MARPOL certified crane engines. The emission offsets that Eni must provide are approximately 4 total tons of NO_x and hydrocarbons combined, and approximately 1 ton of particulate matter. Eni has consulted with the EPA and has identified suitable emission reductions that can be obtained in the timeframe needed for this project. The draft permit requires that the applicant obtain the needed emissions reductions.

Eni must operate engines DR-CE-03 and DR-CE-04 in compliance with all other applicable requirements of 40 CFR part 60, subpart IIII. Condition 6.7.1.1 of the draft permit requires Eni operate, and maintain the crane engines per the manufacturer's instructions (40 CFR part 60.4211(a) and (c)). Eni provided Caterpillar engine maintenance data to the EPA, which can be found in the administrative record. Also, Condition 6.4 of the draft permit requires that engines DR-CE-03 and DR-CE-04 utilize fuel that meets the requirements of 40 CFR part 80.510(b) (40 CFR part 60.4207(b)). In particular, Condition 6.4 of the draft permit limits the sulfur fuel content to 15 ppm (ultra low sulfur diesel), which has a cetane index of 40, and is therefore in compliance with the provisions of subpart IIII and 40 CFR part 80.51(b). Compliance with these permit requirements and the substitute control requirements will also meet the applicant's obligations for these engines under 40 CFR § 63 subpart ZZZZ, as discussed below.

4.6 National Emission Standards for Hazardous Air Pollutants (NESHAP)

Applicable NESHAP promulgated under section 112 of the CAA apply to OCS sources if rationally related to the attainment and maintenance of federal and state ambient air quality standards or the requirements of part C of title I of the CAA. *See* 40 CFR § 55.13(e).

NESHAPs set forth in 40 CFR part 63 apply to a source based on the source category listing, and the regulations generally establish different standards for new and existing sources pursuant to CAA section 112. In addition, many part 63 NESHAPs apply only if the affected source is a "major source" as defined in CAA section 112 and 40 CFR § 63.2. A major source is generally defined as a source that has of the potential to emit 10 tons per year or more of any single "hazardous air pollutant" or "HAP" or 25 tons per year or more of all HAP combined. *See* CAA § 112(a)(1) and 40 CFR § 63.2. An "area source" is any source that is not a major source as defined in CAA § 112(a)(2) and 40 CFR § 63.2.

As Table 3 shows, the project's estimated potential emissions are 0.98 tons/year for all HAPs combined. This makes the project an area source of HAP. Currently, engines with a rating of 500 horsepower (hp) or more at area sources constructed before December 19, 2002 and engines with a rating of 500 hp or less constructed before June 12, 2006 do not have to meet the requirements of 40 CFR part 63, subparts A (General Provisions) and ZZZZ (Stationary Reciprocating Internal Combustion Engines), All engines on the *Pathfinder* are rated 500 hp or more and were constructed before December 19, 2002; thus, none of the engines on the *Pathfinder* are currently subject to requirements in effect under subparts A or ZZZZ.

On March 9, 2011, the EPA revised 40 CFR part 63, subpart ZZZZ. The revised regulation establishes requirements governing all existing stationary engines located at an area source of HAP emissions beginning on May 3, 2013. All of the diesel engine units on the *Pathfinder* will be subject to these new requirements as of May 3, 2013, unless the permitted project is completed by that date.

Because crane engines DR-CE-03 and 04 are subject to 40 CFR part 63, subpart IIII, no additional requirements apply to these engines under the revised subpart ZZZZ. *See* 40 CFR § 63.6585. All other stationary engines on the *Pathfinder* must comply with the requirements in Tables 1b, 2b and 2d of subpart ZZZZ no later than May 3, 2013.

Compliance with the numerical emission limitations established in subpart ZZZZ is based on the results of testing the average of three 1-hour runs using the testing requirements and procedures set forth in 40 CFR §63.6620. Eni plans to complete their proposed operations before this date. If the project extends beyond May 3, 2013, Eni has agreed to comply with additional portions of this subpart, and will submit an updated regulatory applicability for sources subject to the standard, as reflected in the permit Condition 6.7.2.

Table 3 – Holy Cross Hazardous Air Pollutants

Hazardous Air Pollutant	*Pathfinder*	Anchor Handling Boat	Total TPY
1,3-Butadiene	0.00037	0.00013	0.0005
Acetaldehyde	0.013	0.007	0.02
Acrolein	0.004	0.002	0.006
Benzene	0.33	0.14	0.47
Ethylbenzene	0.000002	-	0.000002
Formaldehyde	0.04	0.02	0.06
1,1,1-Trichloroethane	0.000006	-	0.000006
Toluene	0.12	0.05	0.17
Xylene	0.09	0.03	0.12
Total PAH	0.09	0.04	0.13
Naphthalene	0.06	0.02	0.08
Arsenic	0.000014	-	0.00001
Beryllium	0.000010	-	0.00001
Cadmium	0.000010	-	0.00001
Chromium	0.000010	-	0.00001
Mercury	0.000010	-	0.00001
Manganese	0.000021	-	0.00002
Nickel	0.000010	-	0.00001
Selenium	0.000052	-	0.0001
		Total HAPs	**0.98**

5. Sources of Air Emissions

Air emissions associated with this project will result from those generated during the operation of equipment onboard the *Pathfinder* and the associated support vessels.

5.1 Drillship Equipment

The permitted emission units onboard the *Pathfinder* will include the following pieces of equipment. The Unit ID Numbers are those referenced in the draft permit.

Table 4 – List of Permitted Emission Units Onboard the *Pathfinder*

Transocean *Pathfinder* or Similar (Drillship)			
Unit ID	**Description**	**Make & Model**	**Rating/Capacity**
DR-GE-01, -02, 03	Main propulsion generator	Wärtsilä Vasa 18V32 LNE	9,910 hp*
DR-GE-04, -05, 06	Main propulsion generator	Wärtsilä Vasa 12V32 LNE	6,610 hp
DR-GE-07	Emergency diesel engine provides emergency power to the drillship	MAN D-2842 LE	580 hp
DR-CE-01, -02,	Crane engines power the cranes	Caterpillar 3408	525 hp
DR-CE-03, -04	Crane engine powers the crane	Caterpillar 3406	500 hp
DR-PE-01	Emergency fire pump engine, powers backup air compressors, will run periodically to ensure proper operation in the event of an emergency.	Detroit 8V-92 TA	568 hp
DR-EC-01, -02,-03,-04	Escape capsule diesel engine, powers the emergency escape capsules, will run periodically to ensure proper operation in the event of an emergency.	Lister	40 hp
DR-B-01	Diesel boiler used for heating purposes.	Aalborg PH-12t/H	9.6 MMBtu/hr†
DR-TL-01	Fuel tank loading	-	10,132 gal/day‡
DR-TA-01 through DR-TA-24	Diesel fuel, jet fuel to supply fuel to helicopters, lubricating oil storage tanks for various operations	-	Total: 1,743,414 gal

*Horsepower
† Million British thermal units per hour
‡ Gallons per day

5.2 Support Vessels

Emissions will be generated by the vessels that service the *Pathfinder*. The emission units onboard the support vessel will include the following pieces of equipment. The Unit ID Numbers are those referenced in the draft permit.

Table 5 – List of Primary Emission Units Onboard the *Max Chouest* or Similar Support Vessel

Unit ID	Description	Rating
AB-ME-01,-02	Diesel marine propulsion engine	15,200 hp
AB-TE-01,-02	Diesel marine bow thruster (tunnel)	1,500 hp
AB-TE-03	Diesel marine bow thruster (drop-down azimuthing)	1,200 hp
AB-GE-01,-02,-03	Generator engine	2011.5 hp
AB-GE-04	Generator engine	402.3 hp

6. Project Emissions:

Details of the following estimates can be found in the May, August, and October 2010 Application Addendums, which are included in the administrative record referenced at the end of this document. The following sections contain the estimated air emissions for criteria pollutants and regulated non-criteria pollutants. A summary of the project's potential emissions of regulated NSR pollutants is given in Table 6, below.

Table 6 – Potential to Emit Emissions from all Sources (Regulated NSR Pollutants)

Pollutant	***Pathfinder***	**Anchor Handling Boat**	**Total Project**
CO	343.13	139.12	482.25
NO_x	1447.44	607.93	2,055.37
PM	43.59	18.33	61.92
PM_{10}	25.79	10.94	36.73
$PM_{2.5}$	25.06	10.65	35.71
SO_2	0.64	0.27	0.91
VOC	57.32	17.03	74.35
Lead (Pb)	0.01	0.01	0.02
Fluorides	-	-	-
Sulfuric Acid Mist	0.02	0.01	0.03
Hydrogen Sulfide	.	.	.
Total Reduced Sulfur	-	-	-
GHGs (CO_2e)	70,100	28,853	98,953

6.1 Normal Operations

The following table presents the estimated annual air emissions from normal operation of the equipment onboard the *Pathfinder*. These estimates are based on the following assumptions:

- *Pathfinder* throughput of 71,430 lbs/day of diesel fuel, for no more than 150 days.
- All units will run on diesel fuel with a sulfur content limited to 15 ppmw.
- Operation of the Wärtsilä 18V32 LNE generators with a maximum of two engines running at 100% load on diesel fuel at any one time, for no more than 150 days.
- Operation of the Wärtsilä 12V32 LNE generators with a maximum of two engines running at 100% load on diesel fuel at any one time, for no more than 150 days.
- Non-emergency, planned operation of MAN D-2842 LE emergency generator at 100% load for a total of 2 hours per week, for no more than 150 days.
- Operation of two Caterpillar 3408 crane engines at 100% load for 8 hours each per day, for no more than 150 days.
- Operation of two Caterpillar 3406 crane engines at 100% load for 8 hours each per day, for no more than 150 days.
- Non-emergency, planned operation of the Detroit 8V-92 TA emergency fire pump engine for a total of 20 minutes per week, for no more than 150 days.
- Non-emergency, planned operation of four life boats for a total of 10 minutes per month.
- Operation of the marine diesel boiler for 720 hours for no more than 150 days.
- The throughput for diesel storage tanks is based on diesel fuel usage defined above for applicable devices.

Table 7 -Estimated Criteria Pollutant and Regulated Non-Criteria Pollutants from Equipment Onboard the *Pathfinder*

Qty.	Description	Rating (each)	Annual Emissions (ton/150 days)									
			NOx	VOC	CO	SO_2	PM	PM_{10}	$PM_{2.5}$	H_2SO_4	Lead	GHG (CO_2e)
2 of 3	Generator	9,910 hp	856.22	32.47	196.22	0.38	24.97	14.31	13.89	0.01	0.01	40,857
2 of 3	Generator	6,610 hp	571.10	21.65	130.88	0.25	16.66	9.54	9.26	0.008	0.005	27,252
1	Emergency Generator	580 hp	0.40	0.03	0.09	0.0001	0.03	0.03	0.03	$4x10^{-6}$	$3x10^{-6}$	14.61
2	Crane engine	525 hp	9.5	1.3	11.8	0.01	0.6	0.6	0.6	0.0002	0.0001	722
2	Crane engine	500 hp	9.7	1.5	4.01	0.006	1.3	1.3	1.3	0.0002	0.0001	687
1	Fire Pump Engine	568 hp	0.02	0.002	0.005	$1x10^{-5}$	0.002	0.002	0.002	$2x10^{-7}$	$1x10^{-7}$	2.39
4	Escape Capsule Engine	40 hp	0.0003	$3x10^{-5}$	$7x10^{-5}$	$1 x10^{-7}$	$2x10^{-5}$	$2x10^{-5}$	$2x10^{-5}$	$4x10^{-9}$	$2x10^{-9}$	0.08
1	Boiler	9.6 MMBtu/h	0.49	0.005	0.12	0.01	0.05	0.02	0.01	-	$3x10^{-5}$	565.41
-	Fuel Tank Loading	10,132 gal/day	-	0.03	-	-	-	-	-	-	-	-
24	Fuel Tanks	-	-	0.27	-	-	-	-	-	-	-	-

6.2 Support Vessels

The support vessel will transport personnel, supplies, and fuel to the drillship, as required. The availability of specific support vessels during operation was not known at the time of the application, as outside vendors supply these units. Eni selected the largest expected support vessel (*Max Chouest)*, and added a conservative safety factor of 10%. Under Condition 6.6 of the draft permit, no support vessel can be used for this project unless the vessel has equivalent or lower emissions than the *Max Chouest*.

The following table summarizes the emissions that will be generated from the operation of the support vessel within the 25 mile radius of the *Pathfinder*. These estimates are based on the following assumptions:

- Operation of engines on the vessel at 100% load for all engines, and an average brake specific fuel consumption of 7,000 Btu/hp-hr for a total of 14 hours per day within a 25-mile radius of the *Pathfinder*.

Table 8 - Estimated Criteria Pollutant and Regulated Non-Criteria Pollutants from Equipment Onboard the Marine Vessel

Annual Emissions (ton/150 days)									
NO_x	**VOC**	**CO**	**SO_2**	**PM**	**PM_{10}**	**$PM_{2.5}$**	**H_2SO_4**	**Lead**	**GHG (CO_2e)**
607.93	17.03	139.12	0.27	18.33	10.94	10.65	0.01	0.01	28,854

7. Compliance Methodology

Continuous Emissions Monitoring (CEMS) instrumentation is often required to track specific emissions if monitoring of those emissions is critical to ensure that a requirement is being met, or to show that a requirement does not apply. However, the EPA understands the unique issues involved in requiring CEMS for emission units in the marine environment and on deepwater drilling rigs, hence an alternative system may be necessary to monitor pollutants. Eni has triggered PSD for NO_x, CO, GHGs, VOC, and $PM/PM_{10}/PM_{2.5}$. In consideration of the complexity of continuous compliance monitoring on a deepwater drillship, Condition 6.8.1.1 allows the applicant to choose from among three different monitoring systems for NO_x, CO, VOC, $PM/PM_{10}/PM_{2.5}$, and CO_2 for the main generator diesel units (DR-GE-01 through DR-GE-06) on a pollutant-specific basis. In particular, for each pollutant, Eni may monitor its compliance by utilizing either an EPA-approved continuous emissions monitoring system, an EPA-approved alternative parametric monitoring method, or, with EPA's prior written approval, stack testing emissions monitoring system.

The compliance demonstration method for the crane engines, the emergency diesel generator, the emergency fire pump engine, the escape capsule diesel engines, and the diesel boiler (DR-CE-01 through DR-CE-04, DR-GE-07, DR-PE-01, DR-EC-01 through DR-EC- 04, and DR-B-01) will include monitoring and maintaining a contemporaneous record of the unit ID, date/time the engine started, date/time the engine shut down, the printed name of the person operating the equipment and the signature of the person operating the equipment, as well as applicable NSPS and NESHAP monitoring requirements. Eni will calculate each unit's emissions by multiplying the hours of operation by the appropriate emission factor identified in the permit application.

Compliance demonstration for the support vessels for the drillship *Pathfinder* shall include monitoring and maintaining a contemporaneous record of operating time within the 25-mile radius of the drillship and during standby time at the drillship, along with determining and recording the sulfur content upon receiving each fuel shipment as specified in permit Condition 6.4.

Eni will supply the EPA with all records upon request by the EPA. In addition, Eni will provide a semi-annual report of its emission calculations in accordance with all relevant permit conditions including Condition 5.17 (General Reporting Requirements).

8. Best Available Control Technology

A new major stationary source subject to PSD requirements is required to apply BACT for each pollutant subject to regulation under the CAA that it would have the potential to emit in significant amounts. *See* 40 CFR § 52.21(j). Based on the emission inventory for the project, presented in Table 1 of the preliminary determination, NO_x, CO, VOC, GHGs, and $PM/PM_{10}/PM_{2.5}$ are the CAA-regulated pollutants that will be emitted by Eni in quantities exceeding the significant emission rate. Therefore, BACT must be determined for each emission unit on the *Pathfinder* that will emit any of these pollutants while the drillship is operating as an OCS source.

BACT is defined in the applicable permitting regulations at 40 CFR § 52.21(b)(12), in part, as:

> an emissions limitation (including a visible emission standard) based on the maximum degree of reduction for each pollutant subject to regulation under the Act which would be emitted from any proposed major stationary source or major modification which the Administrator, on a case-by-case basis, taking into account energy, environmental, and economic impacts and other costs, determines is achievable for such source or modification through application of production processes or available methods, systems, and techniques, including fuel cleaning or treatment or innovative fuel combustion techniques for control of such pollutant. In no event, shall application of best available control technology result in emissions of any pollutant which would exceed the emissions allowed by any applicable standard under 40 CFR parts 60 and 61. If the Administrator determines that technological or economic limitations on the application of measurement technology to a particular emissions unit would make the imposition of an emissions standard infeasible, a design, equipment, work practice, operational standard, or combination thereof, may be prescribed instead to satisfy the requirement for the application of best available control technology.

The CAA contains a similar BACT definition, although the 1990 CAA amendments added "clean fuels" after "fuel cleaning or treatment" in the above definition. *See* CAA § 169(3).

The EPA has developed a "top-down" process to ensure that a BACT analysis satisfies the applicable legal criteria. The top-down BACT analysis consists of a five-step process which provides that all available control technologies be ranked in descending order of control effectiveness, beginning with the most stringent. *See, e.g., In re Prairie State Generation Company*, 13 E.A.D. 1, PSD Appeal No. 05-05, (EAB, August 24, 2006).

In brief, the top-down approach provides that all available control technologies be ranked in descending order of control effectiveness. Each alternative is then evaluated, starting with the most stringent, until BACT is determined. The top-down approach consists of the following steps:

Step 1: Identify all available control technologies.

Step 2: Evaluate technical feasibility of options from Step 1 and eliminate options that are technically infeasible based on physical, chemical and engineering principles.

Step 3: Rank the remaining control technologies from Step 2 by control effectiveness, in terms of emission reduction potential.

Step 4: Evaluate the most effective controls from Step 3, considering economic, environmental and energy impacts of each control option. If the top option is not selected, evaluate the next most effective control option.

Step 5: Select BACT (the most effective option from Step 4 not rejected).

Below is a summary of the EPA's top-down BACT analysis for the *Pathfinder*.

8.1 BACT Analysis for the Large (>˜500 hp) Internal Combustion Engines

Eni performed a BACT analysis for all engines onboard the *Pathfinder*. The BACT analysis presented in this section, Section 8.1, applies to the main propulsion generator engines (DR-GE-01 through DR-GE-06), the crane engines (DR-CE-01 through DR-CE-04), the emergency diesel engine (DR-GE-07), and the emergency fire pump engine (DR-PE-01).

The engines will not produce emissions at a steady rate. The main engines operate at variable load based on drilling and operational power demand, and extensive "reserve" power is required to adjust for Gulf currents and subsea soil densities. The cumulative operation of the cranes will total eight hours, but they will operate continuously for only short periods. As a result, the crane engines will mainly operate in start-up mode and generally will not reach a steady state. Also, the emergency diesel engine and the emergency fire pump engine will be tested periodically, but not operated continuously. In addition, engine efficiency and performance typically degrades over time, resulting in increased emissions. These factors are important considerations in the BACT analysis for these units.

8.1.1 NO_x BACT Analysis for the Large (>˜500 hp) Internal Combustion Engines

NO_x emissions are generated as both a result of high temperature combustion (thermal NO_x) and oxidation of nitrogen present in the fuel (fuel-bound NO_x). Thermal NO_x emissions increase with an increase in combustion temperature, and are generally the main cause of NO_x emissions from a combustion source.

Step 1: Identify all available control technologies

The applicant identified the following available control technologies in its OCS permit application submitted in May 2010 and August 2010:

1. Selective Catalytic Reduction (SCR)
2. 4-Way Catalyst with Exhaust Gas Recirculation
3. Ignition Timing Retard
4. Turbocharger and Aftercooler
5. Aftercooling with High Pressure Fuel Injection System
6. Direct Water Injection
7. Good Combustion Practices
8. Transocean Diesel Engines with Turbochargers (DEWT) Measurement System on the Main Propulsion Generator Engines

The EPA requested additional information regarding the BACT analysis from the applicant and received supplemental information on May 16, 2011, May 31, 2011, June 13, 2011, June 23, 2011, and August 3, 2011. The supplemental information includes the following additional control technologies as part of Step 1 of the top-down BACT analysis for NO_x emissions:

9. EPA Tier 2 Standards, as set forth in 40 CFR part 89 or 94
10. Replacement of Older Main Propulsion Generator Engines with Newer Ones
11. Replacement of Older Crane Engines with Newer Ones

From the EPA's experience with similar technologies the following is also considered as part of Step 1 of the top-down BACT analysis for NO_x emissions:

12. De-rate Engines
13. Water-in-fuel Emulsions
14. NOx Absorber/Scrubber Technology
15. Combination Direct Water Injection and Exhaust Gas Recirculation
16. CAM Shaft Replacement/Retooling of Engines
17. Lean De-NOx Catalyst or Hydrocarbon SCR
18. Intake Air Humidification/Cooling
19. CSNOx Emission Abatement System

Step 2: Eliminate technically infeasible control options

After analyzing the 19 control technology options, 14 of the options were eliminated as technically infeasible for control of NO_x emissions from the large internal combustion engines. Below is a summary of the reasons for eliminating each of these options from further consideration in the top-down BACT analysis for this project. For detailed descriptions and references, please refer to the application and supplemental information submitted to the EPA in May 14, 2010, August 13, 2010, May 16, 2011, May 31, 2011, June, 13, 2011, June 23, 2011, and August 3, 2011.

Selective Catalytic Reduction (SCR): The installation of this technology is technically infeasible due to space constraints on the *Pathfinder*. Based on the information provided by Wärtsilä the length of each SCR system is 3.2 meters. In addition, the SCR would require large urea storage tanks. The consumption of urea is 7 L/h for 100 L/h fuel. This consumption rate equates to approximately one 550 gallon tank/day, or a tank with an approximate length of 14 meters. This large quantity of urea would be infeasible to store and replenish. Based on blue prints provided by Eni, there is not enough room to include both the SCRs and the required urea storage tanks.

4-Way Catalyst Converter with Exhaust Gas Recirculation System: This technology is in development stages for marine applications, and according to the engine manufacturer (Wärtsilä) not available for the main engines operating on the *Pathfinder*.

Ignition Timing Retard: Further derating the engines will decrease the available power, which would cause an unreasonable safety risk. In addition, according to Wärtsilä, this is not an available technology for the main engines operating on the *Pathfinder*.

Water Injection: This technology requires freshwater that would have to be produced through desalination, and require additional unavailable space. According to Wärtsilä, this is not an available technology for the main engines operating on the *Pathfinder*.

EPA Tier 2 Standards: The main propulsion engines currently on the *Pathfinder* meet Tier I standards of the International Maritime Organization (IMO) 2008 NO_x Technical Code (Regulation 13), which for this type Wärtsilä engine (25-30 liter/cylinder displacement operating at 720 rpm) is identical to EPA Tier 1 (40 CFR part 94) standards of approximately 12.1 g/kW-hr of NO_x. According to the drillship owner, certification to meet these standards is part of the inherent design of the engine and there is no upgrade available for an existing IMO Tier I certified engine to meet either IMO or EPA Tier 2 standards. For these types of engines, the IMO and EPA Tier 2 standards are 9.7 g/kW-hr and 11 g/kW-hr, respectively. In order for the main engines on the *Pathfinder* to meet either IMO or EPA Tier 2 (part 94) standards, the engines would have to be replaced with newer engines. The technical feasibility of this option is discussed below.

Replacement of Older Main Propulsion Generator Engines with Newer Engines: There are several options to consider when analyzing the feasibility of replacing the existing engines on the *Pathfinder* with newer, lower NO_x emitting engines. The first option considered was to replace the existing engines with similar engines meeting IMO Tier II (9.7 g/kW-hr) NO_x emission standards. The drillship owner, Transocean, has provided documentation that new IMO Tier II certified engines are not available for this drilling project. Therefore, this option is not considered feasible as BACT for this particular drilling project.

Finally, the EPA requested the applicant consider replacing the main engines on the *Pathfinder* with engines certified to meet or exceed the EPA Tier 2 (part 89) NO_x emission standards (6.4 g/kW-hr), which serve a similar purpose to the main engines on the *Pathfinder*. A comparable drilling project has proposed the use of Electro Motive Diesel (EMD) engines that are EPA Tier 2 (part 89) certified and predicted to meet annual NO_x emission limits as low as 5.5 g/kW-hr of NO_x. The applicant provided additional information regarding this option in May 2011. The *Pathfinder* currently has 6 main engines on the drillship. In order to meet this power requirement, the applicant would need at least 9 EMD engines (4,027 kW each) certified to meet the EPA Tier 2 (part 89) NO_x emission standards. Since there is physically not enough room on the *Pathfinder* to install 9 EMD engines of this size, this option of replacing the existing engines with the EPA Tier 2 (part 89) certified engines is technically infeasible for this project.

Replacement of Older Crane Engines with Newer Engines: The Caterpillar 3408 crane engines are EPA Tier I certified engines (40 CFR 89), while the Caterpillar 3406 crane engines are certified to international standards and are not EPA certified. The potential for replacing the crane engines was evaluated in two parts. First, EPA requested information regarding replacement of all four crane engines with EPA Tier 3-compliant engines. The EPA Tier 3 standard applies to engines manufactured after 2006. Currently no Tier 3 crane engine exists for replacement as discussed in Section 4.5.1.

Second, the EPA requested information to determine the feasibility of replacement of the 3406 model with the 3408 model. The Caterpillar 3406 engines are not EPA certified and have a higher g/kW-hr emission compared to the 3408 models. However, the older, Caterpillar 3408, engines are no longer manufactured or available. Therefore, this option is considered infeasible as BACT (further compliance issues are discussed in Section 4.5.1.)

Derate Engines: Further derating the engines will decrease the available power, which would cause an unreasonable safety risk given the need for adequate reserve power. The *Pathfinder* requires a certain amount of power to safely operate the ship. The engines maintain the ship's position and the power onboard the ship. Therefore, by derating the engines the ship will not be able to properly operate. In addition, according to Wärtsilä, this is not an available technology for the main engines operating on the *Pathfinder*.

Water-in-Fuel Emulsions (emulsified diesel): This technology would require derating of the engines (see above), and emulsified diesel in marine vessels can cause fuel tank corrosion issues. Additionally, emulsified fuel systems were designed for and installed on slow-speed engines burning heavy fuel oil. The existing engines on the *Pathfinder* are designed and will be burning medium density fuel (diesel). Installing an untested emulsified fuel system designed for heavy fuel oil use on the existing engines increases the potential for mechanical failure and poses a safety risk that is unacceptable for this project.

Adsorber/Scrubber Technology: This technology is in development stages for diesel engines and according to Wärtsilä not available for the main engines operating on the *Pathfinder*.

Combination of Direct Water Injection and Exhaust Gas Recirculation: These technologies are in development stages for marine applications and according to Wärtsilä not available for the main engines operating on the *Pathfinder*.

CAM Shaft Replacement/Retooling of Engines: According to the manufacturer (CCTS), retrofitting the camshaft using a retooling kit is only available for Detroit Diesel engines (model series 71 or 92) and has not been developed for larger engines, such as those used on the Eni drillship.

Lean De-NO_x Catalyst or Hydrocarbon SCR: This technology is not commercially available for large marine engines according to the technology provider (Johnson Matthey Catalyst).

CSNOx Emission Abatement System: This technology is currently in the licensing and commercial demonstration phase of development. Ecospec, the manufacturer, has performed tests on engines operating at stable loads and found the technology reduces approximately 66 percent of NO_x emissions as well as 70 percent of CO_2 and 99 percent of SO_2 emissions. Currently both Wärtsilä and Transocean International are working with Ecospec to design and develop a CSNOx system for use on engines operating at variable loads. While this technology is commercially available for certain types of marine uses, it has not been demonstrated in practice for variable load engines and is therefore technically infeasible for this project.

Step 3: Rank the remaining control technologies by effectiveness/Step 4 Evaluate the energy, environmental and economic impacts

The control options not eliminated as technically infeasible in Step 2 of the top-down BACT analysis include: turbocharger and aftercooling, high fuel injection with aftercooling, good combustion practices, and good combustion practices with DEWT measurement system for the main propulsion generator engines. EPA determined that all of these technologies are technically feasible and can be used simultaneously. Therefore, EPA did not rank the remaining control technologies or evaluate the energy, environmental and economic impacts.

The engine manufacturer of the main engines, Wärtsilä, provided data showing that LNE design will reduce emissions by 30% compared to non-LNE engines. LNE (Low NOx Engine Design) includes three of the available control technologies identified in Step 1, high injection pressure, injection timing retard, and turbocharger and aftercooler.

The control options not eliminated as technically infeasible in Step 2 of the top-down BACT analysis for the crane engines, emergency generator, and the emergency fire pump engine include: turbocharger and aftercooler, high pressure fuel injection with aftercooling, and good combustion practice. The proposed engine design includes turbocharger and aftercooler, and high pressure fuel injection with aftercooling.

Main Propulsion Generator Engines NO_x Emissions Measurement Program/Transocean Diesel Engines with Turbochargers (DEWT Measurement): The applicant has proposed to supplement the good combustion practices outlined by the manufacturer with use of a NO_x emissions measurement program. The applicant and Transocean refer to this system as “DEWT Measurement.” This is a parametric monitoring system that Transocean developed to enhance the load management of the engines, ensure good combustion efficiency, and maintain load levels to between 35 and 45%. The NO_x concentration measurement program will trigger an alarm if the NO_x concentration reaches a specified threshold at which time the operator will investigate the cause of the emission increase and correct the underlying problem quickly. Transocean confirmed that this system can also monitor $PM/PM_{10}/PM_{2.5}$, CO, VOCs, and CO_2.

As part of the DEWT measurement system, a maintenance plan will require Eni to perform regularly scheduled evaluations, inspections, and required maintenance (as necessary) to ensure proper operation of the engine. As part of the maintenance plan, daily engine checks will trend parameters defined in permit Condition 6.8.1.1.2.2. Also a fuel injection equipment plan specified in Eni’s application will ensure good atomization and sufficient air flow. The engine maintenance plan outlines specific procedures based on total hours of operation. The applications dated May 14, 2010, and August 13, 2010, contain additional information describing the DEWT measurement system.

Good Combustion Practices: Eni provided a description of the proposed good combustion practices that are BACT for all large diesel engines. As part of good combustion practices, Eni will follow manufacturer specifications and good operating practices to maintain proper air-to-fuel ratio, residence time, and temperature to minimize emissions. Good combustion practices will require Eni to perform regularly scheduled evaluations, inspections, and required maintenance to ensure proper operation of the engine. Eni will perform engine checks and follow the fuel injection plan to ensure good fuel atomization, and ensure sufficient air flow.

The EPA determined that the following control options for the large (>˜500 hp) diesel engines on the *Pathfinder* are BACT:

Table 9 - Step 4 BACT NO_x Conclusions

Emission Units	BACT Control Option
Main Propulsion Generator Engines (DR-GE-01 through DR-GE-06)	Use of main engines with Low NO_x Engine (LNE) design (turbocharger & aftercooler, high pressure fuel injection with aftercooling), and good combustion practices with use of DEWT measurement system
Crane Engines (DR-CE-01 through DR-CE-04)	Turbocharger and aftercooling, high pressure fuel injection with aftercooling, and good combustion practices
Emergency Generator (DR-GE-07)	Turbocharger and aftercooling, high pressure fuel injection with aftercooling, and good combustion practices
Emergency Fire Pump Engine (DR-PE-01)	Turbocharger and aftercooling, high pressure fuel injection with aftercooling, and good combustion practices

<u>Step 5: Select BACT</u>

Main Propulsion Generator Engines (DR-GE-01 through DR-GE-06): The applicant originally proposed a NO_x emission limit of 14.6 g/kW-hr as BACT for the main engines on the *Pathfinder*. This limit is based on AP-42 emission factors.

The main engines on the drillship are certified at construction to meet Tier 1 standards of the IMO’s 2008 NO_x Technical Code (Regulation 13). At engine speeds of 720 rpm, the engines on the *Pathfinder* were designed to meet NO_x emission limits of 12.1 g/kW-hr operating at engine test bed conditions, which can vary significantly from the onsite drilling conditions.

Previously, the EPA has determined that the NO_x emission limit which represents BACT for Wärtsilä 18V32 LNE and 12V32 LNE model engines (equipped w/turbochargers, high injection pressure, and intake air cooling) is 12.7 g/kW-hr of NO_x (Anadarko OCS Permit issued 6/14/2011). The main engines on the *Pathfinder* are both Wärtsilä 18V32 LNE and 12V32 LNE model engines (equipped w/turbochargers, high injection pressure, and intake air cooling). The emissions data submitted by Anadarko in a prior OCS permit application showed that the 18V32 LNE and 12V32LNE model engines can achieve in practice emissions of 12.7 g/kW-hr. Considering that Eni has the same type of engines as Anadarko, the EPA believes that with the use of good combustion practices and the DEWT measurement system, a BACT limit of 12.7 g/kW-hr also is achievable for the *Pathfinder*. Given the significant load variations required by the operations on the drillship, the EPA has determined an averaging period of 24 hours is appropriate in this case.

Caterpillar 3408 Crane Engines (DR-CE-01 and DR-CE-02): The applicant proposed a NO_x emission limit of 9.2 g/kW-hr for the two crane engines based on an operating time of 8 hours per day. The EPA has determined that BACT for DR-CE-01 and DR-CE-02 is use of certified EPA Tier 1 engines with turbocharger and aftercooler, high pressure fuel injection with aftercooling, and good combustion practices, based on the current manufacturer's specifications for this engine, and limiting NO_x emissions to 9.5 on a rolling 12-month total tons per year. To assure compliance with the BACT emission limit, the permit will limit the use of the DR-CE-01 and DR-CE-02 engines to eight hours per calendar day (midnight to midnight).

Caterpillar 3406 Crane Engine (DR-CE-03 and DR-CE-04): The Caterpillar 3406 crane engines are IMO Tier I NO_x certified (Regulation 13 of Annex VI to MARPOL). For a detailed discussion of the regulations applicable to these engines see Section 4.5.1. The applicant has proposed a NO_x emission limit of 9.8 g/kW-hr based on an operating time of eight hours per day. Based on supplemental information provided by the applicant on August 3, 2011, and applicable regulation requirements, these crane engines will be able to meet this limit. The EPA has determined that BACT for DR-CE-03 and DR-CE-04 is use of engines with turbocharger and aftercooler, high pressure fuel injection with aftercooling, and good combustion practices, based on the current manufacturer's specifications for this engine, and limiting NO_x emissions to 9.7 tons per year on a rolling 12-month total for both engines. To assure compliance with the BACT emission limit, the permit will limit the use of the engine to eight hours per calendar day.

Emergency Generator (DR-GE-07): The applicant proposed a NO_x limit of 18.8 g/kW-hr for the emergency generator on the *Pathfinder* based on an operating time of two hours per week. Since the emergency generator will only operate two hours per week, showing compliance with a short-term numeric emission limit would be unreasonably burdensome and costly. Therefore, the EPA has determined that BACT for the emergency generator is good combustion practices, operating in accordance to the manufacturer's specifications and limiting NO_x emissions to 0.4 tons per year on a rolling 12-month total. To assure compliance with the BACT emission limit, the permit will limit the use of the engine to two hours per week on a rolling 7-day total basis.

Emergency Fire Pump Engine (DR-PE-01): The applicant proposed a NO_x limit of 18.8 g/kW-hr for the emergency fire pump engine on the *Pathfinder* based on an operating time of 20 minutes per week. Since the emergency generator will only operate 20 minutes per week, showing compliance with a short-term numeric emission limit would be unreasonably burdensome and costly. Therefore, the EPA has determined that BACT for the emergency generator is good combustion practices, operating in accordance to the manufacturer's specifications and limiting NO_x emissions to 0.02 tons per year on a rolling 12-month total. To assure compliance with the BACT emission limit, the permit will limit the use of the engine to 20 minutes per week on a rolling 7-day total basis.

8.1.2 BACT Analysis for PM/PM_{10}/$PM_{2.5}$ for the Large (>˜500 hp) Internal Combustion Engines

Particulate matter (PM) emissions depend on the type of fuel combusted and its ash content. Higher ash content fuels, such as coal, necessitate flue gas emission control systems. Using low sulfur fuels can control particulate matter emissions from external combustion sources.

Step 1: Identify all available control technologies

The applicant identified the following available control technologies in its OCS permit application submitted in May 14, 2010 and August 13, 2010:

1. Baghouse
2. Diesel Oxidation Catalyst
3. Diesel Particulate Filter/Catalytic Particulate Filter
4. 4-Way Catalyst Converter with Exhaust Gas Recirculation System
5. Low Sulfur Fuel/Low Ash Fuel
6. Fuel Injection Timing Retard
7. Closed Crankcase Ventilation/Positive Crankcase Ventilation
8. Turbocharger and Aftercooler
9. High Pressure Fuel Injection System and Aftercooler
10. Good Combustion Practices
11. Transocean Diesel Engines with Turbochargers (DEWT) Measurement System on the Main Propulsion Generator Engines

The EPA requested additional information regarding the BACT analysis from the applicant and received supplemental information on May 16, 2011, May 31, 2011, June, 13, 2011, June 23, 2011, and August 3, 2011. The supplemental information includes the following additional control technologies as part of Step 1 of the top-down BACT analysis for $PM/PM_{10}/PM_{2.5}$ emissions:

12. EPA Tier 2 Standards, as set forth in 40 CFR part 89 or 94
13. Replacement of Older Main Propulsion Generator Engines with Newer Ones
14. Replacement of Older Crane Engines with Newer Ones

<u>Step 2: Eliminate technically infeasible control options</u>

After analyzing the 14 control technology options, eight of the options were eliminated as technically infeasible for control of $PM/PM_{10}/PM_{2.5}$ emissions from the large internal combustion engines. Below is a summary of the reasons for eliminating each of these options from further consideration in the top-down BACT analysis for this project. For detailed descriptions and references, please refer to the application and supplemental information submitted to the EPA in May 14, 2010, August 13, 2010, May 16, 2011, May 31, 2011, June, 13, 2011, June 23, 2011, and August 3, 2011.

Baghouse: This technology is large, and generally used for land-based sources. The *Pathfinder* does not have enough space to install and operate a baghouse.

Diesel Oxidation Catalyst: This technology has not been designed, engineered or tested on a commercially available scale for safe operation on the large scale engines found on the *Pathfinder*.

Diesel Particulate Filter/Catalytic Particulate Filter: This technology has not been designed, engineered or tested on a commercially available scale for safe operation on the large scale engines found on the *Pathfinder*.

4-Way Catalyst with Exhaust Gas Recirculation: The discussion related above in Section 8.1.1 applies to this pollutant as well.

Fuel Injection Timing Retard: The discussion related above in Section 8.1.1 applies to this pollutant as well.

EPA Tier 2 Emission Standards: The discussion related above in Section 8.1.1 applies to this pollutant as well.

Replacement of Older Main Propulsion Generator Engines with Newer Engines: The discussion related above in Section 8.1.1 applies to this pollutant as well.

Replacement of Older Crane Engines with Newer Engines: The discussion related above in Section 8.1.1 applies to this pollutant as well.

Step 3 Rank the remaining control technologies by effectiveness/Step 4 Evaluate the energy, environmental and economic impacts

The control options not eliminated as technically infeasible in Step 2 of the top-down BACT analysis for the engines include: turbocharger and aftercooler, high pressure fuel injection with aftercooling, positive crankcase ventilation, and use of low sulfur fuel/low ash fuel, good combustion practice, and DEWT measurement system (for the main generator engines). EPA determined that all of these technologies are technically feasible. Therefore, EPA did not rank the remaining control technologies or need to evaluate the energy, environmental and economic impacts. Turbocharger and aftercooler, high pressure fuel injection with aftercooling, and positive crankcase ventilation are a part of the engine design. The only fuel available for the drillship is ultra low sulfur diesel. Good combustion practices will require Eni to perform regularly scheduled evaluations, inspections, and required maintenance to ensure proper operation of the engine. As part of the engine maintenance plan Eni will perform engine checks and follow the fuel injection plan to ensure good fuel atomization, and ensure sufficient air flow. The EPA determined that the following control options for the large (>˜500 hp) diesel engines on the *Pathfinder* are BACT:

Table 10 - Step 4 BACT PM/PM_{10}/$PM_{2.5}$ Conclusions

Emission Units	BACT Control Option
Main Propulsion Generator Engines (DR-GE-01 through DR-GE-06)	Use of main engines with LNE design (turbocharger & aftercooler, high pressure fuel injection with aftercooling), positive crankcase ventilation and good combustion practices with use of DEWT measurement system
Crane Engines (DR-CE-01 through DR-CE-04)	Turbocharger and aftercooling, high pressure fuel injection with aftercooling, positive crankcase ventilation, ultra low sulfur diesel and good combustion practices
Emergency Generator (DR-GE-07)	Turbocharger and aftercooling, high pressure fuel injection with aftercooling, positive crankcase ventilation, ultra low sulfur diesel and good combustion practices
Emergency Fire Pump Engine (DR-PE-01)	Turbocharger and aftercooling, high pressure fuel injection with aftercooling, positive crankcase ventilation, ultra low sulfur diesel and good combustion practices

Step 5: Select BACT

Main Propulsion Generator Engines (DR-GE-01 through DR-GE-06): The applicant originally proposed a PM emission limit of 0.462 g/kW-hr, a PM_{10} emission limit of 0.244 g/kW-hr, and a $PM_{2.5}$ emission limit of 0.237 g/kW-hr as BACT for the main engines on the *Pathfinder*. PM_{10} and $PM_{2.5}$ emission limits are based on AP-42 emission factors. The sum of filterable and condensible particulate emissions equals the total particulate emissions.

The EPA compared these emissions to those permitted for large internal combustion diesel engines found in the EPA's RACT/BACT/LAER Clearinghouse (RBLC) and to engines on similar offshore sources. While the majority of the engines listed in the database are not marine diesel engines, they still provide a good general comparison. The emission limits proposed by Eni were comparable to those found for previously permitted facilities for PM_{10} and $PM_{2.5}$. In addition, the EPA Tier I standard for PM is 0.55 g/kW-hr. Eni has proposed a lower limit at 0.462 g/kW-hr.

Therefore, the EPA has determined that the emission limit which represents BACT for the main engines on the *Pathfinder* for PM is 0.46 g/kW-hr, for PM_{10} is 0.24 g/kW-hr, and for $PM_{2.5}$ is 0.24 g/kW-hr. Given the significant load variations required by the operations on the drillship, the EPA has determined that an averaging period of 24 hours is appropriate in this case.

Caterpillar 3408 Crane Engines (DR-CE-01 and DR-CE-02): The applicant proposed a $PM/PM_{10}/PM_{2.5}$ emission limit of 0.54 g/kW-hr for the two crane engines based on an operating time of eight hours per day. The EPA has determined that BACT for DR-CE-01 and DR-CE-02 is use of EPA-certified Tier 1 engines equipped with a turbocharger and aftercooling, high pressure fuel injection with aftercooling, positive crankcase ventilation, ultra low sulfur diesel and good combustion practices, based on the current manufacturer's specifications for this engine, and limiting $PM/PM_{10}/PM_{2.5}$ emissions to 0.6 tons per year on a rolling 12-month total for both engines. To assure compliance with the BACT emission limit, the permit will limit the use of the engine to eight hours per calendar day.

Caterpillar 3406 Crane Engine (DR-CE-03 and DR-CE-04): The Caterpillar 3406 crane engines are IMO Tier I NO_x certified (Regulation 13 of Annex VI to MARPOL); this certification does not regulate non-NO_x pollutants (for a detailed discussion of the regulations applicable to these engines see section 4.5.1.). The applicant has proposed a $PM/PM_{10}/PM_{2.5}$ emission limit of 1.34 g/kW-hr based an AP-42 emission rate and an operating time of eight hours per day. The EPA has determined that BACT for DR-CE-03 and DR-CE-04 is use of engines with turbocharger and aftercooling, high pressure fuel injection with aftercooling, positive crankcase ventilation, ultra low sulfur diesel and good combustion practices, based on the current manufacturer's specifications for this engine, and limiting $PM/PM_{10}/PM_{2.5}$ emissions to 1.3 tons per year on a rolling 12-month total for both engines. To assure compliance with the BACT emission limit, the permit will limit the use of the engine to eight hours per calendar day.

Emergency Generator (DR-GE-07): The applicant proposed a $PM/PM_{10}/PM_{2.5}$ limit of 1.34 g/kW-hr for the emergency generator on the *Pathfinder* based on an operating time of two hours per week. Since the emergency generator will only operate two hours per week, showing compliance with a short-term numeric emission limit would be unreasonably burdensome and costly. Therefore, the EPA has determined that BACT for the emergency generator is good combustion practices, operating in accordance to the manufactures' specifications and limiting $PM/PM_{10}/PM_{2.5}$ emissions to 0.03 tons per year on a rolling 12-month total. To assure compliance with the BACT emission limit, the permit will limit the use of the engine to two hours per week on a rolling 7-day total basis.

Emergency Fire Pump Engine (DR-PE-01): The applicant proposed a $PM/PM_{10}/PM_{2.5}$ limit of 1.34 g/kW-hr for the emergency fire pump engine on the *Pathfinder* based on an operating time of 20 minutes per week. Since the emergency generator will only operate 20 minutes per week, showing compliance with a short-term numeric emission limit would be unreasonably burdensome and costly. Therefore, the EPA has determined that BACT for the emergency generator is good combustion practices, operating in accordance to the manufactures' specifications and limiting $PM/PM_{10}/PM_{2.5}$ emissions to 0.002 tons per year on a rolling 12-month total. To assure compliance with the BACT emission limit, the permit will limit the use of the engine to 20 minutes per week on a rolling 7-day total basis.

8.1.3 <u>CO and VOC BACT Analysis for the Large (>˜500 hp) Internal Combustion Engines</u>

Incomplete combustion of the diesel fuel in the combustion chamber forms CO and VOC. Insufficient residence time during the final step in the oxidation of hydrocarbons during combustion will produce CO. The maximum oxidation of CO to carbon dioxide (CO_2) occurs when the combustion process maintains sufficient temperature, residence time, and oxygen supply. Also, most VOCs found in diesel exhaust are the result of unburned fuel, although some are formed as combustion products. VOC compounds participate in atmospheric photochemical reactions. These reactions can result in the formation of ozone. VOCs do not include methane, ethane, and other compounds that have negligible photochemical reactivity.

<u>Step 1: Identify all available control technologies</u>

The applicant identified the following available control technologies in its OCS permit application submitted in May 2010 and August 2010:

1. Diesel Oxidation Catalyst
2. Catalytic Diesel Particulate Filter
3. 4-Way Catalyst Converter with Exhaust Gas Recirculation System
4. Aftercooling with High Pressure Fuel Injection System
5. Closed Crankcase Ventilation/Positive Crankcase Ventilation (for VOCs only)
6. Good Combustion Practices
7. Transocean Diesel Engines with Turbochargers (DEWT) Measurement System on the Main Propulsion Generator Engines

The EPA requested additional information regarding the BACT analysis from the applicant and received supplemental information on May 16, 2011, May 31, 2011, June, 13, 2011, June 23, 2011, and August 3, 2011. . The supplemental information includes the following additional control technologies as part of Step 1 of the top-down BACT analysis for CO and VOC emissions:

8. EPA Tier 2 Standards, as set forth in 40 CFR part 89 or 94
9. Replacement of Older Main Propulsion Generators with Newer Ones
10. Replacement of Older Crane Engines with Newer Ones

Step 2: Eliminate technically infeasible control options

After analyzing the 10 control technology options, six of the options were eliminated as technically infeasible for control of CO and VOC emissions from the large internal combustion engines. Below is a summary of the reasons for eliminating each of these options from further consideration in the top-down BACT analysis for this project. For detailed descriptions and references, please refer to the application and supplemental information submitted to the EPA in May 14, 2010, August 13, 2010, May 16, 2011, May 31, 2011, June 13, 2011, June 23, 2011, and August 3, 2011.

Diesel Oxidation Catalyst: The discussion related above in Section 8.1.2 applies to this pollutant as well.

Catalytic Particulate Filter: The discussion related above in Section 8.1.2 applies to this pollutant as well.

4-Way Catalyst Converter with Exhaust Gas Recirculation System: The discussion related above in Section 8.1.1 applies to this pollutant as well.

EPA Tier 2 emission standards: The discussion related above in Section 8.1.1 applies to this pollutant as well.

Replacement of Older Main Propulsion Generators with Newer Engines: The discussion related above in Section 8.1.1 applies to this pollutant as well.

Replacement of Older Crane Engines with Newer Engines: The discussion related above in Section 8.1.1 applies to this pollutant as well.

Step 3 Rank the remaining control technologies by effectiveness/Step 4 Evaluate the energy, environmental and economic impacts

The only control option not eliminated as technically infeasible in Step 2 of the top-down BACT analysis was high pressure fuel injection and good combustion practices with the use of the DEWT measurement system for the main propulsion generator engines for the reduction of CO, and high pressure fuel injection, positive crankcase ventilation, good combustion practices with the use of the DEWT measurement system for the main propulsion generator engines for the reduction of VOC. EPA determined that all of these technologies are technically feasible and can be used simultaneously. Therefore, EPA did not rank the remaining control technologies or need to evaluate the energy, environmental and economic impacts. The EPA determined that the following control options for the Large (>˜500 hp) Diesel engines on the *Pathfinder* are BACT:

Table 11 - Step 4 BACT CO Conclusions

Emission Units	BACT Control Option
Main Propulsion Generator Engines (DR-GE-01 through DR-GE-06)	High pressure fuel injection and good combustion practices with use of DEWT measurement system
Crane Engines (DR-CE-01 through DR-CE-04)	High pressure fuel injection and good combustion practices
Emergency Generator (DR-GE-07)	High pressure fuel injection and good combustion practices
Emergency Fire Pump Engine (DR-PE-01)	High pressure fuel injection and good combustion practices

Table 12 - Step 4 BACT VOC Conclusions

Emission Units	BACT Control Option
Main Propulsion Generator Engines (DR-GE-01 through DR-GE-06)	High pressure fuel injection), positive crankcase ventilation and good combustion practices with use of DEWT measurement system
Crane Engines (DR-CE-01 through DR-CE-04)	High pressure fuel injection, positive crankcase ventilation, and good combustion practices
Emergency Generator (DR-GE-07)	High pressure fuel injection, positive crankcase ventilation, and good combustion practices
Emergency Fire Pump Engine (DR-PE-01)	High pressure fuel injection, positive crankcase ventilation, and good combustion practices

Step 5: Select BACT

Main Propulsion Generator Engines (DR-GE-01 through DR-GE-06): The EPA compared these emissions to those permitted for large internal combustion diesel engines found in the EPA's RACT/BACT/LAER Clearinghouse (RBLC). Although, the EPA understands that the engines listed in the database are not marine diesel engines, they provide a general comparison for the emission factors. The emission limits proposed by Eni were comparable to those found for previously permitted facilities for VOC.

A comparable engine in use at a land-based source has Wärtsilä 12V32 engine emissions permitted at 0.91 g/kW-hr. However, the EPA Tier 1 standard for CO is 11.4 g/kW-hr, which is significantly higher than the proposed limit of 3.3 g/kW-hr. Moreover, the engine found in the RBLC will not operate under the same conditions as the engines onboard the *Pathfinder*. Specifically, the land-based engine will operate at steady-state, while the engines onboard the *Pathfinder* will operate at variable loads. Therefore, the EPA has determined that BACT for CO is high pressure fuel injection and good combustion practices, based on the current manufacturer's specifications for this engine, and the emission limit which represents BACT for the main engines on the *Pathfinder* for CO is 3.3 g/kW-hr. Given the significant load variations required by the operations on the drillship, the EPA has determined that an averaging period of 24 hours is appropriate in this case.

The VOC emission limit was proposed at 0.55 g/kW-hr, and was calculated based on Wärtsilä data for the worst case operating load. The EPA has determined that BACT for VOC is high pressure fuel injection, positive crankcase ventilation, and good combustion practices, based on the current manufacturer's specifications for this engine, and the emission limit which represents BACT for the main engines on the *Pathfinder* for VOC is 0.55 g/kW-hr. Given the significant load variations required by the operations on the drillship, the EPA has determined that an averaging period of 24 hours is appropriate in this case.

Caterpillar 3408 Crane Engines (DR-CE-01 and DR-CE-02): The applicant proposed a CO emission limit of 11.4 g/kW-hr for DR-CE-01 and DR-CE-02 based on an operating time of eight hours per day. The EPA has determined that BACT for DR-CE-01 and DR-CE-02 is use of certified EPA Tier 1 engines with high pressure fuel injection and good combustion practices, based on the current manufacturer's specifications for this engine, with a BACT limit of 11.8 tons per year on a rolling 12-month total for both engines. To assure compliance with the BACT emission limit, the permit will limit the use of the engine to eight hours per calendar day.

The applicant proposed a VOC emission limit of 1.3 g/kW-hr for DR-CE-01 and DR-CE-02 based on an operating time of eight hours per day. The EPA has determined that BACT for DR-CE-01 and DR-CE-02 is use of certified Tier I engines with high pressure fuel injection, positive crankcase ventilation, and good combustion practices, based on the current manufacturer's specifications for this engine, with a BACT limit of 1.3 tons per year on a rolling 12-month total for both engines. To assure compliance with the BACT emission limit, the permit will limit the use of the engine to eight hours per calendar day.

Caterpillar 3406 Crane Engine (DR-CE-03 and DR-CE-04): The Caterpillar 3406 crane engines are IMO Tier I NO_x certified (Regulation 13 of Annex VI to MARPOL); this certification does not regulate non-NO_x pollutants (for a detailed discussion of the regulations applicable to these engines see section 4.5.1.). The applicant has proposed a CO emission limit of 4.06 g/kW-hr based on an AP-42 emission factor and on an operating time of eight hours per day. The EPA has determined that BACT for DR-CE-03 and DR-CE-04 is use of engines with high pressure fuel injection and good combustion practices, based on the current manufacturer's specifications for this engine, and limiting CO emissions to 4.0 tons per year on a rolling 12-month total for both engines. To assure compliance with the BACT emission limit, the permit will limit the use of the engine to eight hours per calendar day.

The applicant has proposed a VOC emission limit of 1.53 g/kW-hr based on AP-42 emission factors and an operating time of eight hours per day. The EPA has determined that BACT for DR-CE-03 and DR-CE-04 is use of engines with high pressure fuel injection with aftercooling, positive crankcase ventilation, and good combustion practices, based on the current manufacturer's specifications for this engine, and limiting VOC emissions to 1.5 tons per year on a rolling 12-month total for both engines. To assure compliance with the BACT emission limit, the permit will limit the use of the engine to eight hours per calendar day.

Emergency Generator (DR-GE-07): The applicant proposed a CO limit of 4.06 g/kW-hr and a VOC limit of 1.53 g/kW-hr for the emergency generator on the *Pathfinder* based on an operating time of two hours per week. Since the emergency generator will only operate two hours per week, showing compliance with a short-term numeric emission limit would be unreasonably burdensome and costly. Therefore, the EPA has determined that BACT for the emergency generator is good combustion practices, operating in accordance to the manufacturer's specifications and limiting CO emissions to 0.09 tons per year and VOC emission to 0.03 tons per year on a rolling 12-month total. To assure compliance with the BACT emission limit, the permit will limit the use of the engine to two hours per week on a rolling 7-day total basis.

Emergency Fire Pump Engine (DR-PE-01): The applicant proposed a CO limit of 4.06 g/kW-hr and a VOC limit of 1.53 g/kW-hr for the emergency fire pump engine on the *Pathfinder* based on an operating time of 20 minutes per week. Since the emergency generator will only operate 20 minutes per week, showing compliance with a short-term numeric emission limit would be unreasonably burdensome and costly. Therefore, the EPA has determined that BACT for the emergency generator is good combustion practices, operating in accordance to the manufacturer's specifications and limiting CO emissions to 0.005 tons per year VOC emissions to 0.002 tons per year on a rolling 12-month total. To assure compliance with the BACT emission limit, the permit and will limit the use of the engine to 20 minutes per week on a rolling 7-day total basis.

8.1.4 GHG Analysis for the Large (>˜500 hp) Internal Combustion Engines

The combustion of diesel fuel in the *Pathfinder*'s large internal combustion engines produces a large amount of GHG emissions. GHG emissions resulting from these units consist of CO_2, CH_4 and N_2O. More than 99.99% of these emissions are CO_2 on a mass basis. The combustion process also produces CH_4 and N_2O as a product, but in much lower quantities. A GHG BACT analysis was required for new sources with significant emissions of GHG starting on January 2, 2011. The supplemental GHG BACT analysis was submitted by Eni on April 13, 2011.

8.1.4.1. CH_4 and N_2O BACT Analysis for the Internal Combustion Engines

CH_4: Although thermal oxidation and oxidation catalyst systems are potential control options, thermal oxidation would not reduce already low levels of CH_4, and catalytic oxidation would require much higher temperatures, residence times, and catalyst loadings. The EPA, therefore, determined BACT for CH_4 to be good combustion practices and good maintenance.

N_2O: Eni determined that there are no available technologies for reducing N_2O from diesel-fired boilers. The EPA determined BACT as good combustion and maintenance practices.

8.1.4.2. CO_2 BACT Analysis for the Internal Combustion Engines

Step 1: Identify all available control technologies

The applicant identified the following available control technologies in their OCS permit application submitted in the April 13, 2011 Application Addendum and letters dated on June 8, 2011:

1. Carbon Capture and Storage/Carbon Sequestration
2. CSNOx Emission Abatement System
3. Biomass Fuel Sources-Biodiesel
4. Good Combustion and Good Operating Practices
5. Transocean Diesel Engines with Turbochargers (DEWT) Measurement System on the Main Propulsion Generator Engines

Step 2: Eliminate technically infeasible control options

After analyzing the five control technology options, three of the options were eliminated as technically infeasible for control of CO_2 emissions from the engines on the *Pathfinder*. Below is a summary of the reasons for eliminating each of these options from further consideration in the top-down BACT analysis for this project. For detailed descriptions and references, please refer to the application and supplemental information submitted to the EPA in April 13, 2011 and letters dated June 8, 2011.

Carbon Capture and Storage/Carbon Sequestration (CCS): CCS requires the separation of CO_2 from other pollutants in the gas stream; this equipment for capture requires significant space, which is not available on the *Pathfinder*. Also, the mobile nature of the source renders attachment to a fixed pipeline for CO_2 transport infeasible.

CSNOx Emission Abatement System: This technology is currently in the experimental stage of development. Ecospec, the manufacturer, has performed experiments on engines operating at stable loads. However, currently both Wärtsilä and Transocean International are working with Ecospec to design and develop a CSNOx system for use on engines operating at variable load. Therefore, although this technology is infeasible for this project, future OCS projects may find this technology useful.

Biomass Fuel Sources-Biodiesel: The engines onboard are not designed to burn biodiesel. The use of biodiesel could result in the degradation of some fuel lines and gaskets. The use of biodiesel would result in reduced power and would impair the vessels ability to safely maintain operations.

<u>Step 3 Rank the remaining control technologies by effectiveness/Step 4 Evaluate the energy, environmental and economic impacts</u>

The only control option not eliminated as technically infeasible in Step 2 of the top-down BACT analysis was good combustion practices with the use of the DEWT measurement system for the main propulsion generator engines. Therefore, Eni did not rank the remaining control technologies or need to evaluate the energy, environmental and economic impacts.

<u>Step 5: Select BACT (Main Propulsion Generator Engines)</u>

Main Propulsion Generator Engines (DR-GE-01 through DR-GE-06): The applicant proposed a CO_2e emission limit of 1.71 lb/kW-hr. The EPA has determined BACT as good combustion and good operating practices for the main propulsion generator engines on the *Pathfinder* with a BACT limit of 776 g/kW-hr for CO_2e. Given the significant load variations required by the operations on the drillship, the EPA has determined that an averaging period of 24 hours is appropriate in this case.

Caterpillar 3408 Crane Engines (DR-CE-01 and DR-CE-02): The applicant proposed a CO_2e emission limit of 2.56 lb/kW-hr for DR-CE-01 and DR-CE-02 based on an operating time of eight hours. The EPA has determined that BACT for DR-CE-01 and DR-CE-02 is use of EPA-certified Tier 1 engines, good combustion and good operating practices, with a BACT limit of 722 TPY for CO_2e on a rolling 12-month total for both engines. To assure compliance with the BACT emission limit, the permit will limit the use of the engine to eight hours per calendar day.

Caterpillar 3406 Crane Engine (DR-CE-03 and DR-CE-04): The applicant proposed a CO_2e emission limit of 664 average lb/hr for DR-CE-03 and DR-CE-04 based on an operating time of eight hours per day. The EPA has determined that BACT for DR-CE-03 and DR-CE-04 is good combustion and good operating practices, with a BACT limit of 687 TPY for CO_2e on a rolling 12-month total for both engines. To assure compliance with the BACT emission limit, the permit will limit the use of the engine to eight hours per calendar day.

Emergency Generator (DR-GE-07): The applicant proposed a CO_2e limit of 0.85 lb/kW-hr for the emergency generator based on an operating time of two hours per week. Since the emergency generator will only operate two hours per week, showing compliance with a short-term numeric emission limit would be unreasonably burdensome and costly. Therefore, the EPA has determined that BACT for the emergency generator is good combustion practices, operating in accordance to the manufacturer's specifications and limiting CO_2e emissions to 14.6 tons per year on a rolling 12-month total. To assure compliance with the BACT emission limit, the permit will limit the use of the engine to two hours per week on a rolling 7-day total basis.

Emergency Fire Pump Engine (DR-PE-01): The applicant proposed a CO_2e limit of 0.85 lb/kW-hr for the emergency fire pump engine based on an operating time of 2 hours per year. Since the emergency generator will only operate 20 minutes per week, showing compliance with a short-term numeric emission limit would be unreasonably burdensome and costly. Therefore, the EPA has determined that BACT for the emergency generator is good combustion practices, operating in accordance to the manufactures' specifications and limiting CO_2e emissions to 2.4 tons per year on a rolling 12-month total. To assure compliance with the BACT emission limit, the permit will limit the use of the engine to 20 minutes per week on a rolling 7-day total basis.

8.2 BACT (For Escape Capsule Diesel Engines)

The applicant also submitted information regarding the BACT analysis for four escape capsule diesel engines (DR-EC-01 through 04). The emission controls listed in Step 1 for the large internal combustion engines were also listed for the escape capsule diesel engines.

The applicant anticipates the escape capsules would typically be run for a few minutes each week during routine checks of the engines' operation. Given the limited use of this emission unit, the EPA has determined that BACT is good combustion practices based on the current manufacturer's specifications for this engine. Good combustion practices will require regular engine maintenance and inspection to insure optimal engine performance. These engines are already equipped with positive crankcase ventilation, turbochargers and aftercoolers, high pressure fuel injection, and will use ultra low sulfur diesel. Furthermore, to reduce the emissions and maintain consistency with the emission estimates in the permit application, the draft permit limits the use of these smaller diesel engines to 10 minutes per month a 12-month rolling total basis.

8.3 BACT Analysis for the Diesel-fired Boiler

The *Pathfinder* includes a diesel-fired boiler used for heating purposes. The applicant anticipates that the boiler will be run for a maximum of 30 days within the 150-day operating period.

8.3.1 NO_X BACT Analysis for the Diesel-fired Boiler

Step 1: Identify all available control technologies

The applicant identified the following available control technologies in its OCS permit application submitted in August 2010:

1. Flue Gas Recirculation
2. Low-NO_x Burners
3. Good Combustion Practices

Step 2: Eliminate technically infeasible control options

After analyzing the three control technology options, two of the options were eliminated as technically infeasible for control of NO_x emissions from the diesel-fired boiler on the *Pathfinder*. Below is a summary of the reasons for eliminating each of these options from further consideration in the top-down BACT analysis for this project. For detailed descriptions and references, please refer to the application and supplemental information submitted to the EPA in May 2010 and August 2010.

Flue Gas Recirculation (FGR): The technology would require retrofitting FGR onto the boiler, and would require unavailable space. Also, there is a possibility of flame instability at high FGR rates.

Low-NO_x Burners: This technology is inappropriate for retrofit on a furnace this size.

Steps 3 and 4:

The only control option not eliminated as technically infeasible in Step 2 of the top-down BACT analysis was good combustion practices based on the current manufacturer's specifications for this engine. Therefore, EPA did not need to evaluate the energy, environmental and economic impacts.

Step 5:

The EPA has determined good combustion practices based on the current manufacturer's specifications for this engine as BACT for NO_x emissions from the diesel-fired boiler. Eni will operate and maintain the diesel-fired boiler according to the manufacturer's specifications to maximize fuel efficiency and minimize emissions. As part of good combustion practices, Eni shall follow manufacturer's specifications and good operating practices to maintain proper air-to-fuel ratio, residence time, and temperature to minimize emissions.

Given the limited use of this emission unit, the EPA has determined that BACT is good combustion and good operating practices, and limiting NO_x emissions to 0.49 tons per year. To reduce emissions and assure compliance with the emission estimates in the permit application, the draft permit limits the use of the boiler to 720 hours per 150-day operating period on a rolling 12-month total basis.

8.3.2 $PM/PM_{10}/PM_{2.5}$ BACT Analysis for the Diesel-fired Boiler

Step 1: Identify all available control technologies

Any control technology available for control of $PM_{2.5}$ will also effectively control PM and PM_{10}. The applicant identified the following available control technologies in their OCS permit application submitted in August 2010:

1. Low Sulfur Fuel (Ultra Low Sulfur Diesel)
2. Good Combustion Practices

Steps 2/3/4:

The use of low sulfur fuel is technically feasible, and Eni will use ultra low sulfur diesel fuel to power the marine boiler. Therefore, EPA did not need to evaluate the energy, environmental and economic impacts.

Step 5:

The EPA has determined good combustion practices based on the current manufacturer's specifications for this engine is BACT for $PM/PM_{10}/PM_{2.5}$ emissions from the diesel-fired boiler. Eni will operate and maintain the diesel-fired boiler according to the manufacturer's specifications to maximize fuel efficiency and minimize emissions. As part of good combustion practices, Eni shall follow manufacturer's specifications and good operating practices to maintain proper air-to-fuel ratio, residence time, and temperature to minimize emissions.

Given the limited use of this emission unit, the EPA has determined that BACT is good combustion practices, operating in accordance to the manufacturer's specifications and limiting PM emissions to 0.05, PM_{10} emissions to 0.02 and $PM_{2.5}$ emissions to 0.01 tons per year on a rolling 12-month total basis. To reduce emissions and assure compliance with the emission estimates in the permit application, the draft permit limits the use of the boiler to 720 hours per 150-day operating period.

8.3.3 CO and VOC BACT Analysis for the Diesel-Fired Boiler

The only control technology identified for CO and VOC from a diesel-fired boiler with a design heat input capacity less than 100 MMBtu/hr is good combustion practices.

The EPA has determined that good combustion practices is BACT for CO and VOC emissions from the diesel-fired-boiler. Eni will operate and maintain the diesel-fired boiler according to the manufacturer's specifications to maximize fuel efficiency and minimize emissions. As part of good combustion practices, Eni shall follow the manufacturer's specifications and good operating practices to maintain proper air-to-fuel ratio, residence time, and temperature to minimize emission.

Given the limited use of this emission unit, the EPA has determined that BACT is good combustion practices, operating in accordance to the manufacturer's specifications and limiting CO to 0.12 and VOC to 0.0005 tons per year on a rolling 12-month total basis. To reduce emissions and to assure compliance with the emission estimates in the permit application, the draft permit limits the use of the boiler to 720 hours per 150-day operating period.

8.3.4 CO_2e BACT and Analysis for the Diesel-fired Boiler

8.3.4.1. CH_4 and N_2O BACT Analysis for the Diesel-Fired Boiler

CH_4: Although thermal oxidation and oxidation catalyst are potential control options, thermal oxidation would not reduce already low levels of CH_4, and CO oxidation would require much higher temperatures, residence times, and catalyst loadings. EPA determined that BACT is good combustion practices and good maintenance for reducing CH_4 emissions from the boilers.

N_2O: Eni determined that there are no available technologies for reducing N_2O from diesel-fired boilers. The EPA determined that BACT is good combustion and maintenance practices.

8.3.4.2. CO_2 BACT Analysis for the Diesel-Fired Boiler

Step 1: Identify all available control technologies

The applicant identified the following available control technologies in their OCS permit application submitted in April 2011, and two letters submitted in June 2011 Application Addendum:

1. New Burners/Upgrades
2. Instrumentation and Control
3. Economizers
4. Air Preheater
5. Create Turbulent Flow within Firetubes
6. Insulation/Insulation Jackets/Steam Line Maintenance
7. Capture Energy from Boiler Blowdown
8. Condensate Return System
9. Minimizing of Gas-Side Heat Transfer Surface Deposits
10. Carbon Capture and Storage
11. Alternative Fuels-Biomass
12. Co-Firing and Fuel Switching
13. Combined Heat and Power
14. Tuning, Optimization and Air Leak Reduction- Good Combustion Practices

Step 2: Eliminate technically infeasible control options

After analyzing the 14 control technology options, 12 of the options were eliminated as technically infeasible for control of CO_2 emissions from the boiler on the *Pathfinder*. Below is a summary of the reasons for eliminating each of these options from further consideration in the top-down BACT analysis for this project. For detailed descriptions and references, please refer to the application and supplemental information submitted to the EPA in April 2011 and June 2011.

New Burners/Upgrades: This technology is inappropriate for retrofit on a furnace this size.

Instrumentation and Control: The installation is technically infeasible due to limited space availability.

Economizers: This technology is technically infeasible due to limited space availability.

Air Preheater: This technology is technically infeasible due to limited space availability.

Create Turbulent Flow Within Firetubes: This technology is technically infeasible due to limited space availability.

Capture Energy from Boiler Blowdown: This technology is technically infeasible given space and safety considerations.

Condensate Return System: This technology is technically infeasible due to limited space availability.

Minimizing of Gas-Side Heat Transfer Surface Deposits: This technology is technically infeasible due to limited space availability.

Carbon Capture and Storage/Carbon Sequestration (CCS): CCS requires the separation of CO_2 from other pollutants in the gas stream; this equipment for capture requires significant unavailable space reassignment. Also, the mobile nature of the source renders attachment to a fixed pipeline for CO_2 transport infeasible.

Alternative Fuels-Biomass: The boiler is not designed to burn biomass fuels, and use of biomass fuels may result in the degradation of some fuel lines and gaskets.

Co-Firing and Fuel Switching: Fuels other than diesel are not commercially available in offshore drilling applications.

Combined Heat and Power: The boiler is not sized for generating power.

Steps 3 and 4:

The only control options not eliminated as technically infeasible in Step 2 of the top-down BACT analysis were good combustion practices and operating practices, and Insulation/Insulation Jackets/ Steam Line Maintenance. According to Transocean, the boiler onboard the *Pathfinder* is completely insulated; the steam drum, all steam supply and steam return pipelines, and all feed water pipelines are fully insulated. Therefore, EPA did not need to evaluate the energy, environmental and economic impacts.

Step 5:

Given the limited use of this emission unit, the EPA has determined that BACT is insulation/insulation jackets, good combustion and operating practices in accordance to the manufacturer's specifications and limiting GHG emissions to 565 tons per year of CO_2e on a rolling 12-month total basis. To reduce the emissions and assure compliance with the emission estimates in the permit application, the permit proposes to limit the use of the boiler to 720 hours per 150-day operating period.

8.4 BACT Analysis for the Storage Tanks and Loading Operations

The *Pathfinder* will include several diesel and heavy fuel oil storage tanks (DR-TA-01 through DR-TA-17 and DR-TA-19 through DR-TA-24), and a jet fuel tank to supply incoming helicopters (DR-TA-18). The fuel in the tanks will generate VOC emissions through breathing emissions as well as through working (loading) losses. Eni preformed a BACT analysis for VOC emissions from the storage tanks and loading operations.

Step 1: Identify all available control technologies

The applicant identified the following available control technologies in their OCS permit application submitted in May 2010 and August 2010:

1. Vapor Recovery Unit
2. Thermal Oxidation System
3. Adsorption System
4. Internal Floating Roof or External Floating Roof
5. Submerged Loading

Step 2: Eliminate technically infeasible control options

After analyzing the control technologies, all of the options were eliminated as technically infeasible for control of VOC emissions from the tanks on the *Pathfinder*. Below is a summary of the reasons for eliminating each of these options from further consideration in the top-down BACT analysis for this project. For detailed descriptions and references, please refer to the application and supplemental information submitted to the EPA in May 2010 and August 2010.

Vapor Recovery Unit: This technology is technically infeasible due to limited space availability.

Thermal Oxidation System: This technology is technically infeasible due to limited space availability.

Adsorption System: These systems do not control low concentrations of VOCs efficiently. Also, this system would require unavailable space on the *Pathfinder*.

Internal Floating Roof or External Floating Roof: This technology is used for liquids with higher vapor pressures than diesel, and is technically infeasible due to limited space availability.

Submerged Loading: This technology is technically infeasible due to limited space availability.

Steps 3/4/5:

Based on a review of the available control technologies, the EPA has determined that BACT is use of good maintenance practices. This will limit tank leakage and excessive VOC emissions. The amount of VOC emissions emitted from the tanks is contingent upon both the fuel type and the amount of fuel. Therefore, the applicant will maintain records of the tank volume and the fuel type. To assure compliance, the EPA has determined the tanks will have a BACT limit of 0.27 TPY on a rolling 12-month total, as determined by the EPA’s TANKS 4.0.9d program.

The EPA has determined the tank loading will have a BACT limit of 0.03 TPY on a rolling 12-month total basis. To assure compliance, the EPA has limited the tank loading to one hr/day and the throughput to 10,132 gallons/day. This will limit the total fuel stored and loaded onto the *Pathfinder*, thereby limiting the TPY emissions of VOC from the storage tanks and loading operations.

9.0 Summary of Applicable Air Quality Impact Analyses:

9.1 Required Analyses

The PSD permitting regulations for proposed major new sources generally require applicants to perform an air quality impacts analysis for those pollutants that the project emits in significant quantities, as discussed in Section 6 and provided in Table 6. However, the PSD regulations also provide that certain provisions of the analysis are not required for temporary sources that meet specific conditions. The PSD regulations at 40 CFR § 52.21(i)(3) provide exemptions from the following analyses: NAAQS and PSD increment analyses (40 CFR § 52.21(k)), preconstruction and post-construction monitoring (40 CFR § 52.21(m)), and additional impact analysis (40 CFR § 52.21(o)), if the allowable emissions of that pollutant from the source: (i) would impact no Class I area and no area where the applicable increment is known to be violated, and (ii) would be temporary. EPA considers sources operating for less than two years in a given location to be temporary sources. *See* Amended Regulations for Prevention of Significant Deterioration of Air Quality, 45 Fed. Reg. 52676, 52719, 52728 (August 7, 1980).

For sources impacting Federal Class I areas, 40 CFR § 52.21(p) requires EPA to consider any demonstration by the Federal Land Manager (FLM) that emissions from the proposed source would have an adverse impact on air quality related values, including visibility impairment. If EPA concurs with the demonstration, the rules require that EPA shall not issue the PSD permit.

The maximum allowable PSD increments are listed in 40 CFR § 52.21(c) and given in Table 13 below. There are no increments for ozone. There are PSD Class I, II and III increments applicable to areas designated Class I, II and III. Class I areas are defined in 40 CFR § 52.21(e). Mandatory Class I areas (which may not be redesignated to Class II or III) are international parks, national wilderness areas larger than 5,000 acres, memorial parks larger than 5,000 acres, and national parks larger than 6,000 acres.

Table 13 - Ambient Air Quality Concentration Values (Amended to show only project PSD pollutants)

Pollutant and Averaging Period	National Ambient Air Quality Standards (*μg/m³ (ppm)*)		PSD Increments (*μg/m³*)		PSD Significant Impact Levels (*μg/m³*)		PSD *De Minimis* Impact Levels (*μg/m³*)
	Primary	Secondary	Class I	Class II	Class I	Class II	
Particulate Matter (PM_{10}) *24-hr* *Annual*	150 None	150 None	8[b] 4	30[b] 17	0.3 0.2	5 1	10
Particulate Matter ($PM_{2.5}$) *24-hr* *Annual*	35[f] 15[g]	35[f] 15[g]	2[b] 1	9[b] 4	0.07 0.06	1.2 0.3	4
Carbon Monoxide *1-hr* *8-hr*	40,000 (35)[b] 10,000 (9)[b]	None None				2000 500	575
Ozone *1-hr* *8-hr (1997)* *8-hr (2008)*	(0.12) (0.08)[i] (0.075)[i]	(0.12) (0.08)[i] (0.075)[i]					100[j]
Nitrogen Dioxide *1-hr* *Annual*	188[h, k] (0.100) 100 (0.053)	None 100 (0.053)	 2.5	 25	 0.1	7.55[k](0.004)[d] 1	 14

Notes:
b- Not to exceed more than once a year
d – Recommended interim SIL
f– Achieved when the average of the annual 98th percentile 24-hour concentration averaged over the years modeled is ≤ standard.
g –Achieved when the average of the annual mean concentration over the number of years modeled is ≤ standard.
i – Achieved when the average of the annual fourth-highest daily maximum 8-hour average concentrations is less than or equal to the standard.
j- Measured in tons/year of volatile organic compounds.
h- Achieved when the 98th percentile of the annual distribution of the daily maximum 1-hour average concentrations averaged over the number of years modeled is ≤ standard.
k – Values in ug/m³ are estimates. These may change when values and/or ppm to μg/m³ conversion procedures are provided by the EPA.

9. 2 Eni's Qualification as a Temporary Source

Eni has requested an air quality permit for 150 days of potential exploratory drilling activity in the to be completed in less than two years. Since the project will operate for less than two years in Lloyd Ridge 411 Lease Block, the project is considered a temporary source under the applicable PSD regulations. The permit allows for a maximum of 150 days of operation within the two year time frame, reflected in Condition 6.2. Therefore, the following sections address the impact related criterion for temporary source exemption 40 CFR § 52.21(i)(3).

9. 3 Area of Known PSD Increment Violation

The impact related criterion that must be met for a 40 CFR § 52.21(i)(3) exemption require that the project emissions must not impact any PSD Class I area and no area where the applicable increment is known to be violated. The Lloyd Ridge 411 Lease Block is located in the Eastern Gulf of Mexico approximately 154 miles from the nearest shoreline. There are no known areas in the Eastern Gulf of Mexico violating the NO_2, SO_2, or particulate matter (PM_{10}, $PM_{2.5}$) PSD increments. Therefore, the proposed project's emissions will not impact any area where applicable increments are known to be violated. Nor, based on the analysis discussed below, does EPA believe the project's emissions will significantly impact any onshore areas.

9.4 PSD Class I Areas Impact Analyses

The nearest PSD Class I area to the Lloyd Ridge Lease Block 411 is Breton National Wildlife Refuge located on the southeast coast of Louisiana, approximately 280 km from the proposed drilling site. Eni evaluated its potential impact on Breton National Wildlife Refuge's Air Quality Related Values (*i.e.* visibility and nitrogen and sulfur deposition) and PSD increments. The Federal Land Manager for each PSD Class I area (*i.e.*, U.S. Fish & Wildlife Service, U.S. Forest Service, or National Park Service) has the charge to protect the AQRV while the EPA ensures compliance with the PSD increments. The U.S. Fish and Wildlife Service is the Federal Land Manager for Breton National Wildlife Refuge. The EPA-required assessment of PSD Class I increments was addressed using the same model and modeling procedures as used and approved by the Federal Land Manager for the AQRV assessment.

9.4.1. Screening Procedure for Air Quality Related Values

Visibility, nitrogen deposition, and sulfate deposition are the AQRV of concern at Breton National Wildlife Refuge. The Federal Land Manager uses a "Q/D" screening procedure to determine if refined air quality impact modeling is required to quantify estimated project impacts. *See* Federal Land Managers' Air Quality Related Values Workgroup (FLAG) Phase I Report (Revised October 2010). The value of Q is the sum of the annual emissions (in tons per year based on 24-hour maximum allowable emissions) of all the pollutants affecting visibility emitted from the project (*i.e.*, NO_x, PM_{10}, $PM_{2.5}$, SO_2, and sulfuric acid). The D value is the distance, in km, of the project from the PSD Class I area. The Federal Land Manager considers values of the ratio of Q/D less than or equal to 10 to be insignificant, (*i.e.* the project's emissions would not have a significant impact on the Class I area.)

Although the permit limits the project's activities to 150 days, the Q value in this screening analysis was appropriately annualized. Annualized emissions are based on the maximum 24-hour permitted emissions (*i.e.*, drillship and support vessel operations) that are assumed to occur for each 365-day period.

The applicant's Q/D analysis resulted in a value greater than 10, the Federal Land Manager's FLAG guidance threshold value. Based on the project's emissions and the distance of the project from Breton National Wildlife Refuge, the U.S. Fish and Wildlife Service required a Class I AQRV modeling analysis.

9.4.2 Model Selection and Class I Area Modeling Procedures

The EPA-preferred model for long-range transport assessments – CALPUFF Version 5.8 (release 070623) was used to evaluate potential AQRV and PSD increment impacts at the Breton National Wildlife Refuge. The recommendations of the Interagency Workgroup on Air Quality Modeling and the Federal Land Manager Air Quality Related Values Workgroup (FLAG) were followed in performing these impact assessments. The CALPUFF modeling options used in the impact assessments were the defaults recommended by FLAG Phase I Report (Revised June 2008) and the EPA.

The CALPUFF modeling assessment used the maximum emissions from the drillship and support vessels. These emissions correspond to operation at the maximum proposed load conditions and were estimated from representative available vessels including, for the support vessels, an additional 10 % safety factor to ensure worst-case conditions. The drilling phase of the project produces the largest emissions. The worst-case emissions for all averaging periods of concern (*i.e.*, hourly, daily, and annual) were used in the modeling.

The worst-case project emissions were modeled as though emitted from a single stack on the drillship. The stack exit parameters used were based on the stack associated with the main drillship engine which is the largest source of emission from the proposed drilling operations. The worst-case 100% load stack exit parameters, the operational scenario producing the maximum drillship emissions, were used; any change in stack parameters associated with lower loads would not result in appreciably higher impacts considering the long transport distance (280 km) to Breton National Wildlife Refuge.

In addition, to model the operating scenario that would produce the worst-case impact at Breton National Wildlife Refuge, the drilling vessel was located at the NW corner of the Lease Block nearest Breton.

9.4.3 Meteorological Data

The three-year meteorological dataset (2001-2003) developed by the Visibility Improvement State and Tribal Association of the Southeast (VISTAS) was used for the PSD Class I impact assessment. This dataset covers the Gulf of Mexico region of interest. These meteorological data were processed using the regulatory version of CALMET (Version 5.8 Level 070623). The dataset was developed using observations from 100 to 109 surface stations, 10 upper air stations, 9 overwater stations and 92 to 103 precipitation stations, depending on the meteorological year.

9.4.5 Model Outputs

The CALPUFF-estimated hourly concentrations were averaged for comparison with the annual and 24-hour PM_{10}/$PM_{2.5}$ and NO_2 Class I PSD significant impact levels (SIL) and increment. Extinction coefficients for 24-hour daily periods and annual total deposition fluxes were estimated. The highest estimated values for the 3-year period were used in comparisons with the significant impact levels and Deposition Analysis Thresholds (DAT). Maximum and 98 percentile modeled changes in extinction from vessel emissions were compared to the Federal Land Manager target value that is associated with the just-perceptible change in extinction.

9.4.6 Atmospheric Chemistry

The NO_x chemistry in CALPUFF depends on input ambient ammonia concentration. The Federal Land Manager-requested concentration of 3 parts per billion (ppb) was used for background ammonia.

Reaction rates are influenced by background ozone concentrations. Ozone data from the monitor in Sumatra, Florida were used because of the proximity to the modeling domain as well as to the availability and completeness of the record.

9.4.7 Modeling Results

The maximum Class I area estimated impacts of NO_2 and $PM_{10}/PM_{2.5}$ from the proposed exploratory drilling emissions are provided in Table 14. The PM_{10} modeling results were conservatively assumed for $PM_{2.5}$. The accepted PSD Class I SILs are also provided in this table. The maximum modeled concentrations associated with the proposed project emissions are much less than the SILs. Therefore, the project is not considered to have significant impacts on the PSD Class I increments.

The CALPUFF estimates of deposition of acid-forming compounds from the project's emissions are provided in Table 15. This table also contains the Federal Land Manager accepted DAT established for areas east of the Mississippi. The DAT is defined as the additional amount of nitrogen or sulfur deposition within a PSD Class I area below which estimated project impacts are considered negligible. *See* Federal Land Manager's Air Quality Related Values Workgroup, Phase I Report (Revised June 2008). The estimated project deposition rates are much less than the DAT. Therefore, the project associated Class I area deposition should be negligible.

The visibility parameter of concern at Breton National Wildlife Refuge is regional haze. The project's contribution to regional haze is addressed as the 24-hour change in light extinction. The Federal Land Manager considers a five percent change in extinction to be just perceptible. Two Federal Land Manager-accepted procedures were used to provide estimates of the change in extinction associated with project emissions. The CALPUFF post-processor (CALPOST) performs these two procedures, known as Method 2 and Method 8. Method 8 is the updated approved method employing the IMPROVE extinction equation using monthly relative humidity adjustment factors, annual background aerosol concentrations, and 98^{th} percentile modeled values at each receptor.

The Method 2-estimated project associated changes in visibility extinction resulted in a number of days with more than 5 percent change in extinction. The Method 8 estimates of project associated changes in visibility extinction provide further information for the evaluation the visibility impacts. On a daily basis the project's emissions resulted in no days exceeding 5 percent change in extinction. Table 16 provides a summary of the results of the Method 2 and Method 8 modeling analyses. This table reveals the Method 8 98^{th} percentile values are less than the target 5 percent change in extinction.

Table 14 - Maximum Modeled Class 1 Increment Concentrations (ug/m^3)

Parameter	Class I Modeling Significance Level	Year		
		2001	2002	2003
NO_2 – Annual	0.1	0.011	0.014	0.011
$PM_{10}/PM_{2.5}$ – 24 hour	0.3/0.07	0.023	0.021	0.026
PM_{10} /$PM_{2.5}$– Annual	0.2/0.06	0.0009	0.0014	0.0015

Table 15 - Estimated Class I Area Deposition Fluxes (kg/ha/yr)

Class I Area	Class I DAT	Year		
		2001	**2002**	**2003**
Nitrogen Deposition	0.01	0.0046	0.0066	0.0064
Sulfur Deposition	0.01	0.0002	0.0003	0.0002

Table 16 - Summary of Estimated Change in Extinction for Breton National Wildlife Refuse

	Parameter	*Year*		
		2001	***2002***	***2003***
Method 2	Highest Value (%)	56.16	22.04	20.04
	Number Days > 5% Change	21	29	28
	Number Days > 10% Change	11	13	8
Method 8	98^{th} Percentile Highest Value (%)	4.92	3.99	3.56
	Number Days > 5% Change	0	0	0
	98^{th} Percentile Change 2003 Number Days > 10% Change	0	0	0

9.5 Conclusions

Because the draft permit limits Eni's exploratory drilling project in the Lloyd Ridge 411 Lease Block to no more than 2 years, the project qualifies as a temporary emissions source for purposes of PSD permitting. The CALPUFF impact modeling for the nearest PSD Class I area, Breton National Wildlife Refuge, demonstrated impacts less than the PSD Class I area significant impact levels for all proposed project PSD pollutants. The AQRV impact modeling assessment of sulfur and nitrogen deposition demonstrates impacts that are less than the Federal Land Manager Deposition Analysis Thresholds. Finally, the project's estimated impact on Class I area regional haze visibility demonstrated impact within the Federal Land Manager's acceptable perceptibly level. The Breton National Wildlife Refuse Federal Land Manager's evaluation supports these conclusions. Therefore, the estimated maximum emissions from the proposed drilling activities are not expected to significantly impact the nearest PSD Class I area of Breton National Wildlife Refuge nor any more distant PSD Class I area.

10. Additional Requirements:

10.1 Endangered Species Act and Essential Fish Habitat of Magnuson-Stevens Act

Section 7(a)(2) of the Endangered Species Act (ESA) requires federal agencies, in consultation with the National Oceanic and Atmospheric Administration (NOAA) Fisheries Service and/or the U.S. Fish and Wildlife Service (collectively, "the Services"), to ensure that any action authorized, funded, or carried out by the agency is not likely to jeopardize the continued existence of a species listed as threatened or endangered, or result in the destruction or adverse modification of designated critical habitat of such species. 16 U.S.C. § 1536(a)(2); *see also* 50 CFR §§ 402.13, 402.14. The federal agency is also required to confer with the Services on any action which is likely to jeopardize the continued existence of a species proposed for listing as threatened or endangered or which will result in the destruction or adverse modification of critical habitat proposed to be designated for such species. 16 U.S.C. § 1536(a)(4); *see also* 50 CFR § 402.10. Further, the ESA regulations provide that where more than one federal agency is involved in an action, the consultation requirements may be fulfilled by a designated lead agency on behalf of itself and the other involved agencies. *See* 50 CFR § 402.07.

Section 305(b)(2) of the Magnuson-Stevens Fishery Conservation and Management Act (MSA) requires federal agencies to consult with NOAA with respect to any action authorized, funded, or undertaken by the agency that may adversely affect any essential fish habitat identified under the MSA. BOEMRE is the lead federal agency for authorizing oil and gas exploration activities on the OCS. Therefore, BOEMRE has served as the lead agency for ESA Section 7 and MSA compliance for Eni's exploration activities. In accordance with Section 7 of the ESA, BOEMRE consults prior to a lease sale with NOAA Fisheries and the Fish and Wildlife Service to ensure that a sale proposal will not cause any protected species to be jeopardized by oil and gas activities on a lease. In addition, BOEMRE requests annual concurrence from the Services to ensure current activities remain consistent with the terms and conditions of the Biological Opinion issued for the lease sale activities.

Since the BOEMRE consultations address the same exploratory drilling activities addressed by the air permit that the EPA is issuing to Eni, the EPA relied in part on those conclusions for our final determination. Based upon the best available data and informal consultation with the Services, the EPA determined that the issuance of this OCS permit to Eni for exploratory drilling is not likely to cause any adverse effects on listed species and essential fish habitats beyond those already identified, considered and addressed in the prior consultations. The proposed OCS permit includes a condition requiring Eni to comply with all other applicable federal regulations. The EPA received concurrence from the Fish and Wildlife Service and NOAA that our Section 7 ESA consultation requirements were met on August 12, 2010, and January 24, 2011, respectively. These letters are included in the administrative record.

10.2 National Historic Preservation Act

Section 106 of the National Historic Preservation Act requires federal agencies to take into account the effects of their undertakings on historic properties. Section 106 requires the lead agency official to ensure that any federally funded, permitted, or licensed undertaking will have no effect on historic properties that are on or may be eligible for the National Register of Historic Places. The BOEMRE is the lead agency permitting Eni's Lease Area OCS G-31847. Lease OCS G-31847 in Lloyd Ridge (LL) Area Block 411 was included in BOEMRE Lease Sale 205. The environmental effects of Sale 205 were analyzed in a multi-sale Environmental Impact Statement, covering sales in 2007 through 2012 accessible on the web at http://www.Gulf of Mexicor.boemre.gov/PDFs/2007/2007-018-Vol1.pdf.

BOEMRE typically conducts section 106 consultation at the pre-lease stage by prior agreement with the Advisory Counsel for Historic Preservation rather than at the individual post-lease permit level. In order to reach a Finding of No Significant Impact, mitigation is carried out at the post-lease plan level by requiring remote sensing survey of the seafloor in areas considered to have a high probability for archaeological resources. At the time this lease was sold, LL411 was not considered to have a high probability for containing archaeological remains such as a shipwreck. Any cultural resources discovered during that inspection are required by regulation to be reported to BOEMRE within 72 hours. No significant archaeological properties are anticipated in this location, but should anything be discovered there as a result of the operator's investigations, BOEMRE would enter into consultation with State Historic Preservation Office and the Advisory Counsel for Historic Preservation.

10.3 Executive Order 12898 – Environmental Justice

Executive Order 12898, entitled "Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations," directs federal agencies, including the EPA, to the extent practicable and permitted by law, to identify and address, as appropriate, disproportionately high and adverse human health or environmental effects of regulatory programs, policies, and activities on minority populations or low-income populations. *See* Executive Order 12898, 59 Fed. Reg. 7629 (February 11, 1994). Consistent with Executive Order 12898 and the EPA's environmental justice policy (OEJ 7/24/09), in making decisions regarding permits, such as OCS permits, the EPA gives appropriate consideration to environmental justice issues on a case-by-case basis, focusing on whether its action would have disproportionately high and adverse human health or environmental effects on minority or low-income populations.

The EPA has concluded that this proposed OCS air permitting action for Eni's exploratory drilling operation on the Gulf of Mexico would not have a disproportionately high adverse human health or environmental effects on minority or low-income populations. The drill site is located approximately 154 miles southeast of the mouth of the Mississippi River and 189 miles south of the nearest Florida coast in the Gulf of Mexico. Since the project is located more than 150 miles out in the Gulf of Mexico in ultra deepwater, the EPA is not aware of any minority or low-income population that may frequently use the area for recreational or commercial reasons. In addition, since the project is located well away from land, the project's emissions impacts will be dispersed over a wide area with no elevated concentration levels affecting any onshore populated area. Finally, given the projects temporary nature, it will have a minimal air impact on all populations. *See* Section 9 of this document pertaining to air quality impact.

11. Public Participation:

11.1 Opportunity for Public Comment

These proceedings are subject to the EPA Procedures for Decision-making, set forth at 40 CFR part 124. As provided in part 124, the EPA is seeking public comment on the Eni OCS air permit OCS-EPA-R4007 during the public comment period as specified in the public notice. Public notice is also being issued as required under 40 CFR § 55.7 and 40 CFR part 71.

Any interested person may submit written comments on the draft permit during the public comment period. If you believe any condition of the permit is inappropriate, you must raise all reasonably ascertainable issues and submit all reasonably available arguments supporting your position by the end of the comment period. Any documents supporting your comments must be included in full and may not be incorporated by reference unless they are already part of the record for this permit or consist of state or federal statutes or regulations, EPA documents of general applicability, or other generally available referenced materials.

Comments should focus on the proposed air quality permit, the permit terms, and the air quality aspects of the project. The objective of the OCS air quality program is to prevent significant adverse environmental impact from air emissions by a new or modified OCS source. If you have more general concerns regarding non-air quality impacts, such as offshore leasing, drilling safety, discharge, etc., these should be addressed during the leasing and permitting proceedings of BOEMRE, which is the lead permitting agency for this project.

All timely comments will be considered in making the final decision, included in the record, and responded to by the EPA. The EPA may group similar comments together in our response, and will not respond to individual commenters directly.

All comments on the draft permit must be received by email or postmarked by October 3, 2011. Requests for a Public Hearing (see below) must be received by email or mail by September 19, 2011. An extension of the 30-day comment period may be granted if the request for an extension adequately demonstrates why additional time is required to prepare comments. Comments must be sent or delivered in writing to the address below. All comments will be included in the public docket without change and may be made available to the public, including any personal information provided, unless the comment includes Confidential Business Information or other information in which disclosure is restricted by statute. Information that you consider Confidential Business Information or otherwise protected should be clearly identified as such and should not be submitted through email. If you send email directly to the EPA, your email address will be captured automatically and included as part of the public comment. Please note that an email or postal address must be provided with your comments if you wish to receive direct notification of the EPA's final decision regarding the permit and the EPA's response to comments submitted during the public comment period. For questions on the draft permit, please contact: Ms. Eva Land at 404-562-9103 or land.eva@epa.gov.

Submit comments on the draft permit and requests for a public hearing to:

EPA Region 4, APTMD
61 Forsyth Street, SW
Atlanta, GA 30303
Attn: Eva Land

Fax: (404) 562-9019
Email: R4OCSpermits@epa.gov

11.2 Public Hearing

The EPA has discretion to hold a public hearing if we determine there is a significant amount of public interest in the draft permit. Requests for a public hearing must be received by the EPA by email or mail by September 19, 2011, at the address given above, and state the nature of the issues proposed to be raised in the hearing. You may submit oral or written comments on the draft permit at the public hearing. You do not need to attend the public hearing to submit written comments. If there is significant public interest, the EPA will hold a public hearing on the draft OCS permit on October 4, 2011, at the location given in the public notice. If a public hearing is held, the public comment period shall automatically be extended to the close of the public hearing. If no request for a public hearing is received by September 19, 2011, or the EPA determines that there is not significant interest, *the* *hearing will be cancelled.* An announcement of cancellation will be posted on the EPA's website at: http://www.epa.gov/region4/air/permits/OCSPermits/OCSpermits.html, or you may call the EPA at the contact number above to determine if the public hearing will be held.

11.3 Administrative Record

The administrative record contains the application, supplemental information submitted by Eni, and correspondence, including emails, between Eni and its consultants and the EPA clarifying various aspects of Eni's application. The draft permit and the administrative record are available for public review at the EPA Region 4 office and the Bay County Public Library at the addresses listed below. Please call in advance for available viewing times.

Bay County Public Library
Northwest Regional Library System
898 W 11th Street
Panama City, FL 32412-0625
(850) 522-2119

EPA Region 4 Office
61 Forsyth Street, SW
Atlanta, GA 30303
Phone: (404) 562-9043

The administrative record and draft permit are also available on the EPA's website at: http://www.epa.gov/region4/air/permits/OCSPermits/OCSpermits.html.

To request a copy of the draft permit, preliminary determination, or notice of the final permit action, please contact: Ms. Rosa Yarbrough, Permit Support Specialist at: 404-562-9643, or R4OCSpermits@epa.gov.

11.4 Final Determination

A decision to issue a final permit, or to deny the application for the permit, shall be made after all comments have been considered. Notice of the final decision shall be sent to each person who has submitted written comments or requested notice of the final permit decision, provided the EPA has adequate contact information.