UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 10
1200 Sixth Avenue, Suite 900
Seattle, Washington 98101-3140

OUTER CONTINENTAL SHELF
PREVENTION OF SIGNIFICANT DETERIORATION
PERMIT TO CONSTRUCT

Permit Number: R10OCS/PSD-AK-09-01 Issuance Date:

In accordance with the provisions of Clean Air Act (CAA) Section 328 and Code of Federal Regulations (CFR) Title 40, Part 55, and the provisions of Part C to Title I of the CAA and 40 CFR § 52.21,

Shell Gulf of Mexico Inc.
3601 C Street, Suite 1000
Anchorage, AK 99503

is authorized to construct and operate the Noble Discoverer (Discoverer) drillship and its air emission units and to conduct other air pollutant emitting activities in accordance with the permit conditions listed in this permit, and only at the following lease blocks from the Chukchi Sea lease sale 193:

NR02-02:	6819	6820	6821	6822	6868	6869	6870	6871	6872	6918	6919	6920	6921	6922	6968	6969
	6970	6971	6972	7018	7019	7020	7021	7022	7023	7068	7069	7072				
NR03-01:	6105	6106	6155	6156	6161	6162	6211	6212	6261	6363	6364	6413	6414	6415	6418	6419
	6462	6463	6464	6465	6467	6468	6469	6512	6513	6514	6515	6516	6517	6518	6519	6562
	6563	6564	6565	6567	6568	6569	6612	6613	6614	6615	6616	6617	6618	6665	6666	6667
	6668	6705	6706	6712	6715	6716	6717	6753	6754	6755	6756	6761	6762	6765	6766	6767
	6803	6804	6805	6810	6811	6812	6813	6814	6815	6816	6817	6853	6854	6855	6860	6861
	6862	6863	6864	6865	6866	6903	6904	6905	6908	6909	6910	6911	6912	6913	6914	6915
	6916	6953	6954	6955	6956	6957	6958	6959	6960	6961	6962	6963	6964	6965	7006	7007
	7008	7009	7010	7011	7012	7013	7014	7056	7057	7058	7059	7060	7061	7062	7063	7106
	7107	7108	7109	7110	7119											
NR03-02:	6114	6115	6161	6163	6164	6165	6213	6214	6215	6220	6259	6261	6263	6264	6265	6270
	6271	6321	6322	6359	6360	6371	6372	6409	6410	6422	6423	6459	6508	6558	6608	6658
	6671	6672	6708	6713	6714	6715	6721	6722	6757	6761	6762	6763	6764	6765	6766	6771
	6807	6811	6812	6813	6814	6815	6816	6817	6856	6862	6863	6864	6865	6866	6905	6912
	6913	6914	6915	6916	6962	6963	6964	6965								
NR04-01:	6352	6401	6402	6452	6453	6503	6504	6554	6604							
NR03-03:	6007	6008	6009	6010	6017	6018	6020	6056	6057	6058	6059	6067	6068	6070	6108	6219
	6560	6561	6609	6610	6611	6658	6659	6660	6709	6721	6722	6723	6759	6771	6772	6773
	6823															

Terms not otherwise defined in this permit have the meaning assigned to them in the referenced statutes and regulations. All terms and conditions of the permit are enforceable by the United States Environmental Protection Agency (EPA) and citizens under the CAA.

_____ _____
Richard Albright Date
Director, Office of Air, Waste and Toxics

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ABBREVATIONS AND ACRONMYS

BACT. .....Best Available Control Technology
CAA .....Clean Air Act
CDPF.....Catalyzed Diesel Particulate Filter
CFR. .....Code of Federal Regulations
CGA. .....Cylinder Gas Audit
CMS .....Continuous Monitoring Systems
CTM.....Conditional Test Method
COA .....Corresponding Onshore Area
EPA .....United States Environmental Protection Agency
HPU.....Hydraulic Power Unit
MLC.....Mud Line Cellar
NA.....Not applicable
OCS.....Outer Continental Shelf
PSD .....Prevention of Significant Deterioration
PTE .....Potential to Emit
PDF .....Portable Document Format
QA.....Quality Assurance
QC.....Quality Control
SCR.....Selective Catalytic Reduction
USCG.....United States Coast Guard

UNITS AND MEASUREMENTS

Btu.....British thermal units
^{o}C.....degree Celsius
dscf.....dry standard cubic foot
^{o}F .....degree Fahrenheit
g.....grams
hp.....brake horsepower
hr .....hour
kW.....kiloWatts (mechanical)
kWe.....kiloWatts electrical
lb .....pounds
MMBtu/hr .....Million British thermal units per hour
ppm .....parts per million
ppmv .....parts per million by volume
scf.....standard cubic foot
tpy .....tons per year

POLLUTANTS

CO .....Carbon Monoxide
CO_2e .....Carbon Dioxide Equivalent
GHG or GHGs .....Greenhouse Gas or Greenhouse Gases
NH_3 .....Ammonia
NMHC.....Non-Methane Hydrocarbons
NO_X .....Oxides of Nitrogen
NO_2 .....Nitrogen Dioxide
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 10 microns
SO_2.....Sulfur Dioxide
VOC .....Volatile Organic Compound

AUTHORITY

The United States Environmental Protection Agency (EPA) is issuing this outer continental shelf (OCS)/prevention of significant deterioration (PSD) permit pursuant to Section 328 of the CAA, 42 U.S.C. § 7627, and the implementing OCS regulations at 40 CFR Part 55, and pursuant to Part C to Title I of the CAA, 42 USC §§ 7470 to 7492, and the implementing PSD air quality regulations at 40 CFR § 52.21. This proposed action is based upon the application initially submitted by Shell Offshore Inc. (Shell or permittee) on December 19, 2008, supplemental submittals identified in the administrative record for this permit action, and upon the technical analysis performed by the EPA.

FINDINGS

On the basis of the information in the administrative record, the EPA has determined that:

1. The permittee will meet all of the applicable requirements of the 40 CFR Part 55.
2. The permittee will meet all of the applicable requirements of the 40 CFR § 52.21.

APPROVAL CONDITIONS

Shell is authorized to construct and operate the vessels and emission units listed in Tables 1 through 5, at any of the lease blocks identified on Page 1 of this permit, and consistent with the representations in the permit application and subject to the conditions in this permit.

Coast Guard Safety Zone. The permit does not authorize operation unless:

a. The Discoverer is subject to a currently effective safety zone established by the United Sates Coast Guard (USCG) which encompasses an area within at least 500 meters from the center point of the Discoverer and which prohibits members of the public from entering this area except for attending vessels or vessels authorized by the USGC (such area shall be referred to as the “Safety Zone”); and

b. Shell has developed in writing and is implementing a public access control program to:

- locate, identify, and intercept the general public by radio, physical contact, or other reasonable measures to inform the public that they are prohibited by Coast Guard regulations from entering the Safety Zone; and
- communicate to the North Slope communities on a periodic basis when exploration activities are expected to begin and end at a drill site, the location of the drill site, and any restrictions on activities in the vicinity of Shell’s exploration operations.

Table 1 – Noble Discoverer Emission Units

ID	Description	Make and Model	Rating[a]
FD-1 – 6	Generator Engines	Caterpillar D399 SCAC 1200 rpm	1,325 hp
FD-7	Propulsion Engine	Mitsubishi 6UEC65	7,200 hp
FD-8	Emergency Generator Seldom Used Sources	Caterpillar 3412 Various	639 hp Various[b]
FD-9 – 11	MLC Compressor Engines	Caterpillar C-15	540 hp
FD-12 – 13	HPU Engines	To be determined	250 hp
FD-14	Port Deck Crane Engine	Caterpillar D343	365 hp
FD-15	Starboard Deck Crane Engine	Caterpillar D343	365 hp
FD-16 – 17	Cementing Unit Engines	Detroit 8V-71N	335 hp
FD-18	Cementing Unit Engine	GM 3-71	147 hp
FD-19	Logging Winch Engine	Caterpillar C7	250 hp
FD-20	Logging Winch Engine	John Deere PE4020TF270D	35 hp
FD-21 – 22	Heat Boilers	Clayton 200	7.97 MMBtu/hr
FD-23	Incinerator	TeamTec GS500C	276 lb/hr
FD-24 -30	Fuel Tanks	Not applicable (NA)	Various
FD-31	Supply Ship Generator Engine(s) [c]	Generic	584 hp
FD-32	Drilling Mud System	NA	NA
FD-33	Shallow Gas Diverter System[d]	NA	NA

[a] Permit conditions may limit operation to less than rated capacity.
[b] See Condition E.3 for the Discoverer Emergency Generator and Seldom Used Sources (Unit FD-8) aggregate fuel use limit.
[c] Only when attached to the Discoverer.
[d] Permit condition prohibits the shallow gas diverter system from emitting any air pollutants.

Table 2 – Icebreaker #1

Description	Make and Model	Maximum Aggregate Rating[a]
Aggregate of Propulsion Engines and Generator Engines	Various	31,200 hp
Generator Engine(s)	Various	2,800 hp
Heat Boiler(s)	Various	10 MMBtu/hr
Incinerator	Various	154 lbs/hr
Seldom Used Sources	Various	Various[b]

[a] Permit conditions may limit operation to less than rated capacity.
[b] See Condition N.9.3 for the Icebreaker #1 Seldom Used Sources aggregate fuel use limit.

Table 3 – Icebreaker #2

ID	Description	Make and Model	Rating[a]
Tor Viking			
TV-1 - 2	Main Propulsion Engines	Caterpillar MaK 8M32	5,046 hp
TV-3 - 4	Main Propulsion Engines	Caterpillar MaK 6M32	3,784 hp
TV-5 – 6	Non-propulsion Generator Engines	Caterpillar 3412	1,168 hp
TV-7	Heat Boiler	NA	1.37 MMBtu/hr
TV-8	Incinerator	NA	151 lb/hr
	Seldom Uses Sources	Various	Various[b]
Hull 247[c]			
	Main Engines	NA	24 MW[d]
	Heat Boiler	NA	4 MMBtu/hr
	Incinerator	NA	151 lb/hr
	Seldom Uses Sources	Various	Various[b]

[a] Permit conditions may limit operation to less than rated capacity.

[b] See Condition O.9.5 for the Icebreaker #2 Seldom Used Sources aggregate fuel use limit.

[c] Hull 247 is the shipbuilder's (Edison Chouest) designation for a vessel to be built under contract to Shell. The final name for the vessel may be different than this temporary designation.

[d] This represents an aggregate rating of all engines on board Hull 247.

Table 4 – Supply Ship

Description	Make and Model	Maximum Aggregate Rating[a]
Propulsion Engines and Non-Propulsion Generator Engine(s), Excluding Emergency Engine	Various	Various[b]
Emergency Engine	Various	Various[b]

[a] Permit conditions may limit operation to less than rated capacity.

[a] See Condition P.1 for the Supply Ship/Barge and Tug aggregate fuel use limit.

Table 5 – Oil Spill Response Fleet

ID	Description	Make and Model	Rating[a]
Oil Spill Response Main Ship - Nanuq			
N-1 – 2	Propulsion Engines	Caterpillar 3608	2,710 kW
N-3 – 4	Electrical Generators	Caterpillar 3508	1,285 hp
N-5	Emergency Generator	John Deere	166 kW
N-6	Incinerator	ASC/CP100	125 lbs/hr
	Seldom Used Sources	Various	Various[b]
Oil Spill Response Work Boat - Kvichak 34-foot No. 1			
K-1 – 2	Propulsion Engines	Cummins QSB	300 hp
K-3	Generator Engines	Various	12 hp
Oil Spill Response Work Boat - Kvichak 34-foot No. 2			
K-4 – 5	Propulsion Engines	Cummins QSB	300 hp
K-6	Generator Engines	Various	12 hp
Oil Spill Response Work Boat - Kvichak 34-foot No. 3			
K-7 – 8	Propulsion Engines	Cummins QSB	300 hp
K-9	Generator Engines	Various	12 hp

[a] Permit conditions may limit operation to less than rated capacity.
[b] See Condition Q.5 for the Nanuq Seldom Used Sources aggregate fuel use limit.

Effective Date**.** This permit becomes effective 30 days after the service of notice of the final permit decision, unless review of the permit decision is requested pursuant to 40 CFR § 124.19.

OCS Source. Permit conditions contained in Sections B through Q, except for those conditions addressing notification, reporting and testing, apply only during the time that the Discoverer drillship is an OCS Source. Permit conditions in Sections A and R as well as permit conditions contained in Sections B through Q addressing notification, reporting and testing apply at all times as specified.

For the purpose of this permit:

a. The Discoverer is an "OCS Source" at any time the Discoverer is attached to the seabed at a drill site by at least a one anchor; and

b. A drill site is any location at which Shell is authorized to operate under this permit and for which Shell has received from the Bureau of Ocean, Energy, Management and Regulatory Enforcement (BOEMRE) an authorization to drill.

A. GENERALLY APPLICABLE REQUIREMENTS

1 **Construction and Operation.** The permittee shall construct and operate the OCS Source and the Associated Fleet in accordance with the application and supporting materials submitted by the permittee as identified in the Statement of Basis and Supplemental Statement of Basis for this permit action and in accordance with this permit. For purposes of this permit, Icebreaker #1, Icebreaker #2, the supply ship, the Nanuq and Kvichaks No. 1-3 shall collectively be referred to as the "Associated Fleet."

2 **Compliance Required.** The permittee shall comply with all requirements of 40 CFR § 52.21, Part 55, and this permit. Failure to do so shall be considered a violation of Section 111(e) and 165 of the CAA. All enforcement provisions of the CAA, including but not limited to, Section 113, 114, 120, 167, 303, and 304 apply to the permittee.

3 **Compliance with Other Requirements.** This permit does not relieve the permittee of the responsibility to comply fully with applicable provisions of any other requirements under federal law.

4 **Notification to Owners, Operators, and Contractors.** The permittee must notify all other owners or operators, contractors, and the subsequent owners or operators associated with emissions from the source of the conditions of this permit.

5 **Expiration of Approval to Construct.** As provided in 40 CFR § 52.21(f)(4), this approval shall become invalid if construction is not commenced within 18 months after the effective date of this permit, construction is discontinued for a period of 18 months, or construction is not completed within a reasonable time. The EPA may extend the 18-month period upon a satisfactory showing that an extension is justified.

6 **Permit Revision, Termination and Reissuance.** This permit may be revised, terminated, or revoked and reissued by the EPA for cause. Cause exists to revise, terminate, or revoke and reissue this permit under the following circumstances:

6.1 This permit contains a material mistake;

6.2 Materially inaccurate statements were made in establishing the terms or conditions of this permit;

6.3 The permittee fails to comply with any material condition of this permit; or

6.4 This permit must be revised, terminated, or revoked and reissued to assure compliance with CAA requirements.

A request by the permittee for modification, revocation and reissuance, or termination or a notification of planned changes or anticipated noncompliance does not stay any permit condition.

7 **Credible Evidence.** For the purpose of establishing whether or not the permittee has violated or is in violation of any requirement of this permit, nothing in this permit shall preclude the use, including the exclusive use, of any credible evidence or information relevant to whether the permittee would have been in compliance with applicable

requirements if the appropriate performance or reference test or procedure had been performed.

8 **Inspection and Entry.** Upon presentation of credentials and other documents as may be required by law, the permittee shall allow the EPA or an authorized representative to perform the following:

8.1 Enter upon the Discoverer, any support vessel, any location where emissions-related activity is conducted, or any location where records must be kept under the conditions of the permit;

8.2 Have access to and copy, at reasonable times, any records that must be kept under the conditions of the permit;

8.3 Inspect at reasonable times any facilities, equipment (including monitoring and air pollution control equipment), practices, or operations regulated or required under the permit; and

8.4 As authorized by the CAA, sample or monitor at reasonable times substances or parameters for the purpose of assuring compliance with the permit or applicable requirements.

9 **Recordkeeping Requirements.** In addition to the specific recordkeeping requirements contained in the source-wide and emission unit sections of this permit, the permittee shall keep records of required monitoring information that include the following:

9.1 The date, place, and time of sampling or measurements;

9.2 The date(s) analyses were performed;

9.3 The company or entity that performed the analyses;

9.4 The analytical techniques or methods used;

9.5 The results of such analyses;

9.6 The operating conditions as existing at the time of sampling or measurement;

9.7 Copies of all reports and certifications submitted pursuant to this permit; and

9.8 The locations where samples were taken.

The permittee shall retain records of all required monitoring data and support information for a period of at least 5 years from the date of the monitoring sample, measurement, report, or application. Support information includes all calibration and maintenance records, all original strip-chart recordings for continuous monitoring instrumentation, and copies of all reports required by this permit.

10 **Agency Notifications.** Unless otherwise specified in this permit, any documents required to be submitted under this permit, including reports, test data, monitoring data, notifications, and applications for renewals and permit modifications shall be submitted to:

OCS/PSD Air Quality Permits

U.S. EPA - Region 10, AWT-107

1200 Sixth Avenue, Suite 900

Seattle, WA 98101

Facsimile no. 206-553-0110

Email: R10OCSAirPermits_Reports@epa.gov

11 **Certification.** Any document required to be submitted under this permit shall be certified by a responsible official, as that term is defined in 40 CFR § 71.2, of the permittee as to truth, accuracy, and completeness. Such certification shall state that based on information and belief formed after reasonable inquiry, the statements and information in the document are true, accurate and complete.

12 **Severability.** The provisions of this permit are severable, and in the event of any challenge to any portion of this permit, or if any portion is held invalid, the remaining permit conditions shall remain valid and in force.

13 **Property Rights.** This permit does not convey any property rights of any sort, or any exclusive privilege.

14 **Information Request.** The permittee shall furnish the EPA, within a reasonable time, any information the EPA requests in writing to determine whether cause exists to modify, revoke and reissue, or terminate the permit or to determine compliance with the permit. Upon request, the permittee shall furnish the EPA with copies of records required to be kept by the permit.

15 **Excess Emission and Permit Deviation Reports.** Except as provided in Condition A.16, the permittee shall report all emissions or operations that exceed or deviate from the requirements of this permit as follows:

15.1 As soon as possible after the event commences or is identified, report via fax or email:

15.1.1 Emissions that present a potential threat to human health or safety; and

15.1.2 Excess emissions that the permittee believes to be unavoidable.

15.2 Within 3 business days after the event commenced or was identified, report via fax or email an unavoidable emergency, malfunction, or non-routine repair that causes emissions in excess of a technology based emission standard; any other exceedance of an emission limit; or any exceedance of a throughput limit.

15.3 Report all other permit deviations:

15.3.1 Within 30 days of the end of the month in which the deviation occurs, except as provided in Conditions A.15.1 and A.15.2; and

15.3.2 For failure to monitor, as required in other applicable conditions of this permit.

15.4 When reporting excess emissions, the permittee must report using the form contained in Attachment A to this permit. The permittee must provide all information called for by the form.

15.5 When reporting a permit deviation, the permittee must report using the form contained in Attachment A to this permit. The permittee must provide all information called for by the form.

15.6 If requested by the EPA, the permittee shall provide a more detailed written report as requested to follow up on an excess emissions report.

16 **Operating Reports.** During the life of this permit[1], the permittee shall submit an original and two copies of an Operating Report by March 31 for the preceding calendar year.

16.1 The Operating Report must include all information required to be in Operating Reports by other conditions of this permit.

16.2 If excess emissions or permit deviations that occurred during the reporting period are not reported under Condition A.15, either:

16.2.1 The permittee shall identify:

16.2.1.1 The date of the deviation;

16.2.1.2 The equipment involved;

16.2.1.3 The permit condition affected;

16.2.1.4 A description of the excess emissions or permit deviation; and

16.2.1.5 Any corrective action or preventive measures taken and the date or dates of such actions; or

16.2.2 When excess emissions or permit deviations have already been reported under Condition A.15, the permittee shall cite the date or dates of those reports.

16.3 The Operating Report must include a listing of emissions monitored which trigger additional testing or monitoring, whether or not the emissions monitored exceed an emission standard. The permittee shall include in the report:

16.3.1 The date of the emissions;

16.3.2 The equipment involved;

16.3.3 The permit condition affected; and

[1] "Life of this permit" is defined as the permit effective date, including any periods of reporting obligations that extend beyond the permit effective date. For example, if a permit expires prior to the end of a calendar year, there is still a reporting obligation to provide operating reports for the periods when the permit was in effect.

16.3.4 The monitoring result which triggered the additional monitoring.

16.4 The Operating Report must include reports of any required monitoring, including all emission calculations required by the permit.

B. SOURCE WIDE REQUIREMETNS

1. **Drill Site Notification.** At least 6 months prior to the Discoverer becoming an OCS Source, the permittee shall notify the EPA via facsimile of the following information:

1.1. The location of the proposed drill site, using coordinates in the following formats:

1.1.1. Latitude and longitude, and

1.1.2. Universal Transverse Mercator grid system.

1.2. The lease block within the Chukchi Sea lease sale 193 where the drill site is located;

1.3. The proposed date that the Discoverer will become an OCS Source at that drill site;

1.4. Confirmation that emissions from the source would impact no Class I area. The confirmation shall include a description of the legal and factual basis for this determination; and

1.5. Confirmation that emissions from the source would impact no area where an applicable increment was known to be violated. The confirmation shall include a description of the legal and factual basis for this determination.

2. **Duration of Exploration Operations.** The permittee shall only conduct exploration drilling operations in the Chukchi Sea between July 1 and November 30 each year (referred to hereafter as the "drilling season").

2.1. During any drilling season, the permittee shall not operate the Discoverer as an OCS Source in excess of 120 calendar days. Each partial day the Discoverer is operated as an OCS source shall be counted as a calendar day.

2.2. During any drilling season, the permittee shall not conduct any drilling activity in excess of 1,632 hours. Drilling activity is defined as any time when the top drive is engaged and turning the conventional rotary bit and any time when conducting mud line cellar (MLC) activity as defined in Condition B.2.3.

2.3. During any drilling season, the permittee shall not conduct any MLC activity in excess of 480 hours. MLC activity is defined as any time when any MLC compressor engine (Units FD-9 – 11) or HPU engine (Units FD-12 – 13) is operating.

2.4. For each drill site at which the Discoverer operates, the permittee shall record the following:

2.4.1. The location of each drill site, using a modern global positioning system to determine the location. Location shall be recorded by providing coordinates in the following formats:

2.4.1.1. Latitude and longitude, and

2.4.1.2. Universal Transverse Mercator grid system.

2.4.2. The lease block within the Chukchi Sea lease sale 193 where the drill site is located.

2.4.3. The date and hour that the Discoverer became an OCS Source at that drill site.

2.4.4. The date and hour that the Discoverer ceased to be an OCS Source at that drill site.

2.4.5. For each period of drilling activity except for periods of MLC activity, the permittee shall record the following:

2.4.5.1. The date and hour at which the top drive is first engaged and turning the conventional rotary bit; and

2.4.5.2. The date and hour at which the top drive is disengaged and no longer turning the conventional rotary bit.

2.4.6. For each period of MLC activity the permittee shall record the following:

2.4.6.1. The earlier of the following two points in time; the date and hour in which the first MLC compressor engine (Units FD-9 – 11) begins operation and the date and hour in which the first HPU engine (Units FD-12 – 13) begins operation; and

2.4.6.2. The later of the following two points in time: the date and hour in which the last MLC compressor engine (Units FD-9 – 11) ceases operation and the date and hour in which the last HPU engine (Units FD-12 – 13) ceases operation.

2.5. Any time spent drilling a relief well shall be included in the time recorded in Condition B.2.1.

3. **Drilling Season Notification.** Each drilling season, the permittee shall report to the EPA via facsimile the information below, within 3 days of occurrence:

3.1. The date and hour that the Discoverer became an OCS Source at the first drill site of that drilling season; and

3.2. The date and hour that the Discoverer ceased to be an OCS Source at the last drill site of that drilling season.

4. **Global Positioning System.** The permittee shall use a modern global positioning system on the Discoverer and Associated Fleet (except for the Kvichaks Nos. 1-3) as follows:

4.1. Once each hour, monitor and record the date, time, and location of the Discoverer and Associated Fleet.

4.2. Once each hour, monitor and record the date, time, direction the bow of the Discoverer is pointed, and wind direction at the Discoverer.

5. **Best Available Control Technology (BACT) for Sulfur Dioxide (SO_2) Emissions from Discoverer Emission Units.** The permittee shall not combust any liquid fuel with sulfur content greater than 0.0015 percent by weight, as determined by Condition B.5.1, in any emission unit on the Discoverer (except for Unit FD-7).

5.1. Representative fuel samples shall be obtained using one of the methods in 40 CFR § 80.330(b). The sulfur content of the fuel shall be determined using ASTM D 5453-08b.

5.2. Monitoring, Recordkeeping and Reporting. The permittee shall:

5.2.1. Prior to mobilizing the Discoverer for the first time at the beginning of a drilling season, determine the sulfur content in each fuel oil storage tank on the Discoverer. The permittee shall obtain a representative sample of the fuel and analyze the sample for sulfur content using the procedures in Condition B.5.1.

5.2.2. Thereafter, determine and record the sulfur content upon receiving each fuel shipment, as follows:

5.2.2.1. Obtain a representative sample of the fuel delivered and analyze the sample for sulfur content using the procedures in Condition B.5.1; or

5.2.2.2. Obtain a single certification of sulfur content for each shipment of fuel from the fuel supplier based on an analysis of the fuel, providing that the certification indicates that the sulfur content has been determined by the ASTM method listed in Condition B.5.1.

5.3. Within 3 business days of identification, report to the EPA any instance of a liquid fuel with sulfur content greater than 0.0015 percent by weight being combusted in any emission unit on the Discoverer (except Unit FD-7).

6. **Greenhouse Gas Potential to Emit Owner Requested Limit for Discoverer and Associated Fleet**

6.1. At all times while the Discoverer is an OCS Source, greenhouse gas (GHG) emissions as defined in 40 CFR § 52.21(b)(49) from the Discoverer and Associated Fleet, when within 25 miles of the Discoverer, shall not exceed 70,000 tons carbon dioxide equivalent (CO_2e) as determined on a rolling 12-month basis by calculating the emissions (tons) for each month and adding the emissions (tons) calculated for the previous 11 months.

6.1.1. For emission units that combust fuel, monthly carbon dioxide (CO_2), methane (CH_4), and nitrous oxide (N_2O) emissions (tons) shall be determined by multiplying the appropriate emission factors for distillate oil in 40 CFR Part 98, Subpart C, Tables C-1 and C-2, by the recorded monthly fuel usage (gallons/month) and dividing by 2000 lb/ton.

6.1.2. For emission units that incinerate waste, monthly CO_2 emissions (tons) shall be determined by multiplying the CO_2 emission factor for incinerators

in AP42 Table 2.1-7 (10/96) by the recorded monthly quantities of waste incinerated (tons/month) and dividing by 2000 lb/ton.

6.1.3. To account for mud off-gassing, monthly CH_4 emissions from the drilling mud shall be assumed to be 0.798 tons/month.

6.1.4. Monthly CO_2e emissions (tons) shall be determined by multiplying the calculated monthly emissions for CO_2, CH_4, and N_2O from all emission units and activities by the applicable global warming potential factors from 40 CFR Part 98, Subpart A, Table A-1, and summing the products.

6.2. At all times while the Discoverer is an OCS Source, the total amount of fuel combusted in engines and boilers on the Discoverer and Associated Fleet, when within 25 miles of the Discoverer, shall not exceed 6,346,493 gallons during any rolling 12-month period.

6.3. At all times while the Discoverer is an OCS Source, the total amount of waste combusted in incinerators on the Discoverer and Associated Fleet, when within 25 miles of the Discoverer, shall not exceed 1,657,440 pounds during any rolling 12-month period.

6.4. Monitoring, Recordkeeping and Reporting. The permittee shall monitor and record monthly fuel consumption and waste incineration as follows:

6.4.1. Equip each fuel combustion source on the Discoverer and Associated Fleet, except for seldom used sources, with a diesel fuel flow meter to continuously measure and record the fuel flow rate:

6.4.1.1. Each fuel flow meter shall be located so that there is no potential for fuel inflows or outflows between it and the engine(s) being served by the meter.

6.4.1.2. Each fuel flow meter shall be totalizing and non-resettable.

6.4.1.3. Each fuel flow meter shall measure the fuel flow rate with accuracy equal to or better than 2 percent of the meter's upper range value.

6.4.1.4. No less than 60 days before initial deployment of the Discoverer to the Chukchi Sea for the first drilling season, collect information from the manufacturer of each fuel flow meter so as to determine its accuracy. Submit this information to the EPA no less than 30 days prior to operation within the Chukchi Sea.

6.4.1.5. Maintain the accuracy of each fuel flow meter in accordance with manufacturer's recommendations.

6.4.2. Measure the fuel combusted in each seldom used fuel combustion source on the Discoverer and Associated Fleet by recording the quantity of fuel in each engine's fuel tank before and after periodic operation of each seldom used source:

6.4.2.1. Fuel tank content measurement may take the form of sight glass, use of a graduated dip stick, or tank instrumentation.

6.4.3. Calculate and record monthly fuel consumption for each fuel combustion source on the Discoverer and Associated Fleet in gallons. Determine the 12-month rolling fuel consumption by adding the gallons for each month to the gallons recorded for the previous 11 months.

6.4.4. For each batch of waste charged to an incinerator:

6.4.4.1. Record the date and time that each batch of waste was charged to the incinerator;

6.4.4.2. Weigh the batch of waste by using a weigh scale used that shall be accurate to within 0.5 lbs; and

6.4.4.3. Record the weight of each batch of waste charged to the incinerator.

6.4.5. No less than 60 days before initial deployment of the Discoverer to the Chukchi Sea for the first drilling season, collect information from the manufacturer of the weigh scale to determine its accuracy. Submit this information to the EPA no less than 30 days prior to operation within the Chukchi Sea.

6.4.6. Maintain the accuracy of the weigh scale in accordance with manufacturer's recommendations.

6.4.7. Calculate and record monthly waste combusted in each incinerator on the Discoverer and Associated Fleet in pounds. Determine the 12-month rolling waste combusted by adding the waste combusted for each month to the waste combusted for the previous 11 months.

7. **Sulfuric Acid Mist Potential to Emit Owner Requested Limit for Associated Fleet.** The permittee shall not combust any liquid fuel with sulfur content greater than 0.0015 percent by weight, as determined by Condition B.7.1, in any emission unit on any vessel in the Associated Fleet.

7.1. Representative fuel samples shall be obtained using one of the methods in 40 CFR § 80.330(b). The sulfur content of the fuel shall be determined using ASTM D 5453-08b.

7.2. Monitoring, Recordkeeping and Reporting. The permittee shall:

7.2.1. Prior to mobilizing the Discoverer for the first time at the beginning of a drilling season, determine the sulfur content in each fuel oil storage tank on the vessels comprising the Associated Fleet. The permittee shall obtain a representative sample of the fuel and analyze the sample for sulfur content using the procedures in Condition B.7.1.

7.2.2. Thereafter, determine and record the sulfur content upon receiving each fuel shipment, as follows:

7.2.2.1. Obtain a representative sample of the fuel delivered and analyze the sample for sulfur content using the procedures in Condition B.7.1; or

7.2.2.2. Obtain a single certification of sulfur content for each shipment of fuel from the fuel supplier based on an analysis of the fuel, providing that the certification indicates that the sulfur content has been determined by the ASTM method listed in Condition B.7.1.

7.3. Within 3 business days of identification, report to the EPA any instance of a liquid fuel with sulfur content greater than 0.0015 percent by weight being combusted in any emission unit on any vessel in the Associated Fleet.

8. **BACT for Particulate Matter Emissions (PM, PM_{10}, and $PM_{2.5}$) from Discoverer Diesel IC Engine Crankcase Ventilation.** Except for the MLC Diesel Compressor Engines (FD-9 - 11) and the Caterpillar C7 Logging Winch Engine (FD-19), each diesel IC engine on the Discoverer shall be equipped with a closed crankcase ventilation system.

9. **General Testing Requirements.** Whenever conducting a stack test required by this permit, and unless specifically stated otherwise in this permit, the permittee shall comply with the following testing requirements in addition to the specific testing requirements contained in the emission unit sections of this permit:

9.1. The permittee shall provide the EPA at least 30 days prior notice of any stack test. If after 30 days notice for an initially scheduled stack test, there is a delay in conducting the scheduled stack test, the permittee shall notify the EPA as soon as possible of any delay in the original test date, either by providing at least 7 days prior notice of the rescheduled date of the stack test, or by arranging a rescheduled date with the EPA by mutual agreement.

9.2. The permittee shall submit to the EPA a complete stack test plan within 60 days after receiving a request under Condition A.17 and at least 30 days prior to any required testing unless the EPA agrees in writing to some other time period. Retesting may be done without resubmitting the plan provided it is conducted in accordance with the previously submitted plan. The source test plan shall include and address the following elements:

9.2.1. Purpose and scope of testing;

9.2.2. Source description, including a description of the operating scenarios and mode of operation during testing and including fuel sampling and analysis procedures;

9.2.3. Schedule/dates of testing;

9.2.4. Process data to be collected during the test and reported with the results, including source-specific data identified in the emission unit sections of this permit;

9.2.5. Sampling and analysis procedures, specifically requesting approval for any proposed alternatives to the reference test methods, and addressing minimum test length (e.g., one hour, 8 hours, 24 hours, etc.) and minimum sample volume;

9.2.6. Sampling location description and compliance with the reference test methods;

9.2.7. Analysis procedures and laboratory identification;

9.2.8. Quality assurance plan;

9.2.9. Calibration procedures and frequency;

9.2.10. Sample recovery and field documentation;

9.2.11. Chain of custody procedures;

9.2.12. Quality Assurance (QA)/Quality Control (QC) project flow chart;

9.2.13. Data processing and reporting;

9.2.14. Description of data handling and QC procedures; and

9.2.15. Report content and timing.

9.3. Unless the EPA determines in writing that other operating conditions are representative of normal operations or unless specified in the emission unit sections of this permit, the source shall be operated at a capacity of at least 90 percent but no more than 100 percent of maximum during all tests.

9.4. Unless otherwise specified by an applicable requirement or test method, the permittee shall conduct source testing at a point or points that characterize the actual discharge into the ambient air.

9.5. Only regular operating staff may adjust the processes or emission control devices during or within 2 hours prior to the start of a source test. Any operating adjustments made during a source test, that are a result of consultation during the tests with source testing personnel, equipment vendors, or consultants, may render the source test invalid.

9.6. For the duration of each test run (unless otherwise specified), the permittee shall record the following information:

9.6.1. All data which is required to be monitored during the test in the emission unit sections of this permit; and

9.6.2. All continuous monitoring system data which is required to be routinely monitored in the emission unit sections of this permit for the emission unit being tested.

9.7. Each source test shall follow the reference test methods specified by this permit and consist of at least three (3) valid test runs. For purposes of this permit:

9.7.1. EPA Test Methods 1, 2, 3A, 4, 5, 6C, 7E, 9, 10, 19, and 25A are set forth in 40 CFR Part 60, Appendix A;

9.7.2. EPA Test Methods 201A and 202 are set forth in 40 CFR Part 51, Subpart M;

9.7.3. Conditional Test Method 027 (CTM-027), "Procedure for Collection and Analysis of Ammonia in Stationary Sources," is set forth at http://www.epa.gov/ttn/emc/ctm.html;

9.7.4. Conditional Test Method 038 (CTM-038), "Measurement of Ammonia Emissions from Highway, Nonroad, and Stationary Use Diesel Engines by Extractive Fourier Transform Infrared (FTIR) Spectroscopy," is set forth at http://www.epa.gov/ttn/emc/ctm.html;

9.7.5. Other Test Method 27 (OTM 27), "Determination of PM_{10} and $PM_{2.5}$ Emissions from Stationary Sources (Constant Sampling Rate Procedure)," is set forth at http://www.epa.gov/ttn/emc/prelim.html; and

9.7.6. ASTM D 5453-09 is set forth at http://www.astm.org/Standards/D5453.htm.

9.8. Facilities for performing and observing the emission testing shall be provided that meet the requirements of 40 CFR § 60.8(e) and EPA Method 1.

9.9. Emission test reports shall be submitted to the EPA within 45 days of completing any emission test required by this permit along with items required to be recorded in Condition B.9.6 above.

9.10. EPA Methods 1, 2, 3A, 3B, 4, and 19 shall be used as necessary to convert the measured NO_X, PM, PM_{10}, $PM_{2.5}$, and CO emissions into units of the emission limits in the permit.

9.11. Source test emission data shall be reported as the arithmetic average of all valid test runs and in the terms of any applicable emission limit, unless otherwise specified in the emission unit sections of this permit.

9.12. An alternative test method or a deviation from a test method identified in this permit may be approved as follows:

9.12.1. The permittee must submit a written request to the EPA at least 60 days before the stack test is scheduled to begin which includes the reasons why the alternative or deviation is needed and the rationale and data to demonstrate that the alternative test method or deviation from the reference test method:

9.12.1.1. Provides equal or improved accuracy and precision as compared to the specified reference test method; and

9.12.1.2. Does not decrease the stringency of the standard as compared to the specified reference test method.

9.12.2. If requested by the EPA, the demonstration referred to in Condition B.9.12.1 must use Method 301 in 40 CFR Part 63, Appendix A, to validate the alternative test method or deviation.

9.12.3. The EPA must approve the request in writing.

9.12.4. Until the EPA has given written approval to use an alternative test method or to deviate from the test method specified in this permit, the permittee is required to use the test method specified in this permit when conducting a source test under this permit.

9.13. The permittee may request an extension to a source test deadline established by the EPA. The permittee may delay a source test beyond the original deadline only if the extension is approved in writing by the EPA.

9.14. In addition to any source testing explicitly required by this permit, the permittee shall conduct source testing as requested by the EPA to determine compliance with applicable permit requirements.

9.15. For any source test requiring the use of Method 201A, the permittee may substitute the use of Method 5. In either case, Method 202 shall also be employed for condensable PM, and the test results shall consider all PM to be $PM_{2.5}$.

10. **Prohibited Activities.** The permittee shall not:

10.1. Flow test wells,

10.2. Flare gas,

10.3. Store liquid hydrocarbons recovered during well testing,

10.4. Refuel any vessel (including the Discoverer, and excluding the Kvichak workboats) within 25 miles of the Discoverer, while the Discoverer is an OCS Source, or

10.5. Allow any vessel associated with this project, and that is not authorized by Tables 1 through 5 of this permit, to approach within 25 miles of the Discoverer, while the Discoverer is an OCS Source.

11. **Monthly Emissions Calculations.** By the tenth of each month, the permittee shall, using monitoring data collected pursuant to the requirements of this permit, calculate and record the monthly emissions of CO, NO_X, $PM_{2.5}$, PM_{10}, SO_2, VOC, and GHG emissions for the preceding month.

12. **Rolling 12-Month Emissions Calculations.** By the tenth of each month, the permittee shall calculate and record the rolling 12-month emissions of CO, NO_X, $PM_{2.5}$, PM_{10}, SO_2, VOC, and GHG emissions by using the monthly emissions calculated for the previous 12 months pursuant to Condition B.11.

13. **Good Operating and Maintenance Requirements.** At all times, including periods of startup, shutdown, and malfunction, the permittee shall, to the extent practicable, maintain and operate each emission unit, including any associated air pollution control equipment, in a manner consistent with good air pollution control practices for minimizing emissions. Determination of whether acceptable operating and maintenance procedures are being used will be based on information available to the EPA which may include, but is not limited to, monitoring results, opacity observations, review of operating and maintenance procedures, and inspection of the source. The permittee shall keep records of any maintenance that would have a significant effect on emissions (the records may be kept in electronic format) and keep a copy of either the manufacturer's or the operator's maintenance procedures.

14. **Selective Catalytic Reduction (SCR) Control Device Monitoring.** For any emission unit that is required by this permit to be controlled by an SCR control device, the permittee shall install, calibrate, operate, and maintain (in accordance with manufacturer specifications) continuous monitoring systems (CMS) to measure and record inlet

temperature in degrees Fahrenheit (ºF), urea feed rate (gallons/min), and catalyst activity (NO_X ppm concentration) as follows:

14.1. Prepare and submit 60 days before the first drilling season a site-specific monitoring plan that addresses the monitoring system design, data collection, quality assurance, and quality control elements outlined in this condition. Install, calibrate, operate, and maintain each CMS according to the procedures in the approved site-specific monitoring plan. The plan shall address the performance criteria and design specifications for the monitoring system equipment, including the sample interface, detector signal analyzer, sensor tolerance sensitivity, and data acquisition and calculations; sampling interface (e.g., thermocouple, flow meter) location such that the monitoring system will provide representative measurements; equipment performance checks, system accuracy audits, or other audit procedures; ongoing operation and maintenance procedures; and ongoing reporting and recordkeeping procedures.

14.2. The temperature and urea CMS shall collect data at least once every 15 minutes.

14.3. Conduct the CMS equipment performance checks, system accuracy audits, or other audit procedures specified in the site-specific monitoring plan within 60 days prior to each drilling season and at least once every 3 months for the duration of the drilling season.

14.4. Conduct a performance evaluation of each CMS in accordance with the site-specific monitoring plan.

14.5. Except for periods of monitoring system malfunctions, repairs associated with monitoring system malfunctions, and required monitoring system quality assurance or quality control activities (including, as applicable, system accuracy audits and required zero and span adjustments), operate the CMS at all times the affected source is operating. A monitoring system malfunction is any sudden, infrequent, not reasonably preventable failure of the monitoring system to provide valid data. Monitoring system failures that are caused in part by poor maintenance or careless operation are not malfunctions. Complete monitoring system repairs in response to monitoring system malfunctions and return the monitoring system to operation as expeditiously as practicable.

14.6. Monitor and record NO_X emissions (ppm) from the exhaust of each SCR unit once per week using a portable NO_X monitor that meets the requirements of EPA OTM 13 found at http://www.epa.gov/ttn/emc/prelim/otm13.pdf.

14.7. Report as a deviation under Condition A.15.3 any periods during which the urea pump is not operating, the inlet temperature is less than 250°C, or the NO_X concentration is 150 percent or more than the NO_X concentration measured during the most recent previous source test that produced compliance data or emission factors for this permit.

15. **Oxidation Catalyst Control Device Monitoring.** For any emission unit that is required by this permit to be controlled by an oxidation catalyst control device, the permittee shall install, calibrate, operate, and maintain (in accordance with manufacturer specifications)

CMS to measure and record inlet temperature (ºF), and catalyst activity (CO ppm concentration) as follows:

15.1. Prepare and submit 60 days before the first drilling season a site-specific monitoring plan that addresses the monitoring system design, data collection, quality assurance, and quality control elements outlined in this condition. Install, calibrate, operate, and maintain each CMS according to the procedures in the approved site-specific monitoring plan. The plan shall address the performance criteria and design specifications for the monitoring system equipment, including the sample interface, detector signal analyzer, sensor tolerance and sensitivity, and data acquisition and calculations; sampling interface (e.g., thermocouple) location such that the monitoring system will provide representative measurements; equipment performance checks, system accuracy audits, or other audit procedures; ongoing operation and maintenance procedures; and ongoing reporting and recordkeeping procedures.

15.2. The temperature CMS shall collect data at least once every 15 minutes.

15.3. Conduct the CMS equipment performance checks, system accuracy audits, or other audit procedures specified in the site-specific monitoring plan within 60 days prior to each drilling season and at least once every 3 months for the duration of the drilling season.

15.4. Conduct a performance evaluation of each CMS in accordance with the site-specific monitoring plan.

15.5. Except for periods of monitoring system malfunctions, repairs associated with monitoring system malfunctions, and required monitoring system quality assurance or quality control activities (including, as applicable, system accuracy audits and required zero and span adjustments), operate the CMS at all times the affected source is operating. A monitoring system malfunction is any sudden, infrequent, not reasonably preventable failure of the monitoring system to provide valid data. Monitoring system failures that are caused in part by poor maintenance or careless operation are not malfunctions. Complete monitoring system repairs in response to monitoring system malfunctions and return the monitoring system to operation as expeditiously as practicable.

15.6. Monitor and record CO emissions (ppm) from the exhaust of each SCR unit once per week using a portable CO monitor that meets the requirements of EPA OTM 13 found at http://www.epa.gov/ttn/emc/prelim/otm13.pdf.

15.7. Report as a permit deviation under Condition A.15.3 any periods during which the inlet temperature is less than 300°C, or the CO concentration is 120 percent or more than the CO concentration measured during the most recent previous source test that produced compliance data or emission factors for this permit.

C. DISCOVERER GENERATOR ENGINES (FD-1 – 6)

1. **Operation of Selective Catalytic Reduction (SCR) Unit.** At all times that any of Units FD-1 – 6 are in operation, the exhaust from each emission unit shall be directed to an operating SCR unit.

2. **Operation of Oxidation Catalyst.** At all times that any of Units FD-1 – 6 are in operation, the exhaust from each emission unit shall be directed to an operating oxidation catalyst.

3. **BACT Limits.** Emissions from each generator engine (Units FD-1 – 6) shall not exceed the emission limits specified for each of the pollutants below:

3.1. **Nitrogen oxides (NO_X):** 0.50 grams (g) per kilowatt-hour (kW-hr)

3.1.1. For compliance with Condition C.3.1, measurement of NO_X shall be determined using EPA Method 7E.

3.2. **Ammonia (NH_3):** 5 parts per million by volume (ppmv) at actual stack gas conditions

3.2.1. For compliance with Condition C.3.2, measurement of NH_3 shall be determined using EPA Conditional Test Method 027 or 038.

3.3. **Particulate Matter (PM):** 0.127 g/kW-hr

3.3.1. For compliance with Condition C.3.3, measurement of PM shall be determined using EPA Method 5.

3.4. **Particulate Matter with an aerodynamic diameter less than 10 microns (PM_{10}):** 0.127 g/kW-hr

3.4.1. For compliance with Condition C.3.4, measurement of PM_{10} shall be determined using EPA Methods 201A and 202.

3.5. **Particle** Matter with an aerodynamic diameter **less than 2.5 microns ($PM_{2.5}$):** 0.127 g/kW-hr

3.5.1. For compliance with Condition C.3.5, measurement of $PM_{2.5}$ shall be determined using EPA Methods 201A and 202.

3.6. **Visible Emissions:** Visible emissions, excluding condensed water vapor, shall not reduce visibility through the exhaust effluent more than 20 percent averaged over any six consecutive minutes.

3.6.1. For compliance with Condition C.3.6, measurement of visible emissions shall be determined using EPA Method 9.

3.7. **Carbon Monoxide (CO):** 0.1790 g/kW-hr

3.7.1. For compliance with Condition C.3.7, measurement of CO shall be determined using EPA Method 10.

3.8. **Volatile Organic Compounds (VOC):** 0.0230 g/kW-hr

3.8.1. For compliance with Condition C.3.8, measurement of VOC shall be determined using EPA Method 25A.

4. **Annual Emission Limits.** Emissions from all six generator engines in aggregate (Units FD-1 – 6) shall not exceed the emission limits specified for each of the pollutants below:

4.1. **Nitrogen oxides (NO_X):** 5.83 tons/rolling 12-month period

4.1.1. For compliance with Condition C.4.1, measurement of NO_X shall be determined using EPA Method 7E.

5. **Hourly Emission Limit.** Emissions from all six generation engines in aggregate (Units FD-1 –6) shall not exceed the emission limits specified for each of the pollutants below:

5.1. **Nitrogen oxides (NO_X):** 4.64 lb/hr

5.1.1. For compliance with Condition C.5.1, measurement of NO_X shall be determined using EPA Method 7E.

6. **Daily Emission Limits.** Emissions from all six generator engines in aggregate (Units FD-1 – 6) shall not exceed the emission limits specified for each of the pollutants below:

6.1. **Particulate Matter with an aerodynamic diameter less than 10 microns (PM_{10}):** 28.3 lbs/day

6.1.1. For compliance with Condition C.6.1, measurement of PM_{10} shall be determined using EPA Methods 201A and 202.

6.2. **Particulate Matter with an aerodynamic diameter less than 2.5 microns ($PM_{2.5}$):** 28.3 lbs/day

6.2.1. For compliance with Condition C.6.2, measurement of $PM_{2.5}$ shall be determined using EPA Methods 201A and 202.

7. **Electrical Power Output Limit.** The permittee shall not operate Units FD-1 – 6 such that aggregate electrical power from the attached generators is in excess of 3,872 kWe for any hour that these units are operated.

8. **Stack Test Requirements.** The permittee shall stack test all of Units FD-1 – 6 as follows:

8.1. At the start of the first drilling season that the Discoverer operates under this permit in the Chukchi Sea, all six of Units FD-1 – 6 shall have been stack tested under the requirements of this section.

8.2. Each stack test shall be conducted at three different loads: 50 percent, 75 percent and 100 percent.

8.3. Each stack test run shall test for emissions of CO, NO_X, NO_2, $PM_{2.5}$, PM_{10}, VOC, ammonia and visible emissions.

8.4. During each test run, the permittee shall monitor and record the following information:

8.4.1. Quantity of fuel used (in gallons);

8.4.2. Density of the fuel used (in lbs/gallon);

8.4.3. Heat content of the fuel used (in Btu/gallon);

8.4.4. Electrical power produced (in kWe-hr);

8.4.5. The stack temperature upstream of the SCR catalysis in ºC or ºF;

8.4.6. The quantity of urea reagent (in gallons) and the concentration of the urea reagent (in weight percent) introduced into the SCR control system; and

8.4.7. The NO_X concentration (ppm) indicated by the periodic NO_X monitor used for the SCR control system.

8.5. For each engine, each load, and each pollutant, the permittee shall determine emission factors in the following units: g/kW-hr, g/kWe-hr, lbs/kW-hr, lbs/kWe-hr and lbs/gallon.

9. **Monitoring, Recordkeeping, and Reporting.** The permittee shall:

9.1. Equip each of the generator engines (Units FD-1 – 6) on board the Discoverer with a electrical output monitoring device:

9.1.1. Each electrical output monitoring device shall measure the electrical output of the generator attached to each engine with an accuracy equal to or better than 2 percent of the engine's maximum output (in kWe);

9.1.2. Each electrical output monitoring device shall measure the electrical output of the generator attached to each engine at least once every 10 minutes; and

9.1.3. Each electrical output monitoring device shall be equipped to record each reading taken as well as provide and record average loads for each hour.

9.2. Maintain the accuracy of each electrical output monitoring device in accordance with manufacturer's recommendations.

9.3. Monitor and record the power output, in kWe, resulting from the operation of each of Units FD-1 – 6 at least once every 10 minutes.

9.4. Each month, calculate and record NO_X emissions in g/kW-hr from each engine for each hour during the month, using the emission factors collected under Condition C.8.5, and power output data collected under Condition C.9.3, and converted to kW (mechanical).

9.5. Each day, calculate and record for the previous calendar day, the emissions of NO_X in pounds per hour and pounds per day and the emissions of $PM_{2.5}$ and PM_{10} in pounds per day from each engine by using the emission factors for each tested engine collected under Condition C.8.5 and electrical load data collected under Condition C.9.3, to determine emissions from that source. Emissions shall be calculated for each ten-minute load reading for each engine.

9.6. For the purposes of Conditions C.9.4 and C.9.5, if a specific emission unit has not been tested yet, the permittee shall use the highest emission factor for the corresponding load from the test results for any of the generator engines that have already been tested.

9.7. For the purposes of Condition C.9.5, if a specific load reading is missing, the permittee shall calculate the emissions for that missing load reading by using the emission factor and load combination that results in the highest emissions rate for that emissions unit. If the engine in question has not been tested yet, the permittee shall use the emission factor as provided for in Condition C.9.6.

9.8. For the purpose of Condition C.9.5, if either the urea pump is not operating or if the catalyst inlet temperature, measured in Condition B.14, is less than 250^oC, calculate emissions of NO_X for the affected time period by using an uncontrolled emission factor obtained by applying a 95 percent NO_X reduction efficiency to the emission factor determined pursuant to Condition C.8.5.

D. DISCOVERER PROPULSION ENGINE (FD-7)

1. The permittee shall not operate Unit FD-7 for any reason when operating the Discoverer as an OCS Source.

2. The permittee shall report to the EPA via facsimile or email any deviation from Condition D.1 within 3 business days of identification.

E. DISCOVERER EMERGENCY GENERATOR AND SELDOM USED SOURCES (FD-8)

1. **Discoverer Seldom Used Sources.** For purposes of this permit, Discoverer seldom used sources means any fuel burning unit on the Discoverer except for the emergency generator and Units FD 1 – 7 and FD 9 – 22.

2. **Emergency Generator Reliability Testing Limits.** The permittee shall operate the emergency generator:

   2.1. For no more than120 minutes during any one day;

   2.2. For no more than 10 hours during any drilling season; and

   2.3. The emergency generator shall only operate during the period of 12 pm to 2 pm.

3. **Fuel Usage Limit**. The permittee shall not use in excess of 150 gallons of fuel in aggregate in the Discoverer emergency generator and all Discoverer seldom used sources in any rolling 7-day period.

4. **Emergency Generator Hourly Emission Limits.** Emissions from the emergency generator shall not exceed the emission limits specified for each of the pollutants below:

   4.1. **Nitrogen oxides (NO_X):** 19.73 lb/hr

      4.1.1. For compliance with Condition E.4.1 measurement of NO_X shall be determined using EPA Method 7E.

5. **Emergency Generator Daily Emission Limits.** Emissions from the emergency generator shall not exceed the emission limits specified for each of the pollutants below:

   5.1. **PM_{10}:** 2.77 lbs/day

      5.1.1. For compliance with Condition E.5.1, measurement of PM_{10} shall be determined using EPA Method s 201A and 202.

   5.2. **$PM_{2.5}$:** 2.77 lbs/day

      5.2.1. For compliance with Condition E.5.2, measurement of $PM_{2.5}$ shall be determined using EPA Methods 201A and 202.

6. **Monitoring, Recordkeeping, and Reporting.** For each instance in which the Discoverer emergency generator or each Discoverer seldom used source is operated while the Discoverer is an OCS Source, the permittee shall:

   6.1. Record the duration of the episode for the Discoverer emergency generator and each Discoverer seldom used source;

   6.2. Record the daily fuel consumption of the Discoverer emergency generator and each Discoverer seldom used source as provided in condition B.6.4.2;

   6.3. Calculate and record for the previous 6 calendar days the rolling 7- day fuel consumption for the Discoverer emergency generator and all Discoverer seldom used sources in aggregate by adding each day's fuel consumption to the total fuel consumed in the previous 6-calendar days;

   6.4. Each day, calculate and record for the previous calendar day, the emissions of NO_X in pounds per hour and pounds per day and the emissions of $PM_{2.5}$ and PM_{10} in pounds per day from the emergency generator by multiplying an emission factor (0.587 lbs/gal for NO_X and 0.022 lbs/gal for $PM_{2.5}$ and PM_{10}) and recorded fuel use; and

   6.5. The permittee shall report to the EPA via facsimile or email, any deviation from Conditions E.2 and E.3 within 3 business days of identification.

7. **BACT Good Combustion Practices for NO_X, PM_{10}, $PM_{2.5}$, VOC, and CO (Carbon Modoxide)**. The permittee shall:

   7.1. Ensure that a full-time equipment maintenance specialist shall be on board at all times during operation as an OCS Source;

7.2. Train operating personnel to identify signs of improper operation and maintenance, including visible plumes, and to report these events to the maintenance specialist as soon as possible, but no later than within three hours of identification;

7.3. Have the maintenance specialist inspect, at least once each week, each emission unit for proper operation and maintenance consistent with the manufacturer's recommendations;

7.4. Ensure that the operation and maintenance manual provided by the manufacturer for each emission unit shall be kept on board the Discoverer at all times;

7.5. Follow the manufacturer's recommended operation and maintenance procedures for each emission unit;

7.6. Maintain, on board the Discoverer, a log detailing when reporting, inspections and maintenance are conducted pursuant to Conditions E.7.2, E.7.3, and E.7.5, respectively; and

7.7. No less than 30 days prior to each deployment of the Discoverer to the Chukchi Sea, the permittee shall provide notice to the EPA on how the permittee shall comply with the requirements of Conditions E.7.1 and E.7.2 for the upcoming drilling season.

F. MLC COMPRESSOR ENGINES (FD-9 - 11)

1. **Operation of Oxidation Catalyst.** At all times that any of Units FD-9 – 11 are in operation, the exhaust from each emission unit shall be directed to an operating oxidation catalyst.

2. **BACT Limits.** Emissions from each MLC compressor engine (Units FD-9 – 11) shall not exceed the emission limits specified for each of the pollutants below:

2.1. **NO_X and Non-Methane Hydrocarbons (NMHC), in aggregate:** 4.0 g/kW-hr

2.1.1. For compliance with Condition F.2.1, measurement of NO_X shall be determined using EPA Method 7E.

2.1.2. For compliance with Condition F.2.1, measurement of NMHC shall be determined using EPA Method 25A.

2.2. **PM:** 0.10 g/kW-hr

2.2.1. For compliance with Condition F.2.2, measurement of PM shall be determined using EPA Method 5.

2.3. **PM_{10}:** 0.10 g/kW-hr

2.3.1. For compliance with Condition F.2.3, measurement of PM_{10} shall be determined using EPA Methods 201A and 202.

2.4. **$PM_{2.5}$:** 0.10 g/kW-hr

2.4.1. For compliance with Condition F.0, measurement of $PM_{2.5}$ shall be determined using EPA Methods 201A and 202.

2.5. **Visible Emissions:** Visible emissions, excluding condensed water vapor, shall not reduce visibility through the exhaust effluent more than 20 percent averaged over any six consecutive minutes.

2.5.1. For compliance with Condition F.2.5, measurement of visible emissions shall be determined using EPA Method 9.

2.6. **CO:** 1.86 g/kW-hr

2.6.1. For compliance with Condition F.2.6, measurement of CO shall be determined using EPA Method 10.

3. **Annual Emission Limits**. Emissions from all three MLC compressor engine (Units FD-9 – 11) in aggregate shall not exceed the emission limits specified for each of the pollutants below:

3.1. **NO_X:** 1.71 tons/rolling 12-month period

3.1.1. For compliance with Condition F.3.1, measurement of NO_X shall be determined using EPA Method 7E.

4. **Hourly Emission Limits.** Emissions from all three MLC compressor engines (Units FD-9 – 11) in aggregate shall not exceed the emission limits specified for each of the pollutants below:

4.1. **NO_X:** 7.11 lbs/hour

4.1.1. For compliance with Condition F.4.1, measurement of NO_X shall be determined using EPA Method 7E.

5. **Daily Emission Limits**. Emissions from all three MLC compressor engine (Units FD-9 – 11) in aggregate shall not exceed the emission limits specified for each of the pollutants below:

5.1. **PM_{10}:** 4.26 lbs/day

5.1.1. For compliance with Condition F.5.1, measurement of PM_{10} shall be determined using EPA Methods 201A and202.

5.2. **$PM_{2.5}$:** 4.26 lbs/day

5.2.1. For compliance with Condition F.5.1, measurement of $PM_{2.5}$ shall be determined using EPA Methods 201A and 202.

6. **Fuel Usage Limit.** The permittee shall not use in excess of 81,346 gallons of fuel in all three of Units FD-9 – 11 in aggregate during any rolling 12-month period.

7. **Stack Test Requirements.** The permittee shall stack test all of Units FD-9 – 11 as follows:

7.1. At the start of the first drilling season that the Discoverer operates under this permit in the Chukchi Sea, all three of Units FD-9 – 11 shall have been stack tested under the requirements of this section.

7.2. Each stack test shall be conducted for the following pollutants, and at the different loads specified:

7.2.1.	**CO**	at one load between 50 and 70% load;
7.2.2.	**NO_X**	at two loads – between 50 and 70% and between 80 and 100% loads;
7.2.3.	**NO_2**	at two loads – between 50 and 70% and between 80 and 100% loads;
7.2.4.	**NMHC**	at one load between 50 and 70% load;
7.2.5.	**$PM_{2.5}$**	at two loads – between 50 and 70% and between 80 and 100% loads;
7.2.6.	**PM_{10}**	at two loads – between 50 and 70% and between 80 and 100% loads; and
7.2.7.	**Visible emissions**	at one load between 50 and 70% load.

7.3. During each test run, the permittee shall monitor and record the following information:

7.3.1. Quantity of fuel used (in gallons);

7.3.2. Density of the fuel used (in lbs/gallon);

7.3.3. Heat content of the fuel used (in Btu/gallon); and

7.3.4. Mechanical power output (in kW).

7.4. For each engine, each load range, and each pollutant, the permittee shall determine emission factors in the following units: g/kW-hr, lbs/kW-hr, and lbs/gallon.

8. **Monitoring, Recordkeeping and Reporting:** The permittee shall:

8.1. Equip each of Units FD-9 -11 with a diesel fuel flow meter, or install a single fuel meter for all of Units FD-9 -11:

8.1.1. Each fuel flow meter shall be located so that there is no potential for fuel inflows or outflows between it and the engine(s) being served by the meter;

8.1.2. Each fuel flow meter shall be totalizing and non-resettable; and

8.1.3. Each fuel flow meter shall measure the fuel flow rate with accuracy equal to or better than 2 percent of the meter's upper range value.

8.2. No less than 60 days before initial deployment of the Discoverer to the Chukchi Sea for the first drilling season, collect information from the manufacturer of each

fuel flow meter so as to determine its accuracy. Submit this information to the EPA no less than 30 days prior to operation within the Chukchi Sea.

8.3. Maintain the accuracy of each fuel flow meter in accordance with manufacturer's recommendations.

8.4. Monitor and record fuel usage for each engine on a daily basis.

8.5. Each day, calculate and record for the previous calendar day, the emissions of NO_X in pounds per hour and pounds per day and the emissions of $PM_{2.5}$ and PM_{10} in pounds per day using the highest emission factor collected under Condition F.7.4 and fuel usage data collected under Condition F.8.4.

G. HPU ENGINES (FD-12 - 13)

1. **Operation of Catalyzed Diesel Particulate Filter (CDPF).** At all times that any of Units FD-12 – 13 are in operation, the exhaust from each emission unit shall be directed to an operating CleanAIR Systems CDPF, Part No. FDA300.

1.1. Each CDPF shall be equipped with an operating HiBACK monitor and alarm unit, that records exhaust pressure and temperature.

1.2. During each day that each of Units FD-12 -13 is operated, the exhaust temperature shall be above 300°C, or 572°F for at least 30 percent of the time.

2. **BACT Limits.** Emissions from each HPU engine (Units FD-12 – 13) shall not exceed the emission limits specified for each of the pollutants below:

2.1. **NO_X and NMHC, in aggregate:** 4.0 g/kW-hr

2.1.1. For compliance with Condition G.2.1, measurement of NOX shall be determined using EPA Method 7E.

2.2. **PM:** 0.030 g/kW-hr

2.2.1. For compliance with Condition G.2.2, measurement of PM shall be determined using EPA Method 5.

2.3. **PM_{10}:** 0.030 g/kW-hr

2.3.1. For compliance with Condition G.2.3, measurement of PM_{10} shall be determined using EPA Methods 201A and 202.

2.4. **$PM_{2.5}$:** 0.030 g/kW-hr

2.4.1. For compliance with Condition G.2.4, measurement of $PM_{2.5}$ shall be determined using EPA Methods 201A and 202.

2.5. **Visible Emissions:** Visible emissions, excluding condensed water vapor, shall not reduce visibility through the exhaust effluent more than 20 percent averaged over any six consecutive minutes.

2.5.1. For compliance with Condition G.2.6, measurement of visible emissions shall be determined using EPA Method 9.

2.6. **CO:** 0.70 g/kW-hr

2.6.1. For compliance with Condition G.2.6, measurement of CO shall be determined using EPA Method 10.

3. **BACT Good Combustion Practices for NO_X.** The permittee shall:

3.1. Ensure that a full-time equipment maintenance specialist shall be on board at all times during operation as an OCS Source;

3.2. Train operating personnel to identify signs of improper operation and maintenance, including visible plumes, and to report these events to the maintenance specialist as soon as possible, but no later than within three hours of identification;

3.3. Have the maintenance specialist inspect, at least once each week, each of Units FD-12 – 13 for proper operation and maintenance consistent with the manufacturer's recommendations;

3.4. Ensure that the operation and maintenance manual provided by the manufacturer for each of Units FD-12 – 13 shall be kept on board the Discoverer at all times;

3.5. Follow the manufacturer's recommended operation and maintenance procedures for each of Units FD-12 – 13;

3.6. Maintain, on board the Discoverer, a log detailing when reporting, inspections and maintenance are conducted pursuant to Conditions G.3.2, G.3.3, and G.3.5 respectively; and

3.7. No less than 30 days prior to each deployment of the Discoverer to the Chukchi Sea, the permittee shall provide notice to the EPA on how the permittee shall comply with the requirements of Conditions G.3.1 and G.3.2, for the upcoming drilling season.

4. **Annual Emission Limits.** Emissions from both HPU engines (Units FD-12 – 13) in aggregate shall not exceed the emission limits specified for each of the pollutants below:

4.1. **NO_X:** 0.79 tons/rolling 12-month period

4.1.1. For compliance with Condition G.4.1, measurement of NO_X shall be determined using EPA Method 7E.

5. **Hourly Emission Limits.** Emissions from both HPU engines (Units FD-12 – 13) in aggregate shall not exceed the emission limits specified for each of the pollutants below:

5.1. **NO_X:** 3.29 lbs/hour

5.1.1. For compliance with Condition G.5.1, measurement of NO_X shall be determined using EPA Method 7E.

6. **Daily Emission Limits.** Emissions from both HPU engines (Units FD-12 – 13) in aggregate shall not exceed the emission limits specified for each of the pollutants below:

6.1. **PM_{10}:** 0.59 lbs/day

6.1.1. For compliance with Condition G.6.1, measurement of PM_{10} shall be determined using EPA Methods 201A and202.

6.2. **$PM_{2.5}$:** 0.59 lbs/day

6.2.1. For compliance with Condition G.6.2, measurement of $PM_{2.5}$ shall be determined using EPA Methods 201A and 202.

7. **Annual Fuel Usage Limit.** The permittee shall not use in excess of 44,338 gallons of fuel in both of Units FD-12 – 13 in aggregate during any rolling 12-month period.

8. **Daily Fuel Usage Limits/Alternative Operating Scenarios.** Units FD-12, FD-13 and FD-23 shall be operated under one of three operating scenarios: Base Operating Scenario, Alternative Operating Scenario #1 or Alternative Operating Scenario #2. The permittee shall not use fuel in excess of the following limits while operating under the operating scenarios:

8.1. Under Base Operating Scenario, the permittee shall not operate either of Units FD-12 - 13;

8.2. Under Alternative Operating Scenario #1, the permittee shall not use in excess of 352 gallons of fuel in both of Units FD-12 – 13 in aggregate during any calendar day;

8.3. Under Alternative Operating Scenario #2, the permittee shall not use in excess of 704 gallons of fuel in both of Units FD-12 – 13 in aggregate during any calendar day; and

8.4. For each calendar day that the permittee intends to operate under either of Alternative Operating Scenarios #1 or 2, the permittee shall record in a log, at the beginning of the calendar day, which scenario it will be operating under for the day. In the absence of a log entry, the permittee shall comply with the requirements applicable to the Base Operating Scenario.

9. **Stack Test Requirements.** The permittee shall stack test both of Units FD-12 – 13 as follows:

9.1. At the start of the first drilling season that the Discoverer operates under this permit in the Chukchi Sea, both of Units FD-12 – 13 shall have been stack tested under the requirements of this section.

9.2. Each stack test shall be conducted for the following pollutants, and at the different loads specified:

9.2.1. **CO** at one load between 50 and 70% load;

9.2.2. **NO_X** at two loads – between 50 and 70% and between 80 and 100% loads;

9.2.3.	**NO_2**	at two loads – between 50 and 70% and between 80 and 100% loads;
9.2.4.	**$PM_{2.5}$**	at two loads – between 50 and 70% and between 80 and 100% loads;
9.2.5.	**PM_{10}**	at two loads – between 50 and 70% and between 80 and 100% loads;
9.2.6.	**VOC**	at one load between 50 and 70% load; and
9.2.7.	**Visible emissions**	at one load between 50 and 70% load.

9.3. During each test run, the permittee shall monitor and record the following information:

9.3.1. Quantity of fuel used (in gallons);

9.3.2. Density of the fuel used (in lbs/gallon);

9.3.3. Heat content of the fuel used (in Btu/gallon); and

9.3.4. Mechanical power output (in kW).

9.4. For each engine, each load range, and each pollutant, the permittee shall determine emission factors in the following units: g/kW-hr, lbs/kW-hr and lbs/gallon.

10. **Monitoring, Recordkeeping and Reporting.** The permittee shall:

10.1. Equip each of Units FD-12 -13 with a diesel fuel flow meter, or install a single fuel meter for both of Units FD-12 -13:

10.1.1. Each fuel flow meter shall be located so that there is no potential for fuel inflows or outflows between it and the engine(s) being served by the meter;

10.1.2. Each fuel flow meter shall be totalizing and non-resettable; and

10.1.3. Each fuel flow meter shall measure the fuel flow rate with accuracy equal to or better than 2 percent of the meter's upper range value.

10.2. No less than 60 days before initial deployment of the Discoverer to the Chukchi Sea for the first drilling season, collect information from the manufacturer of each fuel flow meter so as to determine its accuracy. Submit this information to the EPA no less than 30 days prior to operation within the Chukchi Sea.

10.3. Maintain the accuracy of each fuel flow meter in accordance with manufacturer's recommendations.

10.4. Monitor and record fuel usage for each engine on a daily basis.

10.5. Monitor the exhaust temperature of each engine by use of the HiBACK monitor and alarm unit, whenever the engine is in operation.

10.6. Each day, calculate and record for the previous calendar day, the percent of operational time for each engine that the exhaust temperature was above 300°C (572°F).

10.7. Each day, calculate and record for the previous calendar day, the emissions of NO_X in pounds per hour and pounds per day and the emissions of $PM_{2.5}$ and PM_{10} in pounds per day using the highest emission factor collected under Condition G.9.4 and fuel usage data collected under Condition G.10.4.

H. DECK CRANES (FD-14 - 15)

1. **Operation of Catalyzed Diesel Particulate Filter (CDPF).** At all times that any of Units FD-14 – 15 in operation, the exhaust from each Unit shall be directed to an operating CleanAIR Systems CDPF, Part No. 07040401AF.

   1.1. Each CDPF shall be equipped with an operating HiBACK monitor and alarm unit, that records exhaust pressure and temperature.

   1.2. During each day that each of Units FD-14 -15 is operated, the exhaust temperature shall be above 300°C, or 572°F, for at least 30 percent of the time.

2. **BACT Limits**. Emissions from each deck crane engine (Units FD-14 – 15) shall not exceed the emission limits specified for each of the pollutants below:

   2.1. **NO_X:** 10.327 g/kW-hr

   2.1.1. For compliance with Condition H.2.1, measurement of NO_X shall be determined using EPA Method 7E.

   2.2. **PM:** 0.0715 g/kW-hr

   2.2.1. For compliance with Condition H.2.2, measurement of PM shall be determined using EPA Method 5.

   2.3. **PM_{10}:** 0.0715 g/kW-hr

   2.3.1. For compliance with Condition H.2.3, measurement of PM_{10} shall be determined using EPA Methods 201A and 202.

   2.4. **$PM_{2.5}$:** 0.0715 g/kW-hr

   2.4.1. For compliance with Condition H.2.4, measurement of $PM_{2.5}$ shall be determined using EPA Methods201A and 202.

   2.5. **Visible Emissions:** Visible emissions, excluding condensed water vapor, shall not reduce visibility through the exhaust effluent more than 20 percent averaged over any six consecutive minutes.

   2.5.1. For compliance with Condition H.2.5, measurement of visible emissions shall be determined using EPA Method 9.

   2.6. **CO:** 0.220 g/kW-hr

   2.6.1. For compliance with Condition H.2.6, measurement of CO shall be determined using EPA Method 10.

2.7. **VOC:** 0.0640 g/kW-hr

2.7.1. For compliance with Condition H.0, measurement of VOC shall be determined using EPA Method 25A.

3. **BACT Good Combustion Practices for NO_X.** The permittee shall:

3.1. Ensure that a full-time equipment maintenance specialist shall be on board at all times during operation as an OCS Source;

3.2. Train operating personnel to identify signs of improper operation and maintenance, including visible plumes, and to report these events to the maintenance specialist as soon as possible, but no later than within three hours of identification;

3.3. Have the maintenance specialist inspect, at least once each week, each of Units FD-14 – 15 for proper operation and maintenance consistent with the manufacturer's recommendations;

3.4. Ensure that the operation and maintenance manual provided by the manufacturer for each of Units FD-14 – 15 shall be kept on board the Discoverer at all times;

3.5. Follow the manufacturer's recommended operation and maintenance procedures for each of Units FD-14 – 15;

3.6. Maintain, on board the Discoverer, a log detailing when reporting, inspections and maintenance are conducted pursuant to Conditions H.3.2, H.3.3, and H.3.5, respectively; and

3.7. No less than 30 days prior to initial deployment of the Discoverer to the Chukchi Sea, the permittee shall provide notice to the EPA on how the permittee shall comply with the requirements of Conditions H.3.1 and H.3.2 for the upcoming drilling season.

4. **Annual Emission Limits.** Emissions from both deck crane engines (Units FD-14 – 15) in aggregate shall not exceed the emission limits specified for each of the pollutants below:

4.1. **NO_X:** 2.76 tons/rolling 12-month period

4.1.1. For compliance with Condition H.4.1, measurement of NO_X shall be determined using EPA Method 7E.

5. **Hourly Emission Limits.** Emissions from both deck cranes engines (Units FD-14 – 15) in aggregate shall not exceed the emission limits specified for each of the pollutants below:

5.1. **NO_X:** 2.48 lbs/hour

5.1.1. For compliance with Condition H.5.1 measurement of NO_X shall be determined using EPA Method 7E.

6. **Daily Emission Limits.** Emissions from both deck crane engines (Units FD-14 – 15) in aggregate shall not exceed the emission limits specified for each of the pollutants below:

6.1. **PM_{10}**: 0.41 lbs/day

6.1.1. For compliance with Condition H.6.1, measurement of PM_{10} shall be determined using EPA Methods 201A and 202.

6.2. **$PM_{2.5}$:** 0.41 lbs/day

6.2.1. For compliance with Condition H.6.2, measurement of $PM_{2.5}$ shall be determined using EPA Methods 201A and 202.

7. **Fuel Usage Limit.** The permittee shall not use in excess of 63,661 gallons of fuel in both of Units FD-14 – 15 in aggregate during any rolling 12-month period.

8. **Stack Test Requirements.** The permittee shall stack test both of Units FD-14 – 15 as follows:

8.1. At the start of the first drilling season that the Discoverer operates under this permit in the Chukchi Sea, both of Units FD-14 – 15 shall have been stack tested under the requirements of this section.

8.2. Each stack test shall be conducted for the following pollutants, and at the different loads specified:

8.2.1.	**CO**	at one load between 60 and 80% load;
8.2.2.	**NO_X**	at two loads – between 60 and 80% and between 80 and 100% loads;
8.2.3.	**NO_2**	at two loads – between 60 and 80% and between 80 and 100% loads;
8.2.4.	**$PM_{2.5}$**	at two loads – between 60 and 80% and between 80 and 100% loads;
8.2.5.	**PM_{10}**	at two loads – between 60 and 80% and between 80 and 100% loads;
8.2.6.	**VOC**	at one load between 60 and 80% load; and
8.2.7.	**Visible emissions**	at one load between 60 and 80% load.

8.3. During each test run, the permittee shall monitor and record the following information:

8.3.1. Quantity of fuel used (in gallons);

8.3.2. Density of the fuel used (in lbs/gallon);

8.3.3. Heat content of the fuel used (in Btu/gallon); and

8.3.4. Mechanical power output (in kW).

8.4. For each engine, each load range, and each pollutant, the permittee shall determine emission factors in the following units: g/kW-hr, lbs/kW-hr and lbs/gallon.

9. **Monitoring, Recordkeeping, and Reporting.** The permittee shall:

9.1. Equip each of Units FD-14 -15 with a diesel fuel flow meter, or install a single fuel meter for both of Units FD-14 -15:

9.1.1. Each fuel flow meter shall be located so that there is no potential for fuel inflows or outflows between it and the engine(s) being served by the meter;

9.1.2. Each fuel flow meter shall be totalizing and non resettable; and

9.1.3. Each fuel flow meter shall measure the fuel flow rate with accuracy equal to or better than 2 percent of the meter's upper range value.

9.2. No less than 60 days before initial deployment of the Discoverer to the Chukchi Sea for the first drilling season, collect information from the manufacturer of each fuel flow meter so as to determine its accuracy. Submit this information to the EPA no less than 30 days prior to operation within the Chukchi Sea.

9.3. Maintain the accuracy of each fuel flow meter in accordance with manufacturer's recommendations.

9.4. Monitor and record fuel usage for each engine on a daily basis.

9.5. Monitor and record the exhaust temperature of each engine by use of the HiBACK monitor and alarm unit, while the engine is in operation.

9.6. Each day, calculate and record for the previous calendar day, the percent of operational time for each engine that the exhaust temperature was above 300°C (572°F).

9.7. Each day, calculate and record for the previous calendar day, the emissions of NO_X in pounds per hour and pounds per day and the emissions of $PM_{2.5}$ and PM_{10} in pounds per day using the highest emission factor collected under Condition H.8.4and fuel usage data collected under Condition H.9.4.

I. CEMENTING UNIT AND LOGGING WINCH ENGINES (FD-16 - 20)

1. **Operation of Catalyzed Diesel Particulate Filter (CDPF).** At all times that any of the cementing unit and logging winch engines (Units FD-16 – 20) are in operation, the exhaust from each emission unit shall be directed to operating CleanAIR Systems CDPF, Part No. FDA300 for Units FD-16 and 17, Part No. FDA225 for Unit FD-18, and as specified by CleanAIR Systems for Units FD-19 - 20.

1.1. Each CDPF shall be equipped with an operating HiBACK monitor and alarm unit, that records exhaust pressure and temperature.

1.2. During each day that each of Units FD-16 – 20 is operated, the exhaust temperature shall be above 300°C, or 572°F, for at least 30 percent of the time.

2. **BACT Limits**. Emissions from each of Units FD-16 – 20 shall not exceed the emission limits specified for each of the pollutants below:

2.1. **NO_X:**

FD-16	13.155 g/kW-hr
FD-17	13.155 g/kW-hr
FD-18	15.717 g/kW-hr
FD-19	4.0 g/kW-hr
FD-20	7.50 g/kW-hr

2.1.1. For compliance with Condition I.2.1, measurement of NO_X shall be determined using EPA Method 7E.

2.2. **PM:**

FD-16	0.253	g/kW-hr
FD-17	0.253	g/kW-hr
FD-18	0.386	g/kW-hr
FD-19	0.03	g/kW-hr
FD-20	0.090	g/kW-hr

2.2.1. For compliance with Condition I.2.2, measurement of PM shall be determined using EPA Method 5.

2.3. **PM_{10}:**

FD-16	0.253	g/kW-hr
FD-17	0.253	g/kW-hr
FD-18	0.386	g/kW-hr
FD-19	0.03	g/kW-hr
FD-20	0.090	g/kW-hr

2.3.1. For compliance with Condition I.2.3, measurement of PM_{10} shall be determined using EPA Methods 201A and 202.

2.4. **$PM_{2.5}$:**

FD-16	0.253	g/kW-hr
FD-17	0.253	g/kW-hr
FD-18	0.386	g/kW-hr
FD-19	0.03	g/kW-hr
FD-20	0.090	g/kW-hr

2.4.1. For compliance with Condition I.2.4, measurement of $PM_{2.5}$ shall be determined using EPA Methods 201A and 202.

2.5. **Visible Emissions:** Visible emissions, excluding condensed water vapor, shall not reduce visibility through the exhaust effluent more than 20 percent averaged over any six consecutive minutes.

2.5.1. For compliance with Condition I.2.5, measurement of visible emissions shall be determined using EPA Method 9.

2.6. **CO:**

FD-16	0.40	g/kW-hr
FD-17	0.40	g/kW-hr
FD-18	0.880	g/kW-hr
FD-19	0.70	g/kW-hr
FD-20	0.550	g/kW-hr

2.6.1. For compliance with Condition I.2.6, measurement of CO shall be determined using EPA Method 10.

2.7. VOC:

FD-16	0.20	g/kW-hr
FD-17	0.20	g/kW-hr
FD-18	0.270	g/kW-hr
FD-19	4.0	g/kW-hr
FD-20	0.750	g/kW-hr

2.7.1. For compliance with Condition I.2.7, measurement of VOC shall be determined using EPA Method 25A.

3. **BACT Good Combustion Practices for NO_X.** The permittee shall:

3.1. Ensure that a full-time equipment maintenance specialist shall be on board at all times during operation as an OCS Source;

3.2. Train operating personnel to identify signs of improper operation and maintenance, including visible plumes, and to report these events to the maintenance specialist as soon as possible, but no later than within three hours of identification;

3.3. Have the maintenance specialist inspect, at least once each week, each of Units FD-16 – 20 for proper operation and maintenance consistent with the manufacturer's recommendations;

3.4. Ensure that the operation and maintenance manual provided by the manufacturer for each of Units FD-16 – 20 shall be kept on board the Discoverer at all times;

3.5. Follow the manufacturer's recommended operation and maintenance procedures for each of Units FD-16 – 20;

3.6. Maintain, on board the Discoverer, a log detailing when reporting, inspections and maintenance are conducted pursuant to Conditions I.3.2, I.3.3, and I.3.5 respectively; and

3.7. No less than 30 days prior to initial deployment of the Discoverer to the Chukchi Sea, the permittee shall provide notice to the EPA on how the permittee shall comply with the requirements of Conditions I.3.1and I.3.2 for the upcoming drilling season.

4. **Annual Emission Limits.** Emissions from all cementing unit and logging winch engines (Units FD-16 – 20) in aggregate shall not exceed the emission limits specified for each of the pollutants below:

4.1. **NO_X:** 4.09 tons/rolling 12-month period

4.1.1. For compliance with Condition I.4.1, measurement of NO_X shall be determined using EPA Method 7E.

5. **Hourly Emission Limits.** Emissions from all cementing unit and logging winch engines (Units FD-16 - 20) in aggregate shall not exceed the emission limits specified for each of the pollutants below:

5.1. **NO_X:** 6.56 lbs/hour

5.1.1. For compliance with Condition I.5.1, measurement of NO_X shall be determined using EPA Method 7E.

6. **Daily Emission Limits.** Emissions from all cementing unit and logging winch engines (Units FD-16 – 20) in aggregate shall not exceed the emission limits specified for each of the pollutants below:

   6.1. **PM_{10}:** 3.87 lbs/day

      6.1.1. For compliance with Condition I.6.1, measurement of PM_{10} shall be determined using EPA Methods 201A and 202.

   6.2. **$PM_{2.5}$:** 3.87 lbs/day

      6.2.1. For compliance with Condition I.6.2, measurement of $PM_{2.5}$ shall be determined using EPA Methods 201A and 202.

7. **Fuel Usage Limit.** The permittee shall not use in excess of:

   7.1. 53,760 gallons of fuel in all Units FD-16 – 20 in aggregate during any rolling 12-month period; and

   7.2. 320 gallons of fuel in all Units FD-16 – 20 in aggregate during any calendar day.

8. **Operational Limit.** The permittee shall not operate any cementing unit or engine (Units FD-16 – 20) while conducting MLC activities as defined in Condition B.2.3.

9. **Stack Test Requirements.** The permittee shall stack test all of Units FD-16 – 20 as follows:

   9.1. At the start of the first drilling season that the Discoverer operates under this permit in the Chukchi Sea, all of Units FD-16 – 20 shall have been stack tested under the requirements of this section.

   9.2. Each stack test shall be conducted for the following pollutants, and at the different loads specified:

      9.2.1. **CO** at one load between 50 and 70% load;

      9.2.2. **NO_X** at two loads – between 50 and 70% and between 80 and 100% loads;

      9.2.3. **NO_2** at two loads – between 50 and 70% and between 80 and 100% loads;

      9.2.4. **$PM_{2.5}$** at two loads – between 50 and 70% and between 80 and 100% loads;

      9.2.5. **PM_{10}** at two loads – between 50 and 70% and between 80 and 100% loads;

      9.2.6. **VOC** at one load between 50 and 70% load; and

      9.2.7. **Visible emissions** at one load between 50 and 70% load.

   9.3. During each test run, the permittee shall monitor and record the following information:

      9.3.1. Quantity of fuel used (in gallons);

      9.3.2. Density of the fuel used (in lbs/gallon);

9.3.3. Heat content of the fuel used (in Btu/gallon); and

9.3.4. Mechanical power output (in kW).

9.4. For each engine, each load range, and each pollutant, the permittee shall determine emission factors in the following units: g/kW-hr, lbs/kW-hr, and lbs/gallon.

10. **Monitoring, Recordkeeping and Reporting.** The permittee shall:

10.1. Equip each of Units FD-16 - 20 with a diesel fuel flow meter, or install a single fuel meter for all of Units FD-16 - 20:

10.1.1. Each fuel flow meter shall be located so that there is no potential for fuel inflows or outflows between it and the engine(s) being served by the meter;

10.1.2. Each fuel flow meter shall be totalizing and non-resettable; and

10.1.3. Each fuel flow meter shall measure the fuel flow rate with accuracy equal to or better than 2 percent of the meter's upper range value.

10.2. No less than 60 days before initial deployment of the Discoverer to the Chukchi Sea for the first drilling season, collect information from the manufacturer of each fuel flow meter so as to determine its accuracy. Submit this information to the EPA no less than 30 days prior to operation within the Chukchi Sea.

10.3. Maintain the accuracy of each fuel flow meter in accordance with manufacturer's recommendations.

10.4. Monitor and record fuel usage for each engine on a daily basis.

10.5. Monitor and record the exhaust temperature of each of engines FD-16 - 20 by use of the HiBACK monitor and alarm unit, while the engine is in operation.

10.6. Each day, for each of engines FD-16 - 20, calculate and record for the previous calendar day, the percent of operational time for each engine that the exhaust temperature was above 300°C (572°F).

10.7. Each day, calculate and record for the previous calendar day, the emissions of NO_X in pounds per hour and pounds per day and the emissions from $PM_{2.5}$ and PM_{10} in pounds per day, using the highest emission factor collected under Condition I.9.4and fuel usage data collected under Condition I.10.4.

J. HEAT BOILERS (FD-21 - 22)

1. **BACT Limits.** Emissions from each of the heat boilers (Units FD-21 – 22) shall not exceed the emission limits specified for each of the pollutants below:

1.1. **NO_X:** 0.20 lbs/MMBtu

1.1.1. For compliance with Condition J.1.1, measurement of NO_X shall be determined using EPA Method 7E.

1.2. **PM:** 0.0235 lbs/MMBtu

1.2.1. For compliance with Condition J.1.2, measurement of PM shall be determined using EPA Method 5.

1.3. **PM_{10}:** 0.0235 lbs/MMBtu

1.3.1. For compliance with Condition J.1.3, measurement of PM_{10} shall be determined using EPA Methods 201A and Method 202.

1.4. **$PM_{2.5}$:** 0.0235 lbs/MMBtu

1.4.1. For compliance with Condition J.1.4, measurement of PM2.5 shall be determined using EPA Methods 201A and Method 202.

1.5. **Visible Emissions:** Visible emissions, excluding condensed water vapor, shall not reduce visibility through the exhaust effluent more than 20 percent averaged over any six consecutive minutes.

1.5.1. For compliance with Condition J.1.5, measurement of visible emissions shall be determined using EPA Method 9.

1.6. **CO:** 0.0770 lbs/MMBtu

1.6.1. For compliance with Condition J.1.6, measurement of CO shall be determined using EPA Method 10.

1.7. **VOC:** 0.00140 lbs/MMBtu

1.7.1. For compliance with Condition J.1.7, measurement of VOC shall be determined using EPA Method 25A.

2. **BACT Good Combustion Practices for NO_X, PM, $PM_{2.5}$, PM_{10}, CO and VOC.** The permittee shall:

2.1. Ensure that a full-time equipment maintenance specialist shall be on board at all times during operation as an OCS Source;

2.2. Train operating personnel to identify signs of improper operation and maintenance, including visible plumes, and to report these events to the maintenance specialist as soon as possible, but no later than within three hours of identification;

2.3. Have the maintenance specialist inspect, at least once each week, each of Units FD-21 – 22 for proper operation and maintenance consistent with the manufacturer's recommendations;

2.4. Ensure that the operation and maintenance manual provided by the manufacturer for each of Units FD-21 – 22 shall be kept on board the Discoverer at all times;

2.5. Follow the manufacturer's recommended operation and maintenance procedures for each of Units FD-21 – 22;

2.6. Maintain, on board the Discoverer, a log detailing when reporting, inspections and maintenance are conducted pursuant to Conditions J.2.2, J.2.3, and J.2.5, respectively; and

2.7. No less than 30 days prior to initial deployment of the Discoverer to the Chukchi Sea, the permittee shall provide notice to the EPA on how the permittee shall comply with the requirements of Conditions J.2.1and J.2.2 for the upcoming drilling season.

3. **Annual Emission Limits**. Emissions from all heat boilers (Units FD-21 – 22) in aggregate shall not exceed the emission limits specified for each of the pollutants below:

3.1. **NO_X:** 4.59 tons/rolling 12-month period

3.1.1. For compliance with Condition J.3.1, measurement of NO_X shall be determined using EPA Method 7E.

4. **Hourly Emission Limits.** Emissions from all heat boilers (Units FD-21 – 22) in aggregate shall not exceed the emission limits specified for each of the pollutants below:

4.1. **NO_X:** 3.19 lbs/hour

4.1.1. For compliance with Condition J.4.1, measurement of NO_X shall be determined using EPA Method 7E.

5. **Daily Emission Limits.** Emissions from all heat boilers (Units FD-21 – 22) in aggregate shall not exceed the emission limits specified for each of the pollutants below:

5.1. **PM_{10}:** 8.99 lbs/day

5.1.1. For compliance with Condition J.5.1, measurement of PM_{10} shall be determined using EPA Methods 201A and202.

5.2. **$PM_{2.5}$:** 8.99 lbs/day

5.2.1. For compliance with Condition J.5.2, measurement of $PM_{2.5}$ shall be determined using EPA Methods 201A and 202.

6. **Stack Test Requirements.** The permittee shall stack test both of Units FD-21 – 22 as follows:

6.1. At the start of the first drilling season that the Discoverer operates under this permit in the Chukchi Sea, both of Units FD-21 – 22 shall have been stack tested under the requirements of this section.

6.2. Each stack test shall be conducted for the following pollutants, and at the different loads specified:

6.2.1. **CO** at 100% load;

6.2.2. **NO_X** at 50% and 100% loads;

6.2.3. **NO_2** at 50% and 100% loads;

6.2.4. **$PM_{2.5}$** at 50% and 100% loads;

6.2.5. **PM_{10}** at 50% and 100% loads;

6.2.6. **VOC** at 100% load; and

6.2.7. **Visible emissions** at 100% load.

6.3. During each test run, the permittee shall monitor and record the following information:

6.3.1. Quantity of fuel used (in gallons);

6.3.2. Density of the fuel used (in lbs/gallon); and

6.3.3. Heat content of the fuel used (in Btu/gallon).

6.4. For each boiler, each load range and each pollutant, the permittee shall determine emission factors in the following units: lbs/MMBtu and lbs/gallon.

7. **Monitoring, Recordkeeping and Reporting.** The permittee shall:

7.1. Equip each of Units FD-21 - 22 with a diesel fuel flow meter, or install a single fuel meter for both of Units FD-21 - 22:

7.1.1. Each fuel flow meter shall be located so that there is no potential for fuel inflows or outflows between it and the boiler(s) being served by the meter;

7.1.2. Each fuel flow meter shall be totalizing and nonresettable; and

7.1.3. Each fuel flow meter shall measure the fuel flow rate with accuracy equal to or better than 2 percent of the meter's upper range value.

7.2. No less than 60 days before initial deployment of the Discoverer to the Chukchi Sea for the first drilling season, collect information from the manufacturer of each fuel flow meter so as to determine its accuracy. Submit this information to the EPA no less than 30 days prior to operation within the Chukchi Sea.

7.3. Maintain the accuracy of each fuel flow meter in accordance with manufacturer's recommendations.

7.4. Monitor and record fuel usage for each boiler on a daily basis.

7.5. Each day, calculate and record for the previous calendar day, the emissions of NO_X $PM_{2.5}$, and PM_{10} using the highest emission factor collected under Condition J.6.4 and fuel usage data collected under Condition J.7.4.

K. INCINERATOR (FD-23)

1. **BACT Limits.** Emissions from the incinerator (Unit FD-23) shall not exceed the emission limits specified for each of the pollutants below:

1.1. **NO_X:** 5.0 lbs/ton of waste incinerated

1.1.1. For compliance with Condition K.1.1, measurement of NO_X shall be determined using EPA Method 7E.

1.2. **PM:** 8.20 lbs/ ton of waste incinerated

1.2.1. For compliance with Condition K.1.2, measurement of PM shall be determined using EPA Method 5.

1.3. **PM_{10}:** 8.20 lbs/ton of waste incinerated

1.3.1. For compliance with Condition K.0, measurement of PM_{10} shall be determined using EPA Methods 201A and 202.

1.4. **$PM_{2.5}$:** 7.00 lbs/ton of waste incinerated

1.4.1. For compliance with Condition K.1.4, measurement of $PM_{2.5}$ shall be determined using EPA Methods 201A and 202.

1.5. **CO:** 31.0 lbs/ton of waste incinerated

1.5.1. For compliance with Condition K.1.5, measurement of CO shall be determined using EPA Method 10.

1.6. **VOC:** 3.0 lbs/ton of waste incinerated

1.6.1. For compliance with Condition K.1.6, measurement of VOC shall be determined using EPA Method 25A.

2. **BACT Good Combustion Practices for NO_X, PM, $PM_{2.5}$, PM_{10}, CO, and VOC.** The permittee shall:

2.1. Ensure that a full-time equipment maintenance specialist shall be on board at all times during operation as an OCS Source;

2.2. Train operating personnel to identify signs of improper operation and maintenance, including visible plumes, and to report these events to the maintenance specialist as soon as possible, but no later than within three hour of identification;

2.3. Have the maintenance specialist inspect, at least once each week, Unit FD-23 for proper operation and maintenance consistent with the manufacturer's recommendations;

2.4. Ensure that the operation and maintenance manual provided by the manufacturer for Unit FD-23 shall be kept on board the Discoverer at all times;

2.5. Follow the manufacturer's recommended operation and maintenance procedures for Unit FD-23;

2.6. Maintain, on board the Discoverer, a log detailing when reporting, inspections and maintenance are conducted pursuant to Conditions K.2.2, K.2.3, and K.2.5, respectively; and

2.7. No less than 30 days prior to initial deployment of the Discoverer to the Chukchi Sea, the permittee shall provide notice to the EPA on how the permittee shall comply with the requirements of Conditions K.2.1and K.2.2 for the upcoming drilling season.

3. **Annual Emission Limits.** Emissions from the incinerator (Unit FD-23) shall not exceed the emission limits specified for each of the pollutants below:

3.1. **NO_X:** 0.20 tons/rolling 12-month period

3.1.1. For compliance with Condition K.3.1, measurement of NO_X shall be determined using EPA Method 7E.

4. **Hourly Emission Limits.** Emissions from the incinerator (Unit FD-23) shall not exceed the emission limits specified for each of the pollutants below:

   4.1. **Nitrogen oxides (NO_X):** 0.65 lb/hr

      4.1.1. For compliance with Condition K.4.1, measurement of NO_X shall be determined using EPA Method 7E.

5. **Daily Emission Limits.** Emissions from the incinerator (Unit FD-23) shall not exceed the emission limits specified for each of the pollutants below:

   5.1. **PM_{10}:** 5.33 lbs/day

      5.1.1. For compliance with Condition K.5.1, measurement of PM_{10} shall be determined using EPA Methods 201A and 202.

   5.2. **$PM_{2.5}$:** 4.55 lbs/day

      5.2.1. For compliance with Condition K.5.2, measurement of PM2.5 shall be determined using EPA Methods 201A and 202.

6. **Throughput-Based Emission Limits.** Emissions from the incinerator (Unit FD-23) shall not exceed the emission limits specified for each of the pollutants below:

   6.1. **PM_{10}:** 8.20 lbs/ton of waste incinerated

      6.1.1. For compliance with Condition K.6.1, measurement of PM_{10} shall be determined using EPA Methods 201A and 202.

   6.2. **$PM_{2.5}$:** 7.00 lbs//ton of waste incinerated

      6.2.1. For compliance with Condition K.6.2, measurement of PM2.5 shall be determined using EPA Methods 201A and 202.

   6.3. **SO_2:** 2.50 lbs//ton of waste incinerated

      6.3.1. For compliance with Condition K.6.3, measurement of SO2 shall be determined using EPA Method 6C.

7. **Annual Waste Throughput Limit.** The permittee shall not incinerate in excess of 50,400 lbs of all types of waste in Unit FD-23 during any rolling 12-month period.

8. **Daily Fuel Usage Limits/Alternative Operating Scenarios.** Units FD-12, FD-13 and FD-23 shall be operated under one of three operating scenarios: Base Operating Scenario, Alternative Operating Scenario #1 or Alternative Operating Scenario #2. The permittee shall not incinerate waste in excess of the following limits while operating under the operating scenarios:

   8.1. Under Base Operating Scenario, the permittee shall not incinerate in excess of 1300 lbs of waste during any calendar day;

   8.2. Under Alternative Operating Scenario #1, the permittee shall not incinerate in excess of 800 lbs of waste during any calendar day;

   8.3. Under Alternative Operating Scenario #2, the permittee shall not incinerate in excess of 300 lbs of waste during any calendar day; and

8.4. For each calendar day that the permittee intends to operate under either of Alternative Operating Scenarios #1 or 2, the permittee shall record as specified in Condition G.8.4.

9. **Waste Segregation Work Practice.** The permittee shall develop and implement a written waste segregation work practice plan to ensure that non-combustible items containing heavy metals that could be volatilized and emitted from the incinerator as PM are not introduced into the incinerator. The plan shall be submitted to the EPA Region 10 at least 30 days prior to initial deployment of the Discoverer to the Chukchi Sea.

10. **Stack Test Requirements.** Prior to each of the first three drilling seasons that the Discoverer operates under this permit in the Chukchi Sea, the permittee shall stack test the incinerator (Unit FD-23) as follows:

10.1. Each stack test shall be conducted at full rated capacity.

10.2. For the first drilling season, each stack test run shall test for emissions of CO, NO_X, NO_2, $PM_{2.5}$, PM_{10}, SO_2, and VOC.

10.3. For subsequent drilling seasons, each stack test run shall test for emissions of NO_X, NO_2, $PM_{2.5}$, PM_{10}, and SO_2.

10.4. During each test run, the permittee shall monitor and record the following information:

10.4.1. Quantity of fuel used (in gallons);

10.4.2. Density of the fuel used (in lbs/gallon);

10.4.3. Heat content of the fuel used (in Btu/gallon);

10.4.4. Quantity of waste incinerated (tons); and

10.4.5. Type of waste incinerated.

10.5. For each pollutant, the permittee shall determine emission factors in the following units: lbs/ton of waste incinerated.

11. **Monitoring, Recordkeeping, and Reporting.** The permittee shall:

11.1. For each batch of waste charged to the incinerator:

11.1.1. Record the date and time that each batch of waste was charged to the incinerator;

11.1.2. Weigh the batch of waste by using a weigh scale used that shall be accurate to within 0.5 lbs; and

11.1.3. Record the weight of each batch of waste charged to the incinerator.

11.2. No less than 60 days before initial deployment of the Discoverer to the Chukchi Sea for the first drilling season, collect information from the manufacturer of the weigh scale to determine its accuracy. Submit this information to the EPA no less than 30 days prior to operation within the Chukchi Sea.

11.3. Maintain the accuracy of the weigh scale in accordance with manufacturer's recommendations.

11.4. Monitor and record the exhaust temperature of the incinerator at least every 15 minutes.

11.5. Each day, calculate and record for the previous calendar day, the emissions of NO_X in pounds per hour and pounds per day and emissions of $PM_{2.5}$ and PM_{10} in pounds per day using the highest emission factor collected under Condition K.10.5 and waste material incinerated throughput collected under Condition K.11.1.

L. SUPPLY SHIP GENERATOR ENGINE (FD-31)

1. **Operational Limits.** For events where the supply ship is attached to the Discoverer, the permittee shall:

   1.1. Not use in excess of 184.0 gallons of fuel per day in the non-propulsion generators (not including the emergency engine), in aggregate; and

   1.2. Not use in excess of 1472.0 gallons of fuel during any rolling 12-month period in the non-propulsion generators (not including the emergency engine), in aggregate.

2. **Annual Emission Limits.** For events where the supply ship is attached to the Discoverer, emissions from operation of the supply ship generator engine (Unit FD-31) shall not exceed the emission limits specified for each of the pollutants below:

   2.1. **NO_X:** 0.43 tons/rolling 12-month period

   2.1.1. For compliance with Condition L.2.1, measurement of NOX shall be determined using EPA Method 7E.

3. **Daily Emission Limits.** For events where the supply ship is attached to the Discoverer, emissions from operation of the supply ship generator engine (Unit FD-31) shall not exceed the emission limits specified for each of the pollutants below:

   3.1. **PM_{10}:** 7.60 lbs/day

   3.1.1. For compliance with Condition L.3.1, measurement of PM_{10} shall be determined using EPA Methods 201A and 202.

   3.2. **$PM_{2.5}$:** 7.60 lbs/day

   3.2.1. For compliance with Condition L.3.2, measurement of $PM_{2.5}$ shall be determined using EPA Methods 201A and 202.

4. **Stack Test Requirements.** Prior to the first supply ship trip of each drilling season to resupply the Discoverer while the Discoverer is operating under this permit in the Chukchi Sea, the permittee shall stack test the supply ship generator engine (Unit FD-31) as follows:

   4.1. If the generator from the intended supply ship has already been tested pursuant to Conditions L.4.2 through L.4.5 during the past 5 years, no additional stack testing is required.

   4.2. Each stack test shall be conducted at 100 percent load.

   4.3. Each stack test run shall test for emissions of NO_X, NO_2, $PM_{2.5}$, and PM_{10}.

4.4. During each test run, the permittee shall monitor and record the following information:

4.4.1. Manufacturer and model no. of the engine;

4.4.2. The rated capacity of the engine (in hp);

4.4.3. Quantity of fuel used (in gallons);

4.4.4. Density of the fuel used (in lbs/gallon);

4.4.5. Heat content of the fuel used (in Btu/gallon); and

4.4.6. Electrical power output (in kWe).

4.5. For each engine, each load range, and each pollutant, the permittee shall determine emission factors in the following units: lbs/kWe-hr and lbs/gallon.

5. **Monitoring, Recordkeeping and Reporting.** The permittee shall:

5.1. Equip each of the non-propulsion generator engines (not including the emergency engine) with a diesel fuel flow meter, or install a single fuel meter for all of these engines:

5.1.1. Each fuel flow meter shall be located so that there is no potential for fuel inflows or outflows between it and the engine(s) being served by the meter;

5.1.2. Each fuel flow meter shall be totalizing and non-resettable; and

5.1.3. Each fuel flow meter shall measure the fuel flow rate with accuracy equal to or better than 2 percent of the meter's upper range value

5.2. No less than 60 days before the first deployment to the Chukchi Sea of a vessel as the supply ship, collect information from the manufacturer of each fuel flow meter so as to determine its accuracy. Submit this information to the EPA no less than 30 days prior to departure of the supply vessel to the Chukchi Sea.

5.3. Maintain the accuracy of each fuel flow meter in accordance with manufacturer's recommendations.

5.4. Monitor and record fuel usage for the non-propulsion generators while the supply vessel is attached to the Discoverer.

5.5. For each event, record the date and time that the supply ship attaches to the Discoverer.

5.6. For each event, record the date and time that the supply ship detaches from the Discoverer.

5.7. For each event, record the manufacturer, model no. and rated capacity (in hp) of the supply ship generator engine.

5.8. For each event, calculate daily emissions of NO_X, $PM_{2.5}$, and PM_{10} using the using the highest emission factor collected under Condition L.4.5and fuel usage data collected under Condition L.5.2.

6. **Supply Ship Events.** The total number of events during which the supply ship transits to and from the Discoverer and either attaches to the Discoverer or operates in dynamic positioning mode shall not exceed 8 in any drilling season.

M. SHALLOW GAS DIVERTER SYSTEM (FD-33)

1. **Shallow Gas Diverter System.** There shall be no emissions of any regulated NSR pollutants or GHGs from the shallow gas diverter system.
2. **Shallow Gas Diversions.** The permittee shall:
   - 2.1. Record the frequency and duration of each shallow gas diversion.
   - 2.2. Report the frequency and duration of each shallow gas diversion no later than February 1st for the time period beginning January 1st and ending December 31st of the preceding year.

N. ICEBREAKER #1

1. **Operation of SCR Unit.** At all times that any of the propulsion or generator engines on board Icebreaker #1 are in operation, the exhaust from each engine shall be directed to an operating SCR emission unit.
2. **Operation of Oxidation Catalyst.** At all times that any of the propulsion or generator engines on board Icebreaker #1 are in operation, the exhaust from each engine shall be directed to an operating oxidation catalyst emission unit.
3. **Aggregate Capacity Limits.** For a given drilling season, the permittee may select any vessel as Icebreaker #1, subject to the following conditions:
   - 3.1. The total capacity of all propulsion engines on Icebreaker #1 shall not exceed 28,400 hp.
   - 3.2. The total capacity of all generator engines on Icebreaker #1 shall not exceed 2,800 hp.
   - 3.3. The total capacity of all boilers on Icebreaker #1 shall not exceed 10 MMBtu/hr.
   - 3.4. The total capacity of all incinerators on Icebreaker #1 shall not exceed 154 lbs/hr.
   - 3.5. Total uncontrolled emissions of $PM_{2.5}$ from all emission sources on board Icebreaker #1 shall not exceed 42.20 lbs/hour.
     - 3.5.1. For compliance with Condition N.3.5, measurement of $PM_{2.5}$ shall be determined using EPA Methods 201A and 202.
     - 3.5.2. For the purposes of Condition N.3.5, emissions from each emission unit shall be based on operation of that emission unit at 100 percent of rated capacity, except for the propulsion engines, for which emissions shall be based on operation of that emission unit at 80 percent of rated capacity.
   - 3.6. Total uncontrolled emissions of PM_{10} from all emission sources on board Icebreaker #1 shall not exceed 48.0 lbs/hour.

3.6.1. For compliance with Condition N.3.6, measurement of PM_{10} shall be determined using EPA Methods 201A and 202.

3.6.2. For the purposes of Condition N.3.6, emissions from each emission unit shall be based on operation of that emission unit at 100 percent of rated capacity, except for the propulsion engines, for which emissions shall be based on operation of that emission unit at 80 percent of rated capacity.

3.7. No later than 45 days prior to deployment to the Chukchi Sea each drilling season, the permittee shall provide notification to the EPA of the vessel selected as Icebreaker #1. The notification shall include a list of all emission sources on board the vessel as well as manufacturer, model and rated capacity of each such emission source, and the conversion efficiency (mechanical to electrical) of each generator on board.

4. **Capacity Limit on Icebreaker #1 Propulsion Engines.** At all times while the Discoverer is an OCS Source and Icebreaker #1 is within 25 miles of the Discoverer, the permittee shall limit operation of the propulsion engines in Icebreaker #1 to no greater than 80 percent of rated capacity.

5. **Annual Emission Limits.** At all times while the Discoverer is an OCS Source and Icebreaker #1 is within 25 miles of the Discoverer, emissions from all emission sources on Icebreaker #1 in aggregate shall not exceed the emission limits specified for each of the pollutants below:

5.1. **NO_X:** 41.59 tons/rolling 12-month period

5.1.1. For compliance with Condition N.5.1, measurement of NOX shall be determined using EPA Method 7E.

6. **Hourly Emission Limits.** Emissions from all emission sources on Icebreaker #1 in aggregate shall not exceed the emission limits specified for each of the pollutants below:

6.1. **NO_X:** 67.96 lbs/hour

6.1.1. For compliance with Condition N.6.1, measurement of NO_X shall be determined using EPA Method 7E.

7. **Daily Emission Limits.** At all times while the Discoverer is an OCS Source and Icebreaker #1 is within 25 miles of the Discoverer, emissions from all emission sources on Icebreaker #1 in aggregate shall not exceed the emission limits specified for each of the pollutants below:

7.1. **PM_{10}:** 277.47 lbs/day

7.1.1. For compliance with Condition N.7.1, measurement of PM_{10} shall be determined using EPA Methods 201A and 202.

7.2. **$PM_{2.5}$:** 269.66 lbs/day

7.3. For compliance with Condition N.7.2, measurement of $PM_{2.5}$ shall be determined using EPA Methods 201A and 202.

8. **Electrical Power Output Limit.** At all times while the Discoverer is an OCS Source and Icebreaker #1 is within 25 miles of the Discoverer, the permittee shall not operate the internal combustion engines in excess of:

   8.1. 28,233,704 kWe-hr from all of the generators on board Icebreaker #1 in aggregate during any rolling 12-month period; or

   8.2. 420,188 kWe-hr from all of the generators on board Icebreaker #1 in aggregate during any calendar day;

9. **Fuel Usage Limit.** At all times while the Discoverer is an OCS Source and Icebreaker #1 is within 25 miles of the Discoverer, the permittee shall not use fuel in excess of:

   9.1. 302,400 gallons in all heat boilers on board Icebreaker #1 in aggregate during any rolling 12-month period; or

   9.2. 1,800 gallons in all heat boilers on board Icebreaker #1 in aggregate during any calendar day; or

   9.3. 100 gallons in Icebreaker #1 seldom used sources in aggregate during any rolling 7-day period. Icebreaker #1 seldom used sources include engines on Icebreaker #1, that are not otherwise identified in the permit as emission units or categories of emission units on Icebreaker #1.

10. **Attachment to Discoverer.** At no time shall Icebreaker #1 be attached to the Discoverer.

11. **Stack Height Limit for Icebreaker #1.** The permittee shall ensure that the stack height of Icebreaker #1 is no less than 24.38 meters. For the purposes of this condition, the permittee shall obtain the stack height information for each vessel to be used as Icebreaker #1.

12. **Stack Test Requirements.** Prior to each of the first two drilling seasons that a vessel is used as Icebreaker #1, and while the Discoverer is operating under this permit in the Chukchi Sea, the permittee shall stack test each propulsion engine, non-propulsion generator engine, boiler and incinerator on Icebreaker #1 as follows:

   12.1. Each stack test on the propulsion engines shall be conducted at three different loads: 30 percent, 60 percent and 80 percent.

   12.2. Each stack test on the non-propulsion generator engines shall be conducted at two different load ranges: 50 – 60 percent and 90 – 100 percent.

   12.3. Each stack test on the boilers shall be conducted at full loads.

   12.4. Each stack test on the incinerator shall be conducted at full load.

   12.5. Each stack test run shall test for emissions of NO_X, NO_2, $PM_{2.5}$, and PM_{10}.

   12.6. During each test run for the propulsion engines, generator engines, and boilers, the permittee shall monitor and record the following information:

      12.6.1. Quantity of fuel used (in gallons);

      12.6.2. Density of the fuel used (in lbs/gallon);

      12.6.3. Heat content of the fuel used (in Btu/gallon);

12.6.4. For the engines, electrical power output (in kWe);

12.6.5. The stack temperature upstream of the SCR catalysis ºC or ºF;

12.6.6. The quantity of urea reagent (in gallons) and the concentration of the urea reagent (in weight percent) introduced into the SCR control system; and

12.6.7. The NO_X concentration (ppm) indicated by the periodic NO_X monitor used for the SCR control system.

12.7. During each test run for the incinerator, the permittee shall monitor and record the quantity of waste material incinerated (in lbs).

12.8. For each engine, each load range, and each pollutant, the permittee shall determine emission factors in the following units: lbs/kWe-hr and lbs/gallon.

12.9. For each boiler, and each pollutant, the permittee shall determine emission factors in the following units: lbs/MMBtu and lbs/gallon.

12.10. For each incinerator, and each pollutant, the permittee shall determine emission factors in the following units: lbs/ton of waste combusted.

13. **Monitoring, Recordkeeping, and Reporting.** The permittee shall:

13.1. Equip each of the propulsion engines and generator engines on board Icebreaker #1 with an electrical output monitoring device:

13.1.1. Each electrical output monitoring device shall measure the electrical output of the generator attached to each engine with an accuracy equal to or better than 2 percent of the engine's maximum output (in kWe);

13.1.2. Each electrical output monitoring device shall measure the electrical output of the generator attached to each engine at least once every 10 minutes; and

13.1.3. Each electrical output monitoring device shall be equipped to record each reading taken as well as provide and record average loads for each hour.

13.2. Maintain the accuracy of each electrical output monitoring device in accordance with manufacturer's recommendations.

13.3. Monitor and record the electrical load for each engine at least once every ten minutes, and record the average hourly load for each hour.

13.4. Equip each of the boilers on board Icebreaker #1 with a diesel fuel flow meter, or install a single fuel meter for all of the boilers:

13.4.1. Each fuel flow meter shall be located so that there is no potential for fuel inflows or outflows between it and the boiler(s) being served by the meter;

13.4.2. Each fuel flow meter shall be totalizing and nonresettable; and

13.4.3. Each fuel flow meter shall measure the fuel flow rate with accuracy equal to or better than 2 percent of the meter's upper range value.

13.5. No less than 60 days before initial deployment of the Discoverer to the Chukchi Sea for the first drilling season, collect information from the manufacturer of each

fuel flow meter so as to determine its accuracy. Submit this information to the EPA no less than 30 days prior to operation within the Chukchi Sea.

13.6. Maintain the accuracy of each fuel flow meter in accordance with manufacturer's recommendations.

13.7. Monitor and record fuel usage for each boiler.

13.8. For each instance in which an Icebreaker #1 seldom used source is operated while the Discoverer is an OCS Source, the permittee shall:

13.8.1. Record the duration of the episode for each such seldom used source;

13.8.2. Record the fuel consumption on a daily basis for each such seldom used source as provided in Condition B.6.4.2; and

13.8.3. Calculate and record for the previous 6 calendar days the rolling 7-day fuel consumption of Icebreaker #1 seldom used sources in aggregate by adding each day's fuel consumption to the total fuel consumed in the previous 6-calendar days.

13.9. At least 45 days before deployment to the Discoverer each drilling season, the permittee shall notify the EPA of the stack height of Icebreaker #1.

13.10. Record any instance that Icebreaker #1 attaches to the Discoverer.

13.11. Each day, calculate and record for the previous calendar day, the emissions of NO_X in pounds per hour and pounds per day and emissions of $PM_{2.5}$ and PM_{10} in pounds per day from the boilers and incinerator by using the highest emission factor for each tested boiler or incinerator collected under Conditions N.12.9 and N.12.10 and fuel usage data collected under Condition N.13.7, to determine emissions from that source. For the purposes of this condition, the permittee shall assume that the incinerator has been operated continuously at the maximum operating rate, and shall use the highest emission factor collected under Condition N.12.10.

13.12. Each day, calculate and record for the previous calendar day, the emissions of NO_X in pounds per hour and pounds per day and emissions of $PM_{2.5}$ and PM_{10} in pounds per day from each engine by using the emission factors for each tested engine collected under Conditions N.12.8 and electrical load data collected under Condition N.13.3, to determine emissions from that source. Emissions shall be calculated for each ten-minute load reading for each engine.

13.13. For the purposes of Conditions N.13.11 and N.13.3, if a specific emission unit has not been tested yet, the permittee shall use the highest emission factor for the corresponding load from the test results for any equivalent emission unit in equivalent service that has already been tested.

13.14. For the purposes of Conditions N.13.11 and N.13.3, if a specific load reading is missing, the permittee shall calculate the emissions for that missing load reading by using the emission factor and load combination that results in the highest emissions rate for that emissions unit. If the engine in question has not been tested yet, the permittee shall use the emission factor as provided for in Condition N.13.13.

13.15. For the purpose of Condition P.13.12, if either the urea pump is not operating or if the catalyst inlet temperature, measured in Condition B.14, is less than 250°C, calculate emissions of NO_X for the affected time period by using an uncontrolled emission factor obtained by applying a 95 percent NO_X reduction efficiency to the emission factor determined pursuant to Condition P.12.8

O. ICEBREAKER #2

1. **Operation of SCR Unit.** At all times that any of the propulsion or generator engines on board Icebreaker #2 are in operation, the exhaust from each engine shall be directed to an operating SCR emission unit.

2. **Operation of Oxidation Catalyst.** At all times that any of the propulsion or generator engines on board Icebreaker #2 are in operation, the exhaust from each engine shall be directed to an operating oxidation catalyst emission unit.

3. **Icebreaker #2 Vessel Alternatives.** For a given drilling season, the permittee may use either the Tor Viking or Hull 247 as Icebreaker #2, subject to the conditions in Section O of this permit. Hull 247 is a temporary vessel name assigned by the shipbuilder, Edison Chouest. This permit is intended to apply to this vessel even when renamed with its permanent name.

   3.1 The total capacity of all propulsion engines on Icebreaker #2 shall not exceed 17,660 hp for the Tor Viking and 24,000 kW for Hull247.

   3.2 The total capacity of all non-propulsion generator engines on Icebreaker #2 shall not exceed 2,336 hp for the Tor Viking and Hull 247 shall not have electrical generation capacity in addition to the engines specified in Condition O.3.1.

   3.3 The total capacity of all boilers on Icebreaker #2 shall not exceed 1.37 MMBtu/hr for the Tor Viking and 4.00 MMBtu/hr for Hull 247.

   3.4 The total capacity of all incinerators on Icebreaker #2 shall not exceed 151.23 lbs/hr.

   3.5 Total uncontrolled emissions of $PM_{2.5}$ from all emission sources on board Icebreaker #2 shall not exceed 11.4 lbs/hour.

      3.5.1 For compliance with Condition O.3.5, measurement of $PM_{2.5}$ shall be determined using EPA Methods 201A and 202.

      3.5.2 For the purposes of Condition O.3.5, emissions from each emission unit shall be based on operation of that emission unit at 100 percent of rated capacity, except for the propulsion engines, for which emissions shall be based on operation of that emission unit at 80 percent of rated capacity.

   3.6 Total uncontrolled emissions of PM_{10} from all emission sources on board Icebreaker #2 shall not exceed 11.7 lbs/hour.

      3.6.1 For compliance with Condition O.3.6, measurement of PM_{10} shall be determined using EPA Methods 201A and 202.

3.6.2 For the purposes of Condition O.3.6, emissions from each emission unit shall be based on operation of that emission unit at 100 percent of rated capacity, except for the propulsion engines, for which emissions shall be based on operation of that emission unit at 80 percent of rated capacity.

3.7 No later than 45 days prior to deployment to the Chukchi Sea each drilling season, the permittee shall provide notification to the EPA of the vessel selected as Icebreaker #2. The notification shall include a list of all emission sources on board the vessel as well as manufacturer, model and rated capacity of each emission source.

4. **Capacity Limit on Icebreaker #2 Propulsion Engines.** At all times while the Discoverer is an OCS Source and Icebreaker #2 is within 25 miles of the Discoverer, the permittee shall limit operation of the propulsion engines in Icebreaker #2 to 80 percent of rated capacity.

5. **Annual Emission Limits.** At all times while the Discoverer is an OCS Source and Icebreaker #2 is within 25 miles of the Discoverer, emissions from all emission sources on Icebreaker #2 in aggregate shall not exceed the emission limits specified for each of the pollutants below:

5.1 **NO_X:** 99.45 tons/rolling 12-month period

5.1.1 For compliance with Condition O.5.1, measurement of NOX shall be determined using EPA Method 7E.

6. **Hourly Emission Limits.** Emissions from all emission sources on Icebreaker #2 in aggregate shall not exceed the emission limits specified for each of the pollutants below:

6.1 **NO_X:** 69.06 lbs/hour

6.1.1 For compliance with Condition O.6.1, measurement of NOX shall be determined using EPA Method 7E.

7. **Daily Emission Limits.** At all times while the Discoverer is an OCS Source and Icebreaker #2 is within 25 miles of the Discoverer, emissions from all emission sources on Icebreaker #2 in aggregate shall not exceed the emission limits specified for each of the pollutants below:

7.1 **PM_{10}:** 281.46 lbs/day

7.1.1 For compliance with Condition O.7.1, measurement of PM_{10} shall be determined using EPA Methods 201A and 202.

7.2 **$PM_{2.5}$:** 273.82 lbs/day

7.2.1 For compliance with Condition O.7.2, measurement of $PM_{2.5}$ shall be determined using EPA Methods 201A and202.

8. **Electrical Power Output Limit.** At all times while the Discoverer is an OCS Source and Icebreaker #2 is within 25 miles of the Discoverer, the permittee shall not operate the internal combustion engines in excess of:

8.1 18,058,216 kWe-hr from all of the generators on board the Tor Viking in aggregate during any rolling 12-month period.

8.2 31,904,074 kWe-hr from all of the generators on board Hull 247 in aggregate during any rolling 12-month period.

8.3 282,867 kWe-hr from all of the generators on board the Tor Viking in aggregate during any calendar day.

8.4 423,936 kWe-hr from all of the generators on board Hull 247 in aggregate during any calendar day.

9. **Fuel Usage Limit.** At all times while the Discoverer is an OCS Source and Icebreaker #2 is within 25 miles of the Discoverer, the permittee shall not use fuel in excess of:

9.1 40,320 gallons in all heat boilers on board the Tor Viking in aggregate during any rolling 12-month period.

9.2 120,960 gallons in all heat boilers on board Hull 247 in aggregate during any rolling 12-month period.

9.3 240 gallons in all heat boilers on board the Tor Viking in aggregate during any calendar day.

9.4 720 gallons in all heat boilers on board Hull 247 in aggregate during any calendar day.

9.5 100 gallons in Icebreaker #2 seldom used sources in aggregate during any rolling 7-day period. Icebreaker #2 seldom used sources include engines on Icebreaker # 2, that are not otherwise identified in the permit as emission units or categories of emission units on Icebreaker #2.

10. **Attachment to Discoverer.** At no time shall Icebreaker #2 be attached to the Discoverer.

11. **Stack Height Limit for Icebreaker #2.** The permittee shall ensure that the stack height of Icebreaker #2 is no less than 24.38 meters. For the purposes of this condition, the permittee shall obtain the stack height information for each vessel to be used as Icebreaker #2.

12. **Stack Test Requirements.** Prior to each of the first two drilling seasons that a vessel is used as Icebreaker #2, and while the Discoverer is operating under this permit in the Chukchi Sea, the permittee shall stack test each propulsion engine, non-propulsion generator engine, boiler and incinerator on Icebreaker #2 as follows:

12.1 Each stack test on the propulsion engines shall be conducted at four different loads: 20 percent, 40 percent, 60 percent, and 80 percent.

12.2 Each stack test on the non-propulsion generator engines shall be conducted at two different load ranges: 50 – 60 percent and 90 - 100 percent.

12.3 Each stack test on the boilers shall be conducted at full loads.

12.4 Each stack test on the incinerator shall be conducted at full load.

12.5 Each stack test run shall test for emissions of NO_X, NO_2, $PM_{2.5}$, and PM_{10}.

12.6 During each test run for the propulsion engines, generator engines, and boilers, the permittee shall monitor and record the following information:

12.6.1 Quantity of fuel used (in gallons);

12.6.2 Density of the fuel used (in lbs/gallon);

12.6.3 Heat content of the fuel used (in Btu/gallon);

12.6.4 For the engines, electrical power output (in kWe);

12.6.5 The stack temperature upstream of the SCR catalysis ºC or ºF;

12.6.6 The quantity of urea reagent (in gallons) and the concentration of the urea reagent (in weight percent) introduced into the SCR control system; and

12.6.7 The NO_X concentration (ppm) indicated by the periodic NO_X monitor used for the SCR control system.

12.7 During each test run for the incinerator, the permittee shall monitor and record the quantity of waste material incinerated (in lbs).

12.8 For each engine, each load range, and each pollutant, the permittee shall determine emission factors in the following units: lbs/kWe-hr and lbs/gallon.

12.9 For each boiler, and each pollutant, the permittee shall determine emission factors in the following units: lbs/MMBtu and lbs/gallon.

12.10 For each incinerator, and each pollutant, the permittee shall determine emission factors in the following units: lbs/ton of waste combusted.

13. **Monitoring, Recordkeeping, and Reporting.** The permittee shall:

13.1 Equip each of the propulsion engines and generator engines on board Icebreaker #2 with an electrical output monitoring device:

13.1.1 Each electrical output monitoring device shall measure the electrical output of the generator attached to each engine with an accuracy equal to or better than 2 percent of the engine's maximum output (in kWe).

13.1.2 Each electrical output monitoring device shall measure the electrical output of the generator attached to each engine at least once every 10 minutes; and

13.1.3 Each electrical output monitoring device shall be equipped to record each reading taken as well as provide and record average loads for each hour.

13.2 Maintain the accuracy of each electrical output monitoring device in accordance with manufacturer's recommendations.

13.3 Monitor and record the electrical load for each engine at least once every ten minutes, and record the average hourly load for each hour.

13.4 Equip each of the boilers on board Icebreaker #2 with a diesel fuel flow meter, or install a single fuel meter for all of the boilers:

13.4.1 Each fuel flow meter shall be located so that there is no potential for fuel inflows or outflows between it and the boiler(s) being served by the meter;

13.4.2 Each fuel flow meter shall be totalizing and non-resettable; and

13.4.3 Each fuel flow meter shall measure the fuel flow rate with accuracy equal to or better than 2 percent of the meter's upper range value.

13.5 No less than 60 days before initial deployment of the Discoverer to the Chukchi Sea for the first drilling season, collect information from the manufacturer of each fuel flow meter so as to determine its accuracy. Submit this information to the EPA no less than 30 days prior to operation within the Chukchi Sea.

13.6 Maintain the accuracy of each fuel flow meter in accordance with manufacturer's recommendations.

13.7 Monitor and record fuel usage for each boiler.

13.8 For each instance in which an Icebreaker #2 seldom used source is operated while the Discoverer is an OCS Source, the permittee shall:

13.8.1 Record the duration of the episode for each such seldom used source;

13.8.2 Record the fuel consumption on a daily basis for each seldom used source as provided in Condition B.6.4.2; and

13.8.3 Calculate and record for the previous 6 calendar days the rolling 7-day fuel consumption of such seldom used sources in aggregate by adding each day's fuel consumption to the total fuel consumed in the previous 6-calendar days.

13.9 At least 45 days before deployment to the Discoverer each drilling season, the permittee shall notify the EPA of the stack height of Icebreaker #2.

13.10 Record any instance that Icebreaker #2 attaches to the Discoverer.

13.11 Each day, calculate and record for the previous calendar day, the emissions of NO_X in pounds per hour and pounds per day and emissions of $PM_{2.5}$ and PM_{10} in pounds per day from the boilers and incinerator by using the highest emission factor for each tested boiler or incinerator collected under Conditions O.12.9 and O.12.10 and fuel usage data collected under Condition O.13.7, to determine emissions from that source. For the purposes of this condition, the permittee shall assume that the incinerator has been operated continuously at the maximum operating rate, and shall use the highest emission factor collected under Condition O.12.10.

13.12 Each day, calculate and record for the previous calendar day, the emissions of NO_X in pounds per hour and pounds per day and emissions of $PM_{2.5}$ and PM_{10} in pounds per day from each engine by using the emission factors for each tested engine collected under Conditions O.12.8 and electrical load data collected under Condition O.13.3, to determine emissions from that source. Emissions shall be calculated for each ten-minute load reading for each engine.

13.13 For the purposes of Conditions O.13.11 and O.13.12, if a specific emission unit has not been tested yet, the permittee shall use the highest emission factor for the corresponding load from the test results from an equivalent emission unit in equivalent service that has already been tested.

13.14 For the purposes of Conditions O.13.11 and O.13.12, if a specific load reading is missing, the permittee shall calculate the emissions for that missing load reading by using the emission factor and load combination that results in the highest emissions

rate for that emissions unit. If the engine in question has not been tested yet, the permittee shall use the emission factor as provided for in Condition O.13.13.

13.15 For the purpose of Condition O.13.12 if either the urea pump is not operating or if the catalyst inlet temperature, measured in Condition B.14, is less than 250°C, calculate emissions of NO_X for the affected time period by using an uncontrolled emission factor obtained by applying a 95 percent NO_X reduction efficiency to the emission factor determined pursuant to Condition O.12.8.

P. SUPPLY SHIP

1. **Operational Limits on Supply Ship Engines.** At all times while the Discoverer is an OCS Source and the supply ship is within 25 miles of the Discoverer, the permittee shall:

   1.1. Not operate the emergency engine on the supply ship.

   1.2. Not use fuel in excess of 1,200 gallons in the Supply Ship propulsion engines and non-propulsion engines in aggregate during any calendar day when in transit to and from the Discoverer.

   1.3. Not use fuel in excess of 4,800 gallons in the supply ship propulsion engines and non-propulsion engines in aggregate during any calendar day when operating in dynamic positioning mode.

2. **Hourly Emission Limits on Supply Ship in Dynamic Positioning Mode.** Emissions from all generator and propulsion engines in aggregate on the supply ship shall not exceed the emission limits specified for each of the pollutants below:

   2.1. **Nitrogen oxides (NO_X):** 117.39 lb/hr

      2.1.1. For compliance with Condition P.2.1, measurement of NO_X shall be determined using EPA Method 7E.

3. **Daily Emission Limits on Supply Ship in Dynamic Positioning Mode.** Emissions from all generator and propulsion engines in aggregate on the supply ship shall not exceed the emission limits specified for each of the pollutants below:

   3.1. **PM_{10}:** 75.09 lbs/day

      3.1.1. For compliance with Condition P.3.1, measurement of PM_{10} shall be determined using EPA Method s 201A and 202.

   3.2. **$PM_{2.5}$:** 75.09 lbs/day

      3.2.1. For compliance with Condition P.3.2, measurement of $PM_{2.5}$ shall be determined using EPA Methods 201A and 202.

4. **Stack Test Requirements.** Prior to each of the first two drilling seasons that the supply ship is used and while the Discoverer is operating under this permit in the Chukchi Sea, the permittee shall stack test each propulsion engine and non-propulsion generator engine on the supply ship as follows:

   4.1. Each stack test on the propulsion engines shall be conducted at four different loads: 20 percent, 40 percent, 60 percent, and 80 percent.

4.2. Each stack test on the non-propulsion generator engines shall be conducted at two different load ranges: 50 - 60 percent and 90 - 100 percent.

4.3. Each stack test run shall test for emissions of NO_X, NO_2, $PM_{2.5}$, and PM_{10}.

4.4. During each test run for the propulsion engines and generator engines the permittee shall monitor and record the following information:

4.4.1. Quantity of fuel used (in gallons);

4.4.2. Density of the fuel used (in lbs/gallon);

4.4.3. Heat content of the fuel used (in Btu/gallon);

4.4.4. For the engines, electrical power output (in kWe);

4.5. For each engine, each load range, and each pollutant, the permittee shall determine emission factors in the following units: lbs/kWe-hr and lbs/gallon.

5. **Monitoring, Recordkeeping and, Reporting**. The permittee shall:

5.1. At all times while the Discoverer is an OCS Source and the supply ship is within 25 miles of the Discoverer, monitor the power output of each propulsion engine on the supply ship at least once every 15 minutes.

5.1.1. The monitored power output shall be recorded as a direct readout value as well as a percentage of the rated capacity of each engine.

5.2. Equip each of the propulsion and non-propulsion engines on the Supply Ship with a diesel fuel flow meter or install a single fuel meter for all of the engines:

5.2.1. Each fuel flow meter shall be located so that there is no potential for fuel inflows or outflows between it and the boiler(s) being served by the meter;

5.2.2. Each fuel flow meter shall be totalizing and non-resettable; and

5.2.3. Each fuel flow meter shall measure the fuel flow rate with accuracy equal to or better than 2 percent of the meter's upper range value.

5.3. No less than 60 days before initial deployment of the Discoverer to the Chukchi Sea for the first drilling season, collect information from the manufacturer of each fuel flow meter so as to determine its accuracy. Submit this information to the EPA no less than 30 days prior to operation within the Chukchi Sea.

5.4. Maintain the accuracy of each fuel flow meter in accordance with manufacturer's recommendations.

5.5. Monitor and record daily fuel usage for the supply ship.

5.6. For each trip to the Discoverer while the Discoverer is an OCS Source, the permittee shall record the following:

5.6.1. The date and time the supply ship came within 25 miles of the Discoverer; and

5.6.2. After the delivery to the Discoverer, the date and time that the supply ship was no longer within 25 miles of the Discoverer.

5.7. Each day, calculate and record for the previous calendar day, the emissions of NO_X in pounds per hour and pounds per day and the emissions of $PM_{2.5}$, and PM_{10} in pounds per day from each engine by using the emission factors for each tested engine collected under Condition P.4.5and recorded fuel use under Condition P.5.3.

5.8. Record the date and time the supply ship ceases operation in dynamic positioning mode.

5.9. Record the date and time the supply ship ceases operation in dynamic positioning mode.

6. **Supply Ship Events.** The total number of events during which the supply ship transits to and from the Discoverer and either attaches to the Discoverer or operates in dynamic positioning mode shall not exceed 8 in any drilling season. Each 24-hour period of operation in dynamic positioning mode is considered a separate supply ship event.

Q. OIL SPILL RESPONSE FLEET

1. **Operation of Catalyzed Diesel Particulate Filter (CDPF).** At all times while the Discoverer is an OCS Source and the Nanuq is within 25 miles of the Discoverer, and any of the Nanuq propulsion engines (Units N-1 - 2) or non-propulsion generator engines (Units N-3 -4) are in operation, the exhaust from each emission unit shall be directed to operating CleanAIR Systems CDPF, as specified by CleanAIR Systems.

1.1. Each CDPF shall be equipped with an operating HiBACK monitor and alarm unit, that records exhaust pressure and temperature.

1.2. During each day that each of Units N-1 - 4 is operated, the exhaust temperature shall be above 300°C, or 572°F, for at least 30 percent of the time.

2. **Annual NO_X Emission Limits.** At all times while the Discoverer is an OCS source and the Oil Spill Response fleet is within 25 miles of the Discoverer, emissions of NO_X from the Oil Spill Response Fleet shall not exceed the emission limits specified below:

2.1. **Nanuq propulsion engines and generators in aggregate (Units N-1 – 4):** 97.11 tons/rolling 12-month period

2.2. **Kvichak Nos. 1-3 propulsion engines in aggregate (Units K1-2, K4-5, and K7-8):** 19.07 tons/rolling 12-month period

2.2.1. For compliance with Conditions Q.2.1and Q.2.2, measurement of NO_X shall be determined using EPA Method 7E.

3. **Hourly Emission Limits:** At all times while the Discoverer is an OCS source and the Oil Spill Response fleet is within 25 miles of the Discoverer, emissions of NO_X from the Oil Spill Response Fleet shall not exceed the emission limits specified below:

3.1. Nanuq propulsion engines and generators in aggregate (Units N-1 – 4):

3.1.1. **NO_X:** 67.44 lbs/hour

3.1.1.1. For compliance with Condition Q.3.1.1, measurement of NO_X shall be determined using EPA Method 7E.

3.2. Kvichak Nos. 1-3 propulsion engines in aggregate (Units K1-2, K4-5, and K7-8):

3.2.1. **NO_X:** 13.24 lb/hr

3.2.1.1. For compliance with Condition Q.3.2.1, measurement of NO_X shall be determined using EPA Method 7E.

4. **Daily Emission Limits:** At all times while the Discoverer is an OCS source and the Oil Spill Response fleet is within 25 miles of the Discoverer, emissions from the Oil Spill Response Fleet shall not exceed the emission limits specified:

4.1. Nanuq propulsion engines and generators in aggregate (Units N-1 – 4):

4.1.1. **PM_{10}:** 3.03 lbs/day

4.1.1.1. For compliance with Condition Q.4.1.1, measurement of PM_{10} shall be determined using EPA Method s 201A and 202.

4.1.2. **$PM_{2.5}$:** 3.03 lbs/day

4.1.2.1. For compliance with Condition Q.4.1.2, measurement of $PM_{2.5}$ shall be determined using EPA Methods 201A and 202.

4.2. Kvichak Nos. 1-3 in aggregate (Units K1-2, K4-5, and K7-8):

4.2.1. **PM_{10}:** 24.34 lbs/day

4.2.1.1. For compliance with Condition Q.4.2.1, measurement of PM_{10} shall be determined using EPA Methods 201A and 202.

4.2.2. **$PM_{2.5}$:** 24.34 lbs/day

4.2.2.1. For compliance with Condition Q.4.2.2, measurement of $PM_{2.5}$ shall be determined using EPA Methods 201A and 202.

5. **Fuel Usage Limit.** At all times while the Discoverer is an OCS Source and the Nanuq is within 25 miles of the Discoverer, the permittee shall not use in excess of:

5.1. 456,000 gallons of fuel in the Nanuq propulsion engines (Units N-1 – 2) and non-propulsion electrical generators (Units N-3 – 4) in aggregate during any rolling 12-month period.

5.2. 3,800 gallons of fuel in the Nanuq propulsion engines (Units N-1 – 2) and non-propulsion electrical generators (Units N-3 – 4) in aggregate during any calendar day.

5.3. 100 gallons of fuel in the Nanuq seldom used sources in aggregate during any rolling 7-day period. The Nanuq seldom used sources include engines on the Nanuq that are not otherwise identified in the permit as emission units or categories of emission units on the Nanuq.

5.4. 2856 gallons of fuel in the Kvichak Nos. 1-3 in aggregate during any rolling 7-day period.

6. **Operating Location.** Except for transport of crew and supplies to and from the Discoverer or when responding to an oil spill, the oil spill response fleet shall operate at a location that is downwind from the Discoverer.

7. **Attachment to Discoverer.** At no time shall the Nanuq or any of the Kvichak work boats be attached to the Discoverer.

8. **Stack Test Requirements.** Prior to each of the first two drilling seasons while the Discoverer is operating under this permit in the Chukchi Sea, the permittee shall stack test at least one of the Nanuq propulsion engines (Units N-1 – 2) and one of the Nanuq non-propulsion generator engines (Units N-3 – 4) as follows:

   8.1. At the end of two drilling seasons that the Discoverer operates under this permit in the Chukchi Sea, all of Units N-1 – 4 shall have been stack tested under the requirements of this section.

   8.2. Each stack test shall be conducted at four different loads - 25 percent, 50 percent, 75 percent and 100 percent for the propulsion engines and at two loads – 50 percent and 100 percent for the non-propulsion engines.

   8.3. Each stack test run shall test for emissions of NO_X and NO_2.

   8.4. During each test run, the permittee shall monitor and record the following information:

      8.4.1. Quantity of fuel used (in gallons);

      8.4.2. Density of the fuel used (in lbs/gallon);

      8.4.3. Heat content of the fuel used (in Btu/gallon); and

      8.4.4. Electrical power output (in kWe).

   8.5. For each engine, each load, and each pollutant, the permittee shall determine emission factors in the following units: lbs/kWe-hr and lbs/gallon.

9. **Monitoring, Recordkeeping and Reporting.** The permittee shall:

   9.1. Equip each of Units FD-N-1 - 4 with a diesel fuel flow meter, or install a single fuel meter for all of Units FD-N-1 - 4:

      9.1.1. Each fuel flow meter shall be located so that there is no potential for fuel inflows or outflows between it and the engine(s) being served by the meter;

      9.1.2. Each fuel flow meter shall be totalizing and non-resettable; and

      9.1.3. Each fuel flow meter shall measure the fuel flow rate with accuracy equal to or better than 2 percent of the meter's upper range value.

   9.2. No less than 60 days before initial deployment of the Discoverer to the Chukchi Sea for the first drilling season, collect information from the manufacturer of each fuel flow meter so as to determine its accuracy. Submit this information to the EPA no less than 30 days prior to operation within the Chukchi Sea.

   9.3. Maintain the accuracy of each fuel flow meter in accordance with manufacturer's recommendations.

   9.4. Monitor and record fuel usage for each propulsion and generator engine (Units N-1 – 4) on a daily basis.

9.5. For each instance in which a Nanuq seldom used source is operated while the Discoverer is an OCS Source, the permittee shall:

9.5.1. Record the duration of the episode for each such seldom used source;

9.5.2. Record the fuel consumption on a daily basis for each such seldom used source as provided in Condition B.6.4.2; and

9.5.3. Calculate and record for the previous 6 calendar days the rolling 7-day fuel consumption of the Nanuq seldom used sources in aggregate by adding each day's fuel consumption to the total fuel consumed in the previous 6-calendar days.

9.6. Record any instance that the Nanuq or Kvichak work boats attach to the Discoverer.

9.7. Each day, calculate and record for the previous calendar day, the emissions of NO_X, using the highest emission factor for each tested engine collected under Condition Q.8.5 and fuel usage data collected under Condition Q.9.4.

9.8. Monitor and record the exhaust temperature of each engine by use of the HiBACK monitor and alarm unit, while the engine is in operation.

9.9. Each day, calculate and record for the previous calendar day, the percent of operational time for each engine that the exhaust temperature was above 300°C (572°F).

R. POST-CONSTRUCTION AMBIENT AIR QUALITY MONITORING

1. **Ambient Air Quality Monitoring Station.** The permittee shall install, operate and maintain a Federal Reference Method or Federal Equivalent Method ambient air quality monitoring station to measure and record $PM_{2.5}$ concentration data in accordance with EPA, 1984a: Ambient Monitoring Guidelines for Prevention of Significant Deterioration (PSD), EPA-450/4-87-007, May 1987, U.S. Environmental Protection Agency, Research Triangle Park, NC.

1.1. An alternative $PM_{2.5}$ monitoring station may be used in lieu of the required monitoring station provided that approval of the monitoring station is obtained from the EPA;

1.2. The permittee shall use a continuous sampler and a manual sampler to measure $PM_{2.5}$. In addition, filters from the manual sampler shall be analyzed as provided for in the EPA-approved ambient air quality and meteorological monitoring plan required pursuant to Condition R.3 to allow for the chemical speciation of $PM_{2.5}$ constituents, including but not limited to sulfates, nitrates, organics, metals, sea salt and crustal matter.

1.3. The monitoring period shall commence within 120 days after the final permit is issued and shall continue for a minimum of 1 year after commencement of initial operation of the Discoverer in the Chukchi Sea as an OCS Source;

1.4. The data recovery shall be as provided for in the EPA-approved ambient air quality and meteorological monitoring plan required pursuant to Condition R.3; and

1.5. The monitoring station shall continue to operate and record data until such time that written approval is obtained from the EPA authorizing the termination of its operation.

2. **Meteorological Monitoring Station.** The permittee shall install, operate and maintain a meteorological monitoring station to monitor and record data in accordance with EPA, 1984a: Ambient Monitoring Guidelines for Prevention of Significant Deterioration (PSD), EPA-450/4-87-007, May 1987, U.S. Environmental Protection Agency, Research Triangle Park, NC.

2.1. An alternative meteorological monitoring station may be used in lieu of the required monitoring station provided that approval of the monitoring station is obtained from the EPA;

2.2. Data shall include horizontal wind direction and speed, temperature, solar radiation and temperature difference;

2.3. Each quarter's data recovery shall be as provided for in the EPA-approved ambient air quality and meteorological monitoring plan required pursuant to Condition R.3;

2.4. The monitoring period shall commence within 120 days after the final permit is issued and shall continue for a minimum of 1 year after commencement of operation of the OCS Source; and

2.5. The monitoring station shall continue to operate and record data until such time that written approval is obtained from the EPA authorizing the termination of its operation.

3. **Ambient Air Quality and Meteorological Monitoring Plan.** At least 60 days prior to the commencement of the data collection, the permittee shall submit to the EPA for approval an ambient air quality and meteorological monitoring plan for the post-construction monitoring requirements specified in Conditions R.1 and R.2 in accordance with the requirements of 40 CFR Part 58, Appendix A "Quality Assurance Requirements for SLAMS, SPMs and PSD Air Monitoring." The plan shall include a description of the proposed monitoring site.

4. **Monthly Reporting.** Within 45 days after the end of each calendar month, the permittee shall submit to the EPA a printed summary of the $PM_{2.5}$ and meteorological monitoring data collected during the prior calendar month.

5. **Audit Reports.** The permittee shall submit audit reports with 45 days after the following events:

5.1. Completion of the post-installation equipment audit;

5.2. Completion of independent performance and system audits;

5.3. Completion of quarterly audits required for ambient air quality data collection system; and

5.4. Completion of the semi-annual audits required for the meteorological data collection system.

Quarterly and semi-annual audit periods shall be based on a calendar year.

6. **Annual Report.** Within 60 days after the end of each calendar year and following completion of the collection of monitoring, the permittee shall submit to the EPA annual/final reports in text, tabular, and graphic forms, including data in digitized format. The digitized formats of the measured air quality and meteorological data shall be in ASCII format and AIRS format.

7. **System and Performance Audit Report**. Within 60 days after completion of data collection, the permittee shall also submit the final report for the system and performance audits required prior to monitoring termination.

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ATTACHMENT A: EPA NOTIFICATION FORM

Excess Emissions and Permit Deviation Reporting

OCS Source (Facility) Name **Air Quality Permit Number**

Company Name

When did you identify the Excess Emissions/Permit Deviation?

Date: / / Time: :

When did the event/deviation occur?

Begin: Date: / / Time: : (please use 24hr clock)

End: Date: / / Time: : (please use 24hr clock)

What was the duration of the event/deviation: : (hrs:min) or days
(total # of hrs, min, or days, if intermittent then include only the duration of the actual emissions/deviation)

Reason for notification: (please check only 1 box and go to the corresponding section)
☐Excess Emissions Complete Section 1 and Certify
☐Deviation from Permit Conditions Complete Section 2 and Certify
☐Deviation from Compliance Order by Consent, Compliance Order, or Settlement Agreement Complete Section 2 and Certify

Section 1. Excess Emissions

(a) Was the exceedance ☐Intermittent or ☐Continuous

(b) Cause of Event (Check one that applies):
☐Start Up/Shut Down ☐Natural Cause (weather/earthquake/flood)
☐Control Equipment Failure ☐Scheduled Maintenance/Equipment Adjustments
☐Bad fuel/coal/gas ☐Upset Condition ☐Other

(c) Description:
Describe briefly what happened and the cause. Include the parameters/operating conditions exceeded, limits, monitoring data and exceedance.

(d) Emission Units Involved:
Identify the emission units or source involved in the event, using the same identification number and name as in the permit. Identify each emission standard (including any throughput limit) potentially exceeded during the event and the exceedance.

Unit ID	Emission Unit Name	Permit Condition Exceeded/Limit/ Potential Exceedance

(e) Type of Incident (please check only one):

☐Opacity percent ☐Venting (gas/scf) ☐Control Equipment Down
☐Fugitive Emissions ☐Emission Limit Exceeded ☐Record Keeping Failure
☐Marine Vessel Opacity ☐Flaring ☐Other:

(f) Unavoidable Emissions:
Do you intend to assert that these excess emissions were unavoidable? ☐YES ☐NO

Certify Report (go to end of form)

Section 2. Permit Deviations

(a) Permit Deviation Type (check one only) (check boxes correspond with sections in permit):
☐ Source Specific
☐ Failure to monitor/report
☐ General Source Test/Monitoring Requirements
☐ Recordkeeping/Reporting/Compliance Certification
☐ Standard Conditions Not Included in Permit
☐ Generally Applicable Requirements
☐ Reporting/Monitoring for Diesel Engines
☐ Insignificant Source
☐ Facility Wide
☐ Other Section: (title of section and section # of your permit)

(b) Emission Units Involved:
Identify the source involved in the event, using the same identification number and name as in the permit. List the corresponding Permit condition and the deviation.

Unit ID	Emission Unit Name	Permit Condition /Potential Deviation

(c) Description of Potential Deviation:
Describe briefly what happened and the cause. Include the parameters/operating conditions and the potential deviation.

(d) Corrective Actions:
Describe actions taken to correct the deviation or potential deviation and to prevent future recurrence.

Certification:
Based on information and belief formed after reasonable inquiry, I certify that the statements and information in and attached to this document are true, accurate, and complete.

Printed Name **Title** **Date**

Signature **Phone number**

To Submit this Report:

1. Fax this form to: Facsimile no. 206-553-0110

   Or

2. E-mail to: R10OCSAirPermits_Reports@epa.gov

   Or

3. Mail to: OCS/PSD Air Quality Permits
   U.S. EPA - Region 10, AWT-107
   1200 Sixth Avenue, Suite 900
   Seattle, WA 98101

ATTACHMENT B: VISIBLE EMISSIONS FIELD DATA SHEET

Permit No. R10OCS/PSD-AK-09-01

Certified Observer: _____

Company & Stationary Source: _____

Location: _____

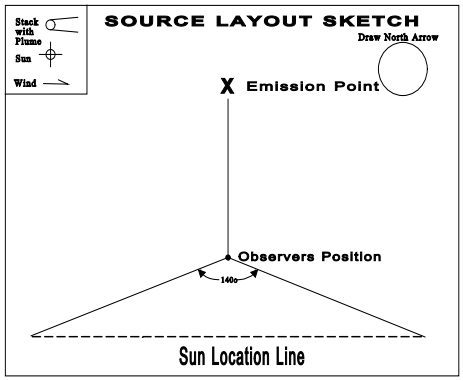
Test No.: _____ Date: _____

Emission Unit: _____

Operating Rate: _____

_____

_____



Clock Time	Initial				Final
Observer location Distance to discharge					
Direction from discharge					
Height of observer point					
Background description					
Weather conditions Wind Direction					
Wind speed					
Ambient temperature					
Relative humidity					
Sky conditions: (clear, overcast, % clouds, etc.)					
Plume description: Color					
Distance visible					
Water droplet plume? (Attached or detached?)					
Other information					

Page ___ of ___

Company & Stationary Source_____ Certified Observer_____

Test Number _____ Clock time_____

Date:		Visibility Reduction Every 15 Seconds (Opacity)				Steam Plume (check if applicable)		Comments
Hr	Min	0	15	30	45	Attached	Detached	

Additional information:

_____ _____
Observer Signature and Date Certified By and Date

Data Reduction:

Duration of Observation Period (minutes) _____ Duration Required by Permit (minutes)_____
Number of Observations _____ Highest Six –Minute Average Opacity (%)_____
Number of Observations exceeding 20 % _____

Average Opacity Summary

Set Number	Time Start—End	Opacity	
		Sum	Average