



**PERMIT to OPERATE 9114 – R5
and
PART 70 OPERATING PERMIT 9114**

**DOS CUADRAS - SOUTH COUNTY
PLATFORM HILLHOUSE**

**PARCEL OCS-P-0240
DOS CUADRAS FIELD
SANTA BARBARA COUNTY, CALIFORNIA
OUTER CONTINENTAL SHELF**

OPERATOR

DCOR, LLC.

OWNERSHIP

DCOR, LLC.

**Santa Barbara County
Air Pollution Control District**

June 2018

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ABBREVIATIONS/ACRONYMS

AP-42	USEPA's <i>Compilation of Emission Factors</i>
API	American Petroleum Institute
ASTM	American Society for Testing Materials
BACT	Best Available Control Technology
CAM	compliance assurance monitoring
CEMS	continuous emissions monitoring
CO	carbon monoxide
District	Santa Barbara County Air Pollution Control District
dscf	dry standard cubic foot
°F	degree Fahrenheit
gal	gallon
GHG	greenhouse gases
gr	grain
HAP	hazardous air pollutant (as defined by CAAA, Section 112(b))
H ₂ S	hydrogen sulfide
I&M	inspection & maintenance
k	kilo (thousand)
l	liter
lb	pound
lbs/day	pounds per day
lbs/hr	pounds per hour
LACT	Lease Automatic Custody Transfer
LPG	liquid petroleum gas
M	mille (thousand)
MACT	Maximum Achievable Control Technology
MM	million
MW	molecular weigh
NG	natural gas
NO _x	Oxides of nitrogen
NSPS	New Source Performance Standards
NESHAP	National Emission Standards for Hazardous Pollutants
O ₂	oxygen
OCS	outer continental shelf
ppm(vd or w)	parts per million (volume dry or weight)
psia	pounds per square inch absolute
psig	pounds per square inch gauge
PM/PM ₁₀ /PM _{2.5}	Particulate matter; Particulate matter of 10 microns diameter or less; Particulate matter of 2.5 microns diameter or less.
PRD	pressure relief device
PTO	Permit to Operate
RACT	Reasonably Available Control Technology
ROC	reactive organic compounds, same as "VOC" as used in this permit
RVP	Reid vapor pressure
scf	standard cubic foot
scfd (or scfm)	standard cubic feet per day (or per minute)
SIP	State Implementation Plan
SO _x	Sulfur oxides
STP	standard temperature (60°F) and pressure (29.92 inches of mercury)
THC	Total hydrocarbons
tpy, TPY	tons per year
TVP	true vapor pressure
USEPA	United States Environmental Protection Agency
VE	visible emissions
VRS	vapor recovery system

1.0 Introduction

1.1 Purpose

General: The Santa Barbara County Air Pollution Control District (District) is responsible for implementing all applicable federal, state and local air pollution requirements which affect any stationary source of air pollution in Santa Barbara County. The federal requirements include regulations listed in the Code of Federal Regulations: 40 CFR Parts 50, 51, 52, 55, 61, 63, 68, 70 and 82. The State regulations may be found in the California Health & Safety Code, Division 26, Section 39000 et seq. The applicable local regulations can be found in the District's Rules and Regulations. This is a combined permitting action that covers both the Federal Part 70 permit (*Part 70 Operating Permit 9114*) as well as the State Operating Permit (*Permit to Operate 9114*).

Santa Barbara County is designated as an ozone non-attainment area for the state ambient air quality standards. The County is also designated a non-attainment area for the state PM₁₀ ambient air quality standard.

Part 70 Permitting. This is the fifth renewal of the DCOR OCS Platform Hillhouse's Part 70 operating permit based on the permit renewal requirements of the District's Part 70 operating permit program. It contains any new applicable requirements and all equipment changes since the last Part 70 permit issuance. Platform Hillhouse is a part of the Dos Cuadras - South County stationary source (SSID 8003), which is a major source for VOC¹, NO_x and CO. Conditions listed in this permit are based on federal, state or local rules and requirements. Sections 9.A, 9.B and 9.C of this permit are enforceable by the District, the USEPA and the public since these sections are federally enforceable under Part 70. Where any reference contained in Sections 9.A, 9.B or 9.C refers to any other part of this permit, that part of the permit referred to is federally enforceable. Conditions listed in Section 9.D are "District-only" enforceable.

Pursuant to the stated aims of Title V of the CAAA of 1990 (i.e., the Part 70 operating permit program), this permit has been designed to meet two objectives. First, compliance with all conditions in this permit would ensure compliance with all federally enforceable requirements for the facility. Second, the permit would be a comprehensive document to be used as a reference by DCOR, the regulatory agencies and the public to assess compliance.

This reevaluation incorporates greenhouse gas emission calculations for the stationary source. On January 20, 2011, the District revised Rule 1301 to include greenhouse gases (GHGs) that are "subject to regulation" in the definition of "Regulated Air Pollutants". District Part 70 operating permits incorporate the revised definition.

¹ VOC as defined in Regulation XIII has the same meaning as reactive organic compounds as defined in Rule 102. The term ROC shall be used throughout the remainder of this document, but where used in the context of the Part 70 regulation, the reader shall interpret the term as VOC.

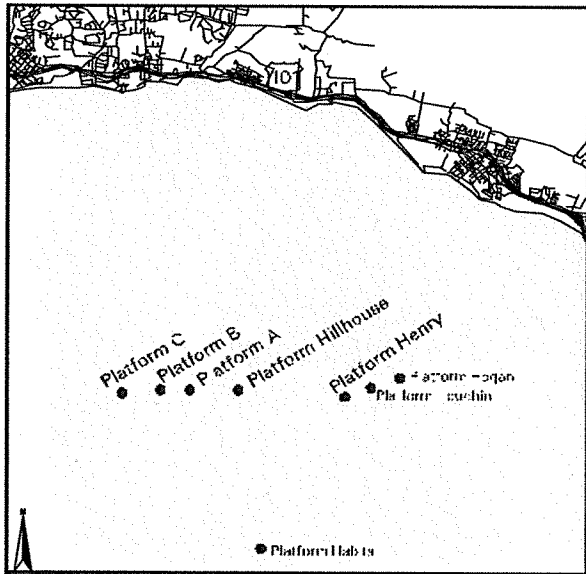
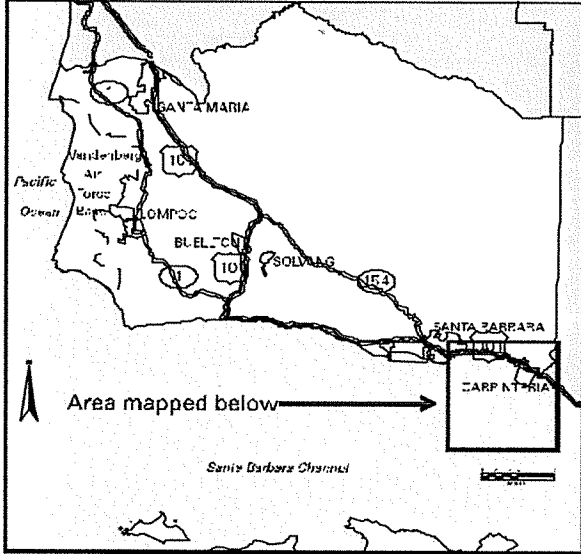
1.2 Facility Overview

- 1.2.1 Facility Overview: DCOR, LLC. is the principal owner and operator of Platform Hillhouse, located on offshore lease tract OCS-P-0241, approximately six miles south-southeast from the City of Santa Barbara, California (Lambert Zone coordinates $x = 987,642$ feet, $y = 787,500$). DCOR has a 100% ownership interest in Platform Hillhouse. For District regulatory purposes, the facility location is in the Southern Zone of Santa Barbara County². Figure 1.1 shows the relative location of the facility within the county.

² District Rule 102, Definition: "Southern Zone"

Figure 1.1 Location Map for Platform Hillhouse

Dos Cuadras - South County



Platform Hillhouse (FID 8005) a twelve leg, sixty-well slot platform, was installed in a water depth of 190 feet in 1969, drilling operations began in 1970. Oil and natural gas produced from the platform, as well as oil and sweet gas received from Platform Henry, are transported via two sub-sea pipelines to DCOR's Platform A (on contiguous OCS tract P-0241). The average gravity and true vapor pressure of the produced crude oil in 2016 was 22.7° API and 1.3 psia (at 82° F), respectively. The platform was initially designed to produce 15 million standard cubic feet gas and 30,000 barrels per day (bpd) of wet crude oil (oil/water emulsion); in 2016, in 2016, the platform's approximate production rates were: 523 bopd, 0.779 MMscfd of gas, and 7,367 bpd of wastewater.

The *Dos Cuadras - South County* stationary source consists of the following five facilities:

- Platform A (FID 8003)
- Platform B (FID 8004)
- Platform C (FID 8006)
- Platform Hillhouse (FID 8005)
- Platform Henry (FID 8007)

Platform Hillhouse consists of the following systems:

- Production wellhead and subsurface system
- Well cleanup system
- Test separation system
- Oil shipping, metering, and pipeline system
- Produced water system
- Low pressure compression system
- Gas compression system
- Gas shipping and metering system
- Electrical system
- Safety system
- Flare relief system

The oil and gas undergo initial separation to reduce water and sediment content prior to being shipped to the DCOR's Platform A. All equipment on Platform Hillhouse, except the two pedestal cranes and an emergency electrical generator, are powered by the SCE electric grid provided through a 34.5 kV sub-sea cable from shore.

- 1.2.2 Facility Permitting History: Since the issuance of the last operating permit, PTO 9114-R4 in December 2014, there have been no permitting actions.

1.3 **Emission Sources**

Air pollution emissions from Platform Hillhouse are the result of combustion sources, storage tanks and piping components, such as valves and flanges. Section 4 of the permit provides the District's engineering analysis of these emission sources. Section 5 of the permit describes the allowable emissions from each permitted emissions unit, the platform as a whole; it also lists the potential emissions from non-permitted emission units.

The emission sources include:

1. Crew boats, supply boats, and emergency response boats.
2. One 25-ton pedestal crane operated by a diesel internal combustion engine.
3. One 15-ton pedestal crane operated by a diesel internal combustion engine.
4. Two (2) emergency diesel-fired generators that are operated in power/drilling situations and tested weekly.
5. One stand-by diesel-fired fire water pump that is operated in emergency situations.
6. Piping components, produced water tanks, pigging and other evaporative emission units that release fugitive hydrocarbons into the atmosphere.
7. Fugitive hydrocarbons emitted into the atmosphere from solvent use.
8. Flare relief system to combust hydrocarbon gases.

A list of all permitted equipment is provided in Section 10.4.

1.4 Emission Control Overview

Air quality emission controls are utilized on Platform Hillhouse for a number of emission units to reduce air pollution emissions. Additionally, the use of onshore utility grid power allows Platform Hillhouse to operate without large gas turbine-powered generators or compressors. The emission controls employed on the platform include:

- A Fugitive Hydrocarbon Inspection & Maintenance (I&M) program for detecting and repairing leaks of hydrocarbons from piping components, consistent with the requirements of Rule 331, to reduce ROC emissions by approximately 80 percent.
- Using Tier 2 main engines and Tier 3 auxiliary engines on both the prime crew boat and the prime supply boat. The main engines on these two boats achieve a NO_x emission rate of 5.99 g/bhp-hr.
- Use of Tier 2 main engines and Tier 4 auxiliary engines on the emergency response boats. The main engines on these boats achieve a NO_x emission rate of 6.76 g/bhp-hr. The NO_x emission rate for the auxiliary engines is 5.04 g/bhp-hr.
- Use of Type "B" diesel fuel injectors on both the 15-ton and 25-ton pedestal crane engines; this allows the *North Pedestal Crane engine (25-ton)* to achieve NO_x emissions of 700 ppmv at 15% O₂, consistent with the Rule 333 limit.
- Use of a flare relief system to combust waste hydrocarbon gases that would otherwise be released directly to the atmosphere.

1.5 Offsets/Emission Reduction Credit Overview

This facility does not require emission offsets nor does it provide emission reduction credits.

1.6 Part 70 Operating Permit Overview

- 1.6.1. **Federally-enforceable Requirements:** All federally enforceable requirements are listed in 40 CFR Part 70.2 (*Definitions*) under “applicable requirements.” These include all SIP-approved District Rules, all conditions in the District-issued Authority to Construct permits and all conditions applicable to major sources under federally promulgated rules and regulations. All permits (and conditions therein) issued pursuant to the OCS Air Regulation are federally enforceable. All these requirements are also enforceable by the public under CAAA. (*See Tables 3.1 and 3.2 for a list of federally enforceable requirements*).
- 1.6.2. **Insignificant Emissions Units:** Insignificant emission units are defined under District Rule 1301 as any regulated air pollutant emitted from the unit, excluding Hazardous Air Pollutants (HAPs), that are less than 2 tons per year based on the unit’s potential to emit and any HAP regulated under section 112(g) of the Clean Air Act that does not exceed 0.5 ton per year based on the unit’s potential to emit. Insignificant activities must be listed in the Part 70 application with supporting calculations. Applicable requirements may apply to insignificant units. (*See Attachment 10.4 for the Insignificant Emissions Unit List.*)
- 1.6.3. **Federal Potential to Emit:** The federal potential to emit (PTE) of a stationary source does not include fugitive emissions of any pollutant, unless the source is: (1) subject to a federal NSPS/NESHAP requirement which was in effect as of August 7, 1980, or (2) included in the 29-category source list specified in 40 CFR 51.66 or 52.21. The federal PTE does include all emissions from any insignificant emissions units. Platform Hillhouse is not subject to any NSPS or NESHAP; thus, its fugitive emissions are not listed in its federal PTE. (*See Section 5.4 for the federal PTE for this source.*)
- 1.6.3. **Federal Potential to Emit:** The federal potential to emit (PTE) of a stationary source does not include fugitive emissions of any pollutant, unless the source is: (1) subject to a federal NSPS/NESHAP requirement which was in effect as of August 7, 1980, or (2) included in the 29-category source list specified in 40 CFR 51.66 or 52.21. Thus, its fugitive emissions are not listed in its federal PTE. The federal PTE does include all emissions from any insignificant emissions units. Five internal combustion engines Platform Hillhouse are subject to NESHAP per 40 CFR Part 63 {*MACT Standards Subpart ZZZZ*}. (*See Section 5.4 for the federal PTE for this source.*)
- 1.6.4. **Permit Shield:** The operator of a major source may be granted a shield: (a) specifically stipulating any federally enforceable conditions that are no longer applicable to the source and (b) stating the reasons for such non-applicability. The permit shield must be based on a request from the source and its detailed review by the District. Permit shields cannot be granted indiscriminately with respect to all federal requirements. DCOR has not made a request for a permit shield.
- 1.6.5. **Alternate Operating Scenarios:** A major source may be permitted to operate under different operating scenarios, if appropriate descriptions of such scenarios are included in its Part 70 permit application and if such operations are allowed under federally-enforceable rules. DCOR has made no request for permitted alternative operating scenarios.

- 1.6.6. Compliance Certification: Part 70 permit holders must certify compliance with all applicable federally enforceable requirements including permit conditions. Such certification must accompany each Part 70 permit application; and, be re-submitted annually on or before March 1st or on a more frequent schedule, as specified in the permit. Each certification is signed by a “responsible official” of the owner/operator company whose name and address is listed prominently in the Part 70 permit. (See Section 1.6.10 below)
- 1.6.7. Permit Reopening: Part 70 permits are re-opened and revised if the source becomes subject to a new rule or new permit conditions are necessary to ensure compliance with existing rules. The permits are also re-opened if they contain a material mistake or the emission limitations or other conditions are based on inaccurate permit application data. (See Section 4.10.3, CAM Rule)
- 1.6.8. MACT/Hazardous Air Pollutants (HAPs): Part 70 permits also regulate emission of HAPs from major sources through the imposition of maximum achievable control technology (MACT), where applicable. See Sections 3.2.5 for specifics on 40 CFR 63, Subpart HH and Section 3.2.6 on 40 CFR 63, Subpart ZZZZ.
- 1.6.9. Compliance Assurance Monitoring (CAM): The CAM rule became effective on April 22, 1998. This rule affects emission units at the source subject to a federally enforceable emission limit or standard that uses a control device to comply with the emission standard, and either pre-control or post-control emissions exceed the Part 70 source emission thresholds. Sources subject to CAM Rule must submit a CAM Rule Compliance Plan along with their Part 70 operating permit renewal applications. (See Section 4.9.3). The District has determined that no emissions unit at this facility is subject to CAM Rule.
- 1.6.10 Responsible Official: The designated responsible official and the official’s mailing address is:

Mr. Bob Garcia, Vice President, California Offshore Operations
DCOR, LLC.
290 Maple Court, Suite 290
Ventura, California 93003

2.0 Process Description

2.1 Process Summary

- 2.1 Process Summary: Platform Hillhouse produces both oil and gas. Production equipment includes oil and gas separators, treaters, a LACT unit, oil shipping pumps, gas compressors, flotation cell units, and water treating and injection equipment. Platform Hillhouse has minimal production facilities, as there is no crude oil or gas dehydration or treating equipment on the platform. The wet crude oil and natural gas produced from the platform are sweet and have low concentrations of H₂S and mercaptans.

Crude oil and wet natural gas are shipped through separate sub-sea pipelines first to Platform A and from there to the Rincon Onshore Oil and Gas facility in Ventura County for further processing. Oil and gas from DCOR's Platform Henry are received on Platform Hillhouse and combined with Hillhouse production prior to shipment to Platform A and the Rincon facility. Produced water from Platforms Henry and Hillhouse is treated and either disposed of offshore in accordance with NPDES permit conditions or pumped into an injection well.

- 2.1.1 Production: Platform Hillhouse has 60 well slots located in two well bays. There is presently a total of 47 production wells and one (1) injection well. Nuevo drilled its last well (A-54) in 1995. One well, A-55, a *de minimis* project, implemented in May 2000, has been abandoned. The wells are not free flowing; submersible pumps, progressive cavity pumps, or rod pumps have been installed in all wells in order to produce them. Platform Hillhouse has a design production rate of 30,000 bpd (barrels per day) of crude oil (oil and water) and 15 MMscfd (million standard cubic feet) of natural gas.

The oil production flow line from each wellhead ties into one of three separate piping manifolds or headers. These three manifolds are the production header, test header, and well clean-up header. Normally, each well flows into one of the two production headers and from there into the production separators (MBD-1201, 1202). Redundant production systems are provided on the platform to allow equipment maintenance and repair without having to interrupt production.

Two test headers and test separators (MBD-1203 and MBD-1204) are used to flow test the individual production wells. For the flow test, the well is switched from the production header to the test header. Only one well is tested at a time in each test separator. The well clean-up header and separator (MBD-1211) is used to start-up a well after testing or work over activities are completed. For the first few hours when a well is brought back on line, gas surges and contamination from drilling fluids or reservoir sand can occur. The well clean-up separator is a vertical vessel with a high gas capacity. After the flow rate stabilizes and any drilling fluids are removed, the well is switched to the production header and separator.

From the production, test, and well clean-up separators, the crude oil flows to treaters (MBK-1221 or MBK-1222). Platform Hillhouse treaters also process crude oil received from Platform Henry via a sub-sea pipeline. Crude oil from Platform Henry first enters an oil surge tank (MBJ-1205) before it flows to the treaters. The treaters are larger than the separators and are used to reduce the water cut (*i.e.*, water concentration) of the crude oil. Oil and water separation in the treater takes place through gravity and electrostatic methods; the water cut of the crude oil leaving the treater is controlled at approximately 5 percent. Produced water is pumped directly to the (Wemco) floatation cell units.

The oil from the treaters is pumped to the production surge vessel (MZZ-1231). The vessel provides surge capacity and adequate suction pressure for the LACT (Lease Automatic Custody Transfer) pumps (PBA-3231 and PBA-3232). From the LACT unit, oil goes to the metered surge vessel (MAV-1241) and is then pumped by the oil shipping pumps (PAX-3211, PAX-3212, and PAX-3213) to Platform A via an eight-inch sub-sea pipeline. A turbine meter is provided on the pipeline to measure the oil flow rate and measure the total amount of oil transferred.

No gas processing (*e.g.*, sweetening or dehydration) is done on Platform Hillhouse. Gas from the separators, treaters, and surge vessels is compressed and commingled with the gas received from Platform Henry. The combined gas stream is shipped in an eight-inch sub-sea pipeline to the Rincon onshore plant for processing.

- 2.1.2 Gas, Oil, and Water Separation: Fluid from the production wells is a mixture of oil, gas, and water. The separation of the streams is accomplished in production separators (MBD-1201 and MBD-1202). They are horizontal 6' diameter by 18'3" seam-to-seam, two-phase separators (one gas phase outlet and one liquid phase outlet). Each separator has a capacity of 18,000 bpd of crude oil and 15 MMscfd of natural gas. The wells are produced directly into the production separators. The production from all the wells on Platform Hillhouse is normally handled by these two separators.

The production separators operate at 40 psig and 90°F. The gas section (top half) of the separator is sized to sufficiently reduce the gas velocity to cause any liquid to drop out. The separators also have a mist extractor to promote removal of liquid droplets from the gas stream. The gas from the production separators flows to the filter separator (MAK-1263). Liquid droplets removed in the filter separator go to the north and south treaters (MBK-1221 and MBK-1222); gas from the filter separator goes to the suction line for the Ariel and Worthington compressors.

The liquid section (bottom half) of the separator is designed to provide sufficient retention time to allow entrained gas to bubble off from the liquid, but is not large enough to allow separation of the oil and water into two separate streams. The liquid level in the production separator is automatically controlled by a level control valve. The oil and water discharged from the production separator flows to the north and south treaters.

North and south treaters (MBK-1221 and MBK-1222) are electrostatic dehydrators that remove emulsified water from the oil. The oil and water emulsion flows through electrically charged grids in each treater, where the dispersed water droplets are electrically charged. The charged droplets repel and attract each other until they collide and coalesce and then settle out of the oil by gravity separation. About 10,000 bpd of water is removed in the treaters. The horizontal treaters are 10' diameter by 20' seam-to-seam vessels that normally operate at 30 psig.

Water and crude oil levels in the treaters are independently controlled. The water level controller governs the pumping rate of the produced water from the treaters to the Wemco floatation cell units (ABM-1273 and ABM-1277). The oil level controller controls the pumping rate of oil to the production surge vessel (MZZ-1231).

- 2.1.3 Waste Water Treatment: Platform Hillhouse has a produced water treating and disposal system. Two Wemco floatation cell units (ABM-1273 and ABM-1277) treat the produced water separated in the treaters. The Wemco units each have a design capacity of 15,000 bpd and can operate in series or parallel. About 10,000 bpd of water is separated from the oil in the treaters; clean water from the Wemco units is pumped to the Wemco surge tank (ABM-1275). The Wemco units agitate the produced water creating an oily froth that can be skimmed; skimming from the floatation cell unit gravity flow to the drain sumps. Clean water from the Wemco units is pumped by the Wemco pumps (PBE-3274 and PBE-3275) to the Wemco tank (ABM-1275). Waste water from the surge tank is discharged to the ocean in accordance with the existing NPDES (National Pollutant Discharge Elimination System) permit.
- 2.1.4 Well Testing and Maintenance: To measure the oil, gas, and water flow rates from a well, the well is produced into one of two test separators (MBD-1203 and MBD-1204) by closing the well flow line valve to the production header and opening the well flow line valve to the test header. The test separators are 3' in diameter by 15' seam-to-seam horizontal two-phase separators. Each separator has a capacity of 3,000 bpd liquid and 5 MMscfd of natural gas; separator capacity is smaller than the production separators, since only one well is tested at a time. The gas and liquid sections in the test separator are sized similarly to the production separators, and the test separator has a mist extractor to promote removal of liquid droplets from the gas stream. The test separators normally operate at 40 psig and 90° F. Gas from the test separator is commingled with gas from the production separators and is compressed by either the Worthington or the Ariel compressor. The gas stream from each test separator is measured by an orifice meter in the outlet line.

Liquid from each test separator is measured by a turbine meter, which measures the total flow rate of the combined oil and water stream. The water cut (concentration) is determined by taking samples. Oil and water from the test separators are combined with the oil and water from the production separators; the combined flow is then processed in the north and south treaters.

After a well work over is completed, oil production from the well goes to the well clean-up separator (MBD-1211). This procedure segregates the well from the rest of the platform's wells and prevents contamination of the production separators and piping. The initial production from a well can also have frequent flow surges or high gas flow rates. Producing the well into the well clean-up separator prevents upsetting the normal production from the platform. After the flow from the well has stabilized, it is switched back to the production header and separator.

The well clean-up separator is a vertical 3'6" diameter by 15' seam-to-seam two-phase separator with a capacity of 4,000 bpd and five MMscfd of natural gas. The well clean-up separator operates at 40 psig and 90° F. Gas and liquid sections are sized in similar proportion to the production and test separators, and gas from the separator is commingled with the gas from the production separators and sent to the gas compressors.

The liquid from the well clean-up separators is measured by a turbine meter that measures the total flow rate of the combined oil and water stream. The water cut (concentration) is determined by taking samples. Clean production from the well clean-up separator is combined with the oil

2.1.5 Emulsion Breaking and Crude Oil Storage: There are no crude oil storage facilities on Platform Hillhouse. The produced oil/water emulsion is shipped to Platform A.

2.1.6 Emulsion Shipping: Oil separated in the treaters is pumped by treater oil pumps (PBE-3235 and PBE-3237) to the production surge vessel (MZZ-1231). The production surge vessel is a 10' diameter by 18' seam-to-seam vertical pressure vessel operating at 20 psig. The vessel provides surge capacity to stabilize the flow of oil and prevents upsets in the Lease Automatic Custody Transfer (LACT) meters. Oil from the production surge vessel is pumped through the LACT meters and into the metered surge vessel (MAV-1241).

The metered surge vessel provides surge capacity so the oil shipping pumps (PAX-3211, PAX-3212, and PAX-3213) can operate continuously. Each oil shipping pump has approximately a 15,000 bpd capacity at a 150 psig discharge pressure. Normally only a single pump is in operation; a second pump is started automatically by a high level switch on the metered surge vessel. The oil flow rate is metered by a turbine meter at the inlet of the eight inch pipeline to Platform A.

2.1.7 Drain Sumps: Platform Hillhouse has two drain sumps (ABH-1212 and ABH-1213) that collect oily water from the platform deck drains and production equipment drains. The decks on Platform Hillhouse have curbs around the perimeter and curbs or seals around the deck penetrations to prevent any liquids from spilling overboard. The sumps operate at atmospheric pressure. Three sump pumps (PBE-3292, PBE 3263, and PBR 3264) transfer the liquid collected in the drain sumps to the settling tank (MBF-1261), which is also at atmospheric pressure. Two of the sump pumps are started and stopped automatically by level switches on the drain sumps. The liquid in the settling tank is transferred by the waste water pumps (PBE-3221 and PBE 3222) to the Wemco units

2.1.8 Gas Compression, Dehydration, and Disposition: The natural gas removed from the crude oil in the production separators, test separators, well clean-up separator, treaters, and oil surge vessels is compressed, commingled with gas from Platform Henry, and shipped to Platform A via an eight-inch sub-sea pipeline. The gas is not dehydrated on Platform Hillhouse.

Natural gas is compressed by either the Ariel or Worthington compressor to a pressure of 100 psig; each compressor has a capacity of 4 MMscfd at 100 psig discharge pressure. A suction scrubber is provided in the suction line of each compressor to remove entrained liquids that could damage the compressor. The discharge from the Ariel compressor is cooled by a shell and tube exchanger (HBG-2297); the discharge from the Worthington compressor is not cooled.

The discharge from the Ariel and Worthington compressors is combined with the gas received from Platform Henry. The combined gas stream goes to Platform A via an eight inch sub-sea pipeline; the gas flow rate is measured and recorded with an orifice meter at the inlet of the gas pipeline.

- 2.1.9 Condensate Chilling: A condensate chiller system, installed in 1999, reduces the dew point of sales gas and prevents the formation of liquids in the gas pipeline. The system consists of an inlet separator, a heat exchanger, a suction scrubber, a chiller, a refrigerant compressor, an economizer, a low-temperature separator and a condenser. Gases from the pipeline compressors listed above enter the inlet separator where any free liquids drop out. The gas flows to the chiller where its temperature is reduced to 45° F. The chilled gas enters the low-temperature separator, where any residual liquids are removed. The gas is then piped to Platform A and then to shore via the gas pipelines. The liquids from the separators are continuously “slipstreamed” into the produced oil and piped to Platform A and then to shore. This avoids the liquids from being shipped as slugs through the pipeline.
- 2.1.10 Gas Sweetening and Sulfur Recovery: The gas produced from Platform Hillhouse is sweet gas. There is no gas sweetening or sulfur recovery facility on Platform Hillhouse.
- 2.1.11 Vapor Recovery Systems: Low pressure gas from the Wemco units, Wemco surge tank, settling tank, small drilling water tank, west sump and east sump goes through a suction scrubber (MBF-1281) to remove entrained liquids and is then compressed to about 40 psig by the vapor recovery compressors (CAE-2201 and CAE-2202). *Note that the platform uses two-stage compression, i.e., operates two low-pressure and two high pressure compressors.* Gas discharged from the vapor recovery compressor is combined with the gas from the separators and compressed by either the Ariel compressor or Worthington compressor.

Pressure relief valves on pressure vessels, compressors, and other equipment handling hydrocarbon liquids or vapors discharge to an eight inch vent relief header. The pressure relief valves only open during emergency situations. The vent relief header flows into the atmospheric vent scrubber (MBF-1289), which removes any liquid discharged from the pressure relief valves; the gas then goes to the platform vent stack. The liquid from the vent scrubber is drained to the drain sumps (ABH-1212 and ABH-1213).

- 2.1.12 Fuel Gas System: Platform Hillhouse does not have a fuel gas system. There is no equipment on Platform Hillhouse that burns natural gas.

Platform Hillhouse is equipped with a diesel storage tank in the South Pedestal Crane pedestal with a capacity of approximately 230 bbl. CARB diesel fuel is used by the two pedestal cranes and by emergency equipment such as the diesel fire water pump and standby diesel generators. CARB Diesel fuel containing less than 0.0015 percent sulfur by weight is used.

- 2.1.13 Flare Relief System: Platform Hillhouse is equipped with a flare system to minimize emissions of ROCs that would otherwise be emitted to the atmosphere.

2.1.13.1 Flare System Design: The flare system receives gas from relief valves and piping vents which are first routed to the flare header. The equipment connected to the flare header is as follows:

- Production separators (MBD-1201 and 1203)
- Test separators (MBD-1203 and 1204)
- Well clean-up separator (MBD-1211)
- Henry oil surge tank (MBJ-1205)
- Treaters (MBK-1221 and 1222)
- Henry treater (MBK-1223)
- Production surge vessel (MZZ-1231)
- Metered surge vessel (MAV-1241)
- Filter separator (MAK-1263)
- Vapor recovery scrubber (MBE-1281)
- Surge vessel (MZZ-1283)
- Worthington scrubber (MBF-1284)
- Henry gas scrubber (MBF-1245)
- Settling tank (MBF-1261)
- Sump tanks (ABH-1212 and 1213)
- Ariel compressor (CAE-2203)
- Worthington compressor (CAE-2204)
- Vapor recovery compressors (CAE-2201 and 2202)
- Production gas header pressure control valve (PCV-1289)

All gas collected in the flare header is routed to the flare boom and on to the flare tip where it is burned. A Daniels ten-inch orifice meter is used to measure and record the gas that is flared. Its range of operation is 0.012 MMscfd minimum to 10 MMscfd maximum.

2.1.13.2 Planned Flaring Events: Flaring emissions to the atmosphere are due to both planned and unplanned events. Planned events include (but are not limited to):

- pipeline pigging operations
- compressor shutdowns/startups for routine maintenance
- well casing blowdown during work-over and rig operations
- new well unloading and cleanup
- clearing of gas lines during equipment or process turnarounds
- episodic events such as equipment depressurization for maintenance, purging of vessels and gas pipeline blowdown
- Bureau of Safety and Environmental Enforcement ordered safety tests.

2.1.13.3 Unplanned Flaring Events: Unplanned flaring events are defined as all flaring that does not meet the definition of planned flaring under Rule 359. Unplanned or emergency events include, but are not limited to, the following:

- emergency shutdowns caused by safety devices
- well surges during drilling or production
- unintentional pressure safety valve releases
- processing equipment or compressor failures
- onshore facility failures that affect platform operations
- faulty-sensor caused shutdowns
- high/low temperature and pressure indicated shutdowns
- electrical equipment failures and power failure
- pipeline failures
- earthquakes or other unforeseeable emergency events

2.2 Support Systems

2.2.1 Piping Assemblies and Pipelines: The piping on Platform Hillhouse is designed, tested, and installed in general accordance with API 14C and 14E. In general, piping 2" or larger is of welded carbon steel construction; and, generally piping 1.5 inches and smaller is of threaded carbon steel construction. Two pipelines are associated with shipping material from the platform: an 8-inch emulsion line and an 8-inch gas line. Both pipelines go to Platform A. Three pipelines are used to transport oil, gas, and water from Platform Henry to Platform Hillhouse.

2.2.2 Power Generation: Electrical power for Platform Hillhouse is provided from shore by Southern California Edison through a 34.5 kV sub-sea cable. The platform has a 500 kW diesel stand-by generator which is used in the event of a power outage from Southern California Edison. During such a power failure, the Motor Control Center (MCC) on Platform Hillhouse supplies standby power from the diesel generator to critical equipment, such as the fire pumps. A 24 volt battery backup system is provided for the essential platform controls.

2.2.3 Crew/Utility Boats: Crew/Utility boats (hereinafter referred as "crew boats") are used for a variety of purposes in support of the platform. Crew boats average about 2-4 round trips per day between the platform and Casitas or other piers or ports and are used for the following activities:

1. Load, transport (receipt, movement and delivery) and unload personnel, supplies, and equipment to and from the platforms and dock or pier locations for routine operations and special logistic situations, [Examples: transport of drilling/work-over fluid, casing, specialty chemicals, cement or other supplies].
2. Support supply/work boat while it is working at the platforms, [Examples: hold supply boat in position and transfer equipment or supplies].
3. Operate boat engines to maintain boat positioning while working at the platforms, docks, or piers or in open waters.
4. Support operations in conjunction with maintenance and/or repairs on platform components, [Examples: mooring buoy, boat dock, structural supports, diving operations and cathodic protection equipment].

5. Support operations in conjunction with surveys of platform and sub-sea components including pipelines and power cables, [Examples: side scan sonar, ROV inspection, diving inspections and marine biological inspections].
6. Support operations in conjunction with drilling and work-over operations, [Examples: perforation watch and marine safety zone surveillance].
7. Support/participate in oil spill drills and actual incidents, [Examples: deploying boom and recovery equipment, taking samples and personnel exposure measurements and other spill response activities].
8. Support/participate in safety, health, and emergency drills and actual incidents. [Examples: third party requests for assistance, Medi-vac and platform evacuation as well as other safety and health activities,-fire and explosion, well control blowout, storm, vessel collision, bomb threat, support operations during periods of elevated Homeland Security Alert threat levels (orange or red) as requested by Federal Agencies, and man overboard].
9. Provide standby boat services when required due to limitations of platform survival craft capabilities and/or platform personnel count.
10. Supply marine support services to accommodate activities by local, state and federal agencies and special industry / public interest groups when requested.
11. Conduct engine source compliance tests as required by the permits or other rules and regulations.
12. Perform vessel and boat maintenance as required.
13. Travel to safe harbor from platforms, dock or pier during extreme weather or other emergency situations.

2.2.4 *Supply Boats*: Supply/Work boats (hereinafter referred to as “supply boats”) are also routinely used in support of platform activities. Supply boats make an average of one round trip per day between the platform and Port Hueneme or other ports during normal operations (i.e., no drilling or well repair). DCOR does not use the Ellwood Pier. Supply boats may be used more frequently during periods of drilling or well repair. Supply boats are used for the following activities:

1. Load, transport (receipt, movement and delivery) and unload personnel, equipment and supplies to and from the platforms and Port Hueneme or other ports during routine operations to accommodate special logistic situations, [Examples: transport of drilling/work-over fluid, casing, specialty chemicals, cement or other supplies to a dock or pier to accommodate special needs of a vendor].
2. Support supply/work boat while it is working at the platforms, [Examples: hold supply boat in position and transfer equipment or supplies].
3. Operate boat engines to maintain boat positioning while working at the platforms, docks, or piers or in open waters.
4. Support operations in conjunction with maintenance and/or repairs on platform components, [Examples: mooring buoy, boat dock, structural supports, diving operations and cathodic protection equipment].

5. Support operations in conjunction with surveys of platform and sub-sea components including pipelines and power cables, [Examples: side scan sonar, ROV inspection, diving inspections and marine biological inspections].
6. Support operations in conjunction with drilling and work-over operations, [Examples: perforation watch and marine safety zone surveillance].
7. Support/participate in oil spill drills and actual incidents. [Examples: deploying boom and recovery equipment, taking samples and personnel exposure measurements and other spill response activities].
8. Support/participate in safety, health, and emergency drills and actual incidents, [Examples: third party requests for assistance, Medi-vac and platform evacuation as well as other safety and health activities, -fire and explosion, well control blowout, storm, vessel collision, bomb threat, support operations during periods of elevated Homeland Security Alert threat levels (orange or red) as requested by Federal Agencies, and man overboard].
9. Provide standby boat services when required due to limitations of platform survival craft capabilities and/or platform personnel count.
10. Supply marine support services to accommodate activities by local, state and federal agencies and special industry/public interest groups when requested.
11. Conduct engine source compliance tests as required by the permits or other rules and regulations.
12. Perform vessel and boat maintenance as required.

2.2.5 Helicopter: There is a helipad on Platform Hillhouse, but helicopters are not used for routine offshore transportation. *Information on the estimated emissions (less than 2 tpy) from this activity has been provided to the District. However, this emissions unit is not included in the permit.*

2.2.6 Emergency Response Drills: DCOR conducts periodic and unannounced emergency response drills. Several plans have been developed for different types of emergency situations that could occur on or around the platform. The plans include the *Emergency Evacuation Plan and Oil Spill Contingency Plan*. All of the plans have been prepared to comply with applicable rules and regulations and guidelines set forth by the appropriate regulatory agencies. In addition, the following drills are practiced by the entire crew on a regular basis: (1) man overboard, (2) combustible gas, (3) abandon platform, and (4) emergency shutdown.

2.3 Drilling Activities

2.3.1 Drilling Program: Platform Hillhouse has a resident electric drilling rig, which is used for drilling oil-gas production wells. A standby emergency drilling generator is available for use in case of power failure during drilling operations.

2.3.2 Well Work over Program: The resident electric drilling rig is used for servicing wells. Well work-over programs have been conducted in the past on Platform Hillhouse and may likely occur in the future.

2.4 Maintenance/Degreasing Activities

- 2.4.1 Paints and Coatings: Maintenance painting on Platform Hillhouse is conducted on an intermittent basis. Normally only touchup and equipment labeling or tagging is done with cans of spray paint.
- 2.4.2 Solvent Usage: Solvents not used for surface coating thinning may be used on the platform for daily operations. Usage includes cold solvent degreasing and wipe cleaning with rags.

2.5 Planned Process Turnarounds

Process turnarounds on platform equipment are scheduled to occur when the onshore receiving facilities are required to shut down for maintenance. There are approximately one or two turnarounds per year, each of which lasts from two to three days. Major pieces of equipment such as gas compressors undergo maintenance as specified by the manufacturer. Maintenance of critical components is carried out according to the requirements of Rule 331 *Fugitive Emissions Inspection and Maintenance*. The emissions from planned process turnarounds are incorporated in the emissions category for planned flaring.

2.6 Other Processes

- 2.6.1 Pigging: Two (2) pig launchers and two (2) pig receivers are installed at Platform Hillhouse. Pig launching occurs between the platform and Platform A, and pig receiving occurs between the platform and platform Henry. Oil lines are pigged twice a week, gas lines two to three times a week. All pig launchers and receivers are connected both to the blanket gas system and to the platform's vapor recovery system. This ensures an ROC removal efficiency of 90 percent and a low ROC/TOC ratio (= 0.13).
- 2.6.2 Other Processes: DCOR has stated that no other processes exist that would be subject to permit.

2.7 Detailed Process Equipment Listing

Refer to the tables in Attachment 10.4 for a complete listing of all permitted emission units.

Permit-exempt emission units are specifically listed in Attachment 10.4.

3.0 Regulatory Review

This Section identifies the federal, state and local rules and regulations applicable to Platform Hillhouse.

3.1 Rule Exemptions Claimed

- District Rule 202 (*Exemptions to Rule 201*): DCOR has requested a number of exemptions under this rule. An exemption from permit, however, does not necessarily grant relief from any applicable prohibitory rule. Specific Exemptions are noted below:
 - Section 202.F.1.e for a 49 bhp, “John Deere, Model 70-DPO-JD’ diesel-fired piston IC engine driving a ‘Sullair’ (100 – 125 psig, 100 – 170 cfm) portable air compressor; *the compressor is used at all DCOR South County OCS platforms.*
 - *Note: This IC engine does not qualify as an ‘insignificant’ unit, based on its annual ‘potential to emit’ NOx; thus, it must be included in the federal Part 70 permit.*
 - Section 202.V.2 for two diesel fuel storage tanks; 6,000 gallons and 300 gallons capacity.
 - Section D.6 (*De Minimis Exemption*). As of February 12, 2018, DCOR has documented de minimis projects (including the roll-off bins) that resulted in an increase of 4.56 lbs/day of ROC emissions for Platform Hillhouse. Each of the increases was below the 2.4 lb/day exemption threshold and the aggregate for the stationary source is below the 24 lb/day exemption threshold.
 - Section D.8 for routine repair or maintenance of permitted equipment.
 - Section D.14 for application of architectural coating in the repair and maintenance of a stationary structure.
 - Section U.3 for wipe cleaning using solvents as long as the solvents meet other applicable requirements and the use does not exceed 55 gallons/year.
- District Rule 331 (*Fugitive Emissions Inspection and Maintenance*): The following exemptions were applied for and approved by the District:
 - Section B.2.b for components buried below the ground.
 - Section B.3.b for components handling liquids or gases with ROC concentrations less than 10 percent by weight.
- District Rule 333 (*Control of Emissions from Reciprocating Internal Combustion Engines*):
 - Under Section B.1.b, engines exempt per Rule 202 are also exempt from the requirements of this rule. Therefore, the air compressor engine listed above under the Rule 202 exemption is not required to comply with Rule 333. Furthermore, the South Pedestal Crane (15 ton), driven by a diesel-fired piston internal combustion engine rated at 109 bhp, the emergency drilling generator driven by a diesel engine rated at 730 bhp, the standby emergency fire pump driven by a diesel engine rated at 200 bhp, and the emergency power generator driven by a diesel engine rated at 715 bhp are exempted per Section 333.B.2 (less than 200 hours per year of operation) from Sections E (emission limits), F (engine inspections), G (compliance plan) and I (testing).

3.2 Compliance with Applicable Federal Rules and Regulations

- 3.2.1 40 CFR Parts 51/52 {New Source Review (Nonattainment Area Review and Prevention of Significant Deterioration)}: Platform Hillhouse was constructed and permitted prior to the applicability of these regulations. However, all permit modifications after September 4, 1992 are subject to District NSR requirements. [*Note: Some equipment installed after September 4, 1992 were identified earlier in the OCS Compliance Plans, and thus were not subject to NSR requirements*] Compliance with District Regulation VIII (New Source Review) ensures that future modifications to the facility will comply with these regulations.
- 3.2.2 40 CFR Part 55 {OCS Air Regulation}: DCOR is operating Platform Hillhouse in compliance with the requirements of this regulation.
- 3.2.3 40 CFR Part 60 {New Source Performance Standards}: None of the equipment items in this permit are subject to NSPS requirements.
- 3.2.4 CFR 60 Subpart OOOO {Standards of Performance for Crude Oil and Natural Gas Production, Transmission, and Distribution} This subpart does not apply to operations in the outer continental shelf (OCS). As defined in 60.5365, this regulation applies to owners and operators of “onshore affected facilities”. The OCS is specifically excluded from the definition of onshore as found in section 60.5430.
- 3.2.5 40 CFR Part 61 {NESHAP}: None of the equipment items in this permit are subject to any NESHAP requirement.
- 3.2.6 40 CFR 63 {MACT}: This facility submitted to the USEPA its ‘Notice of Applicability’ of *40 CFR 63: Subpart HH, (Oil & Gas Production MACT)*, on October 18, 2000. None of the emissions units at this facility are currently subject to any MACT, specifically to 40 CFR 63, Subpart HH. (*Reference: District letter to Nuevo on 11/15/2001 and Nuevo response on 12/10/2001 for Platforms A, B, C, Henry, and Hillhouse*) A ‘black oil’ exemption was claimed and validated. However, DCOR must maintain adequate recordkeeping, as specified in 40 CFR63, Subpart A to affirm its exemption from this MACT under the ‘black oil’ provisions of the MACT.
- 3.2.7 40 CFR Part 63 {MACT Standards Subpart ZZZZ}: The revised National Emission Standard for Hazardous Air Pollutants (NESHAP) for reciprocating internal combustion engines (RICE) was published in the Federal Register on January 18, 2008. An affected source under the NESHAP is any existing, new, or reconstructed stationary RICE located at a major source or area source.

Existing Non-Emergency Non-Black Start Compression Ignition RICE \leq 300 hp. Two engines, the North Pedestal Crane (ID 004905) and the South Pedestal Crane (ID 004904) are both subject to the requirements for engines rated less than or equal to 300 bhp. The following operating requirements apply:

- (1) Change the oil and filter every 1,000 hours of operation or annually, whichever comes first; and
- (2) Inspect the air cleaner every 1,000 hours of operation or annually, whichever comes first; and
- (3) Inspect all hoses and belts every 500 hours of operation or annually, whichever comes first.

During periods of startup the operator must minimize the engine's time spent at idle and minimize the engine's startup time at startup to a period needed for appropriate and safe loading of the engine, not to exceed 30 minutes, after which time the non-startup emission limitations apply.

In lieu of changing the oil, DCOR may instead conduct an oil analysis. The analysis measures the Total Base Number, the oil viscosity, and the percent water content. The oil and filter will be changed if any of the following limits are exceeded:

- (1) The tested Total Base Number is less than 30 percent of the Total Base Number of the oil when new;
- (2) The tested oil viscosity has changed by more than 20 percent from the oil viscosity when new;
- (3) The tested percent water content (by volume) is greater than 0.5 percent.

The Total Base Number is the amount acid necessary to neutralize the base reserve in one gram of oil. It is expressed in the equivalent number of milligrams of potassium hydroxide and is a measure of the ability of the oil to neutralize acids created during combustion. If DCOR chooses to change the oil at the specified frequencies, no analysis is required.

Existing Emergency Compression Ignition RICE. Three engines, the diesel fired 715 bhp backup generator (ID 004906), the 200 bhp fire water pump (ID 004908), and the 730 bhp emergency rig generator (ID 004907) are each subject to the following requirements:

- (1) Change the oil and filter every 500 hours of operation or annually, whichever comes first; and
- (2) Inspect the air cleaner every 1,000 hours of operation or annually, whichever comes first; and
- (3) Inspect all hoses and belts every 500 hours of operation or annually, whichever comes first.

3.2.8 40 CFR Part 64 {Compliance Assurance Monitoring}: This rule became effective on April 22, 1998. None of the emission units at this facility are subject to the requirements of the CAM Rule, per 40 CFR 64.2 (*Applicability*). Pre-control emissions of any pollutant from the North Pedestal Crane unit are less than 100 tpy; while the South Pedestal Crane and the boat engines do not use any control device to comply with any federally enforceable emissions limit.

3.2.9 40 CFR Part 70 {Operating Permits}: This Subpart is applicable to Platform Hillhouse. Table 3.1 lists the federally enforceable District promulgated rules that are “generic” and apply to DCOR OCS. Table 3.2 lists the federally enforceable District promulgated rules that are “unit-specific” that apply to DCOR OCS. These tables are based on data available from the District’s administrative files and DCOR’s Part 70 Operating Permit Renewal Application 9114.

In its Part 70 *permit renewal* application, DCOR certified compliance with all existing District rules and permit conditions. This certification is also required of DCOR semi-annually. Issuance of this permit and compliance with all its terms and conditions will ensure that DCOR complies with the provisions of all applicable Subparts.

3.2.10 Airborne Toxic Control Measure (ATCM) for Stationary Compression Ignition (CI) Engines (CCR Section 93115, Title 17): This applies for all diesel engines rated over 50 brake horsepower located at this OCS facility. See discussion in section 3.3.3 below.

3.3 Compliance with Applicable State Rules and Regulations

- 3.3.1 Division 26. Air Resources {California Health & Safety Code}: The administrative provisions of the Health & Safety Code apply to this facility and will be enforced by the District. These provisions are District-enforceable only.
- 3.3.2 California Administrative Code Title 17: These sections specify the standards by which abrasive blasting activities are governed throughout the State. All abrasive blasting activities at Platform Hillhouse are required to conform to these standards. Compliance will be assessed through onsite inspections. These standards are District-enforceable only. However, CAC Title 17 does not preempt enforcement of any SIP-approved rule that may be applicable to abrasive blasting activities.
- 3.3.3 Airborne Toxic Control Measure (ATCM) for Stationary Compression Ignition (CI) Engines (CCR Section 93115, Title 17): This ATCM applies for all stationary diesel-fueled engines rated over 50 brake horsepower (bhp) at this facility. On March 17, 2005, District Rule 202 was revised to remove the compression-ignited engine (e.g. diesel) permit exemption for units rated over 50 bhp to allow the District to implement the State's ATCM for Stationary Compression Ignition Engines. Compliance shall be assessed through onsite inspections and reporting. The operating requirements and emission standards outlined in the ATCM do not apply to stationary diesel-fueled engines solely used on the OCS. However these OCS engines are required to meet fuel, recordkeeping, reporting, and monitoring requirements outlined in the ATCM. On January 30, 2006 the DICE ATCM was incorporated into 40 CFR Part 55, making the requirements of the DICE ATCM federally enforceable in the OCS.
- 3.3.4 Greenhouse Gas Emission Standards for Crude Oil and Natural Gas Facilities (CCR Title 17, Section 95665 et. Seq.): On October 1, 2017, the California Air Resources Board (CARB) finalized this regulation, which establishes greenhouse gas emission standards for onshore and offshore crude oil and natural gas production facilities. As defined in this regulation, offshore means all lands located within the State of California. Therefore, this regulation does not apply to operations within the outer continental shelf (OCS), and Platform Hillhouse is exempt from the requirements of this regulation.

3.4 Compliance with Applicable Local Rules and Regulations

- 3.4.1 Applicability Tables: Tables 3.1 and 3.2 list the federally-enforceable District rules. Table 3.3 lists the non-federally-enforceable District rules that apply to Platform Hillhouse.
- 3.4.2 Rules Requiring Further Discussion: This section provides a more detailed discussion regarding the applicability and compliance of certain rules. The following is a rule-by-rule evaluation of compliance for Platform Hillhouse:

The following is a rule-by-rule evaluation of compliance for Platform Hillhouse:

Rule 201 - Permits Required: This rule applies to any person who builds, erects, alters, replaces, operates or uses any article, machine, equipment, or other contrivance which may cause the issuance of air contaminants. The equipment included in this permit is listed in Attachment 10.4. An Authority to Construct is required to return any de-permitted equipment to service and may be subject to New Source Review.

Rule 210 - Fees: Pursuant to Rule 201.G, District permits are reevaluated every three years. This includes the re-issuance of the underlying permit to operate. Fees for this facility are recovered under the cost reimbursement provisions of this rule.

Rule 301 - Circumvention: This rule prohibits the concealment of any activity that would otherwise constitute a violation of Division 26 (Air Resources) of the California H&SC and the District rules and regulations. To the best of the District's knowledge, DCOR is operating in compliance with this rule.

Rule 302 - Visible Emissions: This rule prohibits the discharge from any single source any air contaminants for which a period or periods aggregating more than three minutes in any one hour which is as dark or darker in shade than a reading of 1 on the Ringlemann Chart or of such opacity to obscure an observer's view to a degree equal to or greater than a reading of 1 on the Ringlemann Chart. Sources subject to this rule include: the flare and all diesel-fired piston internal combustion engines. Compliance will be assured by requiring all engines to be maintained according to manufacturer maintenance schedules, and through visible emissions monitoring requirements in Condition 9.B.2. Rule 359 addresses the need for the flares to operate in a smokeless fashion.

Rule 305 - Particulate Matter, Southern Zone: DCOR OCS Platform Hillhouse is a Southern Zone source. This rule prohibits the discharge into the atmosphere from any source particulate matter in excess of specified concentrations measured in gr/scf. The maximum allowable concentrations are determined as a function of volumetric discharge, measured in scfm, and are listed in Table 305(a) of the rule. Sources subject to this rule include: the flares and all IC engines including all diesel-fired units. Improperly maintained diesel engines have the potential to violate this rule. All engines to be maintained according to the *IC engine Particulate Matter Operation and Maintenance Plan* (updated June 4, 2009 and approved on July 22, 2014) and any subsequent District approved updates, for the life of the project.

Rule 309 - Specific Contaminants: Under Section "A", no source may discharge sulfur compounds and combustion contaminants in excess of 0.2 percent as SO₂ (by volume) and 0.3 gr/scf (at 12% CO₂) respectively. Sulfur emissions due to flaring of sweet gases (less than 4 ppm sulfur) at Platform Hillhouse will comply with the SO₂ limit due to stoichiometric combustion requirements. All diesel powered piston IC engines have the potential to exceed the combustion contaminant limit if not properly maintained (see discussion on Rule 305 above for compliance).

Rule 310 - Odorous Organic Compounds: This rule prohibits the discharge of H₂S and organic sulfides that result in a ground level impact beyond the property boundary in excess of 0.06 ppmv averaged over 3 minutes or 0.03 ppmv averaged over 1 hour. No measured data exists to confirm compliance with this rule; however, all produced gas from Platform Hillhouse is sweet (*less than 4 ppmv S*). As a result, it is expected that compliance with this rule will be achieved.

Rule 311 - Sulfur Content of Fuels: This rule limits the sulfur content of fuels combusted on Platform Hillhouse to 0.5 percent (by weight) for liquids fuels and 15 gr/100 scf (calculated as H₂S) {or 239 ppmvd} for gaseous fuels. All piston IC engines on the platform and on the crew and supply boats are expected to be in compliance with the liquid fuel limit as determined by fuel analysis documentation. The flare relief system is not subject to this rule (see discussion under Rule 359).

Rule 317 - Organic Solvents: This rule sets specific prohibitions against the discharge of emissions of both photochemically and non-photochemically reactive organic solvents (40 lb/day and 3,000 lb/day respectively for each equipment item). Solvents may be used on the platform during normal operations for degreasing by wipe cleaning and for use in paints and coatings in maintenance operations. There may be a potential to exceed the limits under Section B.2 during significant surface coating activities. DCOR will be required to maintain records to ensure compliance with this rule.

Rule 318 - Vacuum Producing Devices or Systems – Southern Zone: This rule prohibits the discharge of more than 3 pounds per hour of organic materials from any vacuum producing device or system, unless the organic material emissions have been reduced by at least 90 percent.

Rule 321 - (Solvent Cleaning Operations): This rule was revised to fulfill the commitment in the Clean Air Plans to implement requirements for solvent cleaning machines and solvent cleaning. The revised rule contains solvent reactive organic compounds (ROCs) content limits, revised requirements for solvent cleaning machines, and sanctioned solvent cleaning devices and methods. These provisions apply to solvent cleaning machines and wipe cleaning.

Rule 322 - Metal Surface Coating Thinner and Reducer: This rule prohibits the use of photochemically reactive solvents for use as thinners or reducers in metal surface coatings. DCOR will be required to maintain records during maintenance operations to ensure compliance with this rule.

Rule 323.1 (Architectural Coatings): This rule sets the standards for any architectural coating that is supplied, sold, offered for sale, or manufactured for use within the District.

Rule 324 - Disposal and Evaporation of Solvents: This rule prohibits any source from disposing more than one and a half gallons of any photochemically reactive solvent per day by means that will allow the evaporation of the solvent into the atmosphere. DCOR will be required to maintain records to ensure compliance with this rule.

Rule 325 - Crude Oil Production and Separation: This rule applies to equipment used in the production, gathering, storage, processing and separation of crude oil and gas prior to custody transfer. The primary requirements of this rule are under Sections D and E. Section D requires the use of vapor recovery systems on all tanks and vessels, including waste water tanks, oil/water separators, waste oil tanks, skimmer tanks and flotation cells (Wemco Unit). Section E requires that all produced gas be controlled at all times, except for wells undergoing routine maintenance. All production and test vessels and tanks are connected to gas gathering systems and all relief valves are connected to the flare relief system. Also, vapor recovery units have been installed on all equipment subject to this rule. Compliance with Section E is met by directing all produced gas to a sales compressor, injection well or to the flare relief system.

Rule 330 - Surface Coating of Metal Parts and Products: This rule sets standards for many types of coatings applied to metal parts and products. In addition to the ROC standards, this rule sets operating standards for application of the coatings, labeling and recordkeeping.

Rule 331 - Fugitive Emissions Inspection and Maintenance: This rule applies to components in liquid and gaseous hydrocarbon service at oil and gas production fields. An updated I&M Plan

was submitted on July 2001, followed by a revised one in June 2002. The final Plan received District approval in September 2002. Ongoing compliance with the many provisions of this rule will be assessed via platform inspection by District personnel using an organic vapor analyzer and through analysis of operator records. Platform Hillhouse does not perform any routine venting of hydrocarbons to the atmosphere. All gases routinely vented are directed to the flare relief system or vapor recovery system. *Note: Nuevo informed the District in June 2002 that the 367 stainless steel fittings on Platform Hillhouse, 1/2-inch or less in diameter, are no longer exempt from Rule 331, since they could not demonstrate the leak-free nature of these fittings. These fittings are included in their I&M Plan inventory for Platform Hillhouse.*

Rule 333 - Control of Emissions from Reciprocating Internal Combustion Engines: This rule applies to all engines with a rated brake horsepower of 50 or greater that are fueled by liquid or gaseous fuels. The South Pedestal Crane engine, the emergency drilling generator driven by a diesel engine rated at 730 bhp, the standby emergency fire pump driven by a diesel engine rated at 200 bhp, and the emergency power generator driven by a diesel engine rated at 715 bhp are exempt from Rule 333 emission standards. The North Pedestal Crane engine on Platform Hillhouse is subject to the NO_x emission standard in Rule 333.

On June 19, 2008 Rule 333 was revised. The NO_x emission limit for diesel-fired engines was reduced, and ROC and CO limits were added. Additionally, the inspection and maintenance requirements of the Rule were changed. The revised Rule came into effect on the OCS on November 21, 2008. The revised emission limits came into effect on November 21, 2010.

DCOR has performed District-approved emission source testing on the crane engines and the booster compressor. Ongoing compliance with the standards will be maintained through implementation of the District-approved *Rule 333 IC Engine Maintenance Plan* required under Section F and through biennial source testing.

Rule 352 - Natural Gas-Fired Fan-Type Central Furnaces and Small Water Heaters: This rule applies to new water heaters rated less than 75,000 Btu/hr and new fan-type central furnaces. It requires the certification of newly installed units.

Rule 353 - Adhesives and Sealants: This rule applies to the use of adhesives, adhesive bonding primers, adhesive primers, sealants, sealant primers, or any other primers. Compliance shall be based on site inspections.

Rule 359 - Flares and Thermal Oxidizers: This rule applies to flares for both planned and unplanned flaring events. A detailed review of compliance with this Rule follows:

- D.1 - Compliance with this rule is anticipated since the produced gas from Platform Hillhouse is sweet.
- D.2 - The flare on Platform Hillhouse is in compliance with this section.
- D.3 - DCOR has fully implemented their *Flare Minimization Plan*.

Rule 810 - Federal Prevention of Significant Deterioration: This rule was adopted June 20, 2013 to incorporate the federal Prevention of Significant Deterioration rule requirements into the District's rules and regulations. Future projects at the facility will be evaluated to determine whether they constitute a new major stationary source or a major modification.

Rule 360 – Emissions of Nitrogen from Large Water Heaters and Small Boilers: The permittee shall comply with the requirements of this rule whenever a new boiler, process heater or other external combustion device is added or an existing unit is replaced. An ATC/PTO permit shall be obtained prior to installation of any grouping of Rule 360 applicable boilers or hot water heaters whose combined system design heat input rating exceeds 2.000 MMBtu/hr. An ATC shall be obtained for any size boiler or water heater if the unit is not fired on natural gas or propane. DCOR currently has no units subject to this rule.

Rule 361 – Small Boilers, Steam Generators and Process Heaters: The permittee shall comply with the requirements of this rule whenever a new boiler, process heater or other external combustion device is added or an existing unit is replaced. An ATC permit shall be obtained prior to installation, replacement, or modification of any existing Rule 361 applicable boiler or water heater rated over 2.000 MMBtu/hr. An ATC shall be obtained for any size boiler or water heater if the unit is not fired on natural gas or propane. DCOR currently has no units subject to this rule.

Rule 505 - Breakdown Conditions: This rule describes the procedures that DCOR must follow when a breakdown condition occurs to any emissions unit associated with Platform Hillhouse. A breakdown condition is defined as an unforeseeable failure or malfunction of (1) any air pollution control equipment or related operating equipment which causes a violation of an emission limitation or restriction prescribed in the District Rules and Regulations, or by State law, or (2) any in-stack continuous monitoring equipment, provided such failure or malfunction:

- a. Is not the result of neglect or disregard of any air pollution control law or rule or regulation;
- b. Is not the result of an intentional or negligent act or omission on the part of the owner or operator;
- c. Is not the result of improper maintenance;
- d. Does not constitute a nuisance as defined in Section 41700 of the Health and Safety Code;
- e. Is not a recurrent breakdown of the same equipment item.

Rule 603 - Emergency Episode Plans: Section "A" of this rule requires the submittal of *Stationary Source Curtailment Plan* for all stationary sources that can be expected to emit more than 100 tons per year of hydrocarbons, nitrogen oxides, carbon monoxide or particulate matter. Such a plan was submitted on July 23, 1994. This Plan was approved in November 1994. (Note: This plan was updated on November 30, 1998).

Rule 810 - Federal Prevention of Significant Deterioration: This rule was adopted January 20, 2011 to incorporate the federal Prevention of Significant Deterioration rule requirements into the District's rules and regulations. Future projects at the facility will be evaluated to determine whether they constitute a new major stationary source or a major modification.

3.5 Compliance History

This section contains a summary of the compliance history for this facility and was obtained from documentation contained in the District's administrative files and the District's Compliance Database. The last facility inspection occurred on July 20, 2017. No violations of District rules or permit conditions were documented during the inspection.

- 3.5.1 Variations: No variations are currently in effect for OCS Platform Hillhouse.
- 3.5.2 Violations: No Notices of Violation (NOVs) were issued to Platform Hillhouse since the last permit renewal was issued on December 12, 2014.
- 3.5.3 Significant Historical Hearing Board Actions/NOV's: There are no significant historical Hearing Board actions or NOV's.

Table 3.1 - Generic Federally-Enforceable District Rules

Generic Requirements	Affected Emission Units	Basis for Applicability	Adoption Date
<u>RULE 101</u> : Compliance by Existing Installations	All emission units	Emission of pollutants	June 21, 2012
<u>RULE 102</u> : Definitions	All emission units	Emission of pollutants	August 25, 2016
<u>RULE 103</u> : Severability	All emission units	Emission of pollutants	October 23, 1978
<u>RULE 201</u> : Permits Required	All emission units	Emission of pollutants	June 19, 2008
<u>RULE 202</u> : Exemptions to Rule 201	Applicable emission units, as listed in form 1302-H of the Part 70 application.	Insignificant activities/emissions, per size/rating/function	August 25, 2016
<u>RULE 203</u> : Transfer	All emission units	Change of ownership	April 17, 1997
<u>RULE 204</u> : Applications	All emission units	Addition of new equipment of modification to existing equipment.	April 17, 1997
<u>RULE 205</u> : Standards for Granting Permits	All emission units	Emission of pollutants	April 17, 1997
<u>RULE 206</u> : Conditional Approval of Authority to Construct or Permit to Operate	All emission units	Applicability of relevant Rules	October 15, 1991
<u>RULE 207</u> : Denial of Applications	All emission units	Applicability of relevant Rules	October 23, 1978
<u>RULE 208</u> : Action on Applications – Time Limits	All emission units. Not applicable to Part 70 permit applications.	Addition of new equipment of modification to existing equipment.	April 17, 1997
<u>RULE 212</u> : Emission Statements	All emission units	Administrative	October 20, 1992
<u>RULE 301</u> : Circumvention	All emission units	Any pollutant emission	October 23, 1978
<u>RULE 302</u> : Visible Emissions	All emission units	Particulate matter emissions	June 1981
<u>RULE 303</u> : Nuisance	All emission units	Emissions that can injure, damage or offend.	October 23, 1978
<u>RULE 304</u> : Particulate Matter – Northern Zone	Each PM Source	Emissions of PM in effluent gas	October 23, 1978
<u>RULE 309</u> : Specific Contaminants	All emission units	Combustion contaminant emission	October 23, 1978
<u>Rule 310</u> : Odorous Organic Sulfides	All emission units	Combustion contaminant emission	October 23, 1978

Generic Requirements	Affected Emission Units	Basis for Applicability	Adoption Date
<u>RULE 311</u> : Sulfur Content of Fuel	All combustion units	Use of fuel containing sulfur	October 23, 1978
<u>RULE 317</u> : Organic Solvents	Emission units using solvents	Solvent used in process operations.	October 23, 1978
<u>RULE 321</u> : Solvent Cleaning Operations	Emission units using solvents.	Solvent used in process operations.	June 21, 2012
<u>RULE 322</u> : Metal Surface Coating Thinner and Reducer	Emission units using solvents.	Solvent used in process operations.	October 23, 1978
<u>RULE 323.1</u> : Architectural Coatings	Paints used in maintenance and surface coating activities.	Application of architectural coatings.	June 19, 2014. Effective January 1, 2015.
<u>RULE 324</u> : Disposal and Evaporation of Solvents	Emission units using solvents.	Solvent used in process operations.	October 23, 1978
<u>RULE 353</u> : Adhesives and Sealants	Emission units using adhesives and solvents.	Adhesives and sealants used in process operations.	June 21, 2012
<u>RULE 505.A, B1, D</u> : Breakdown Conditions	All emission units	Breakdowns where permit limits are exceeded or rule requirements are not complied with.	October 23, 1978
<u>RULE 603</u> : Emergency Episode Plans	Stationary sources with PTE greater than 100 tpy	Dos Cuadras - South County is a major source.	June 15, 1981
<u>REGULATION VIII</u> : New Source Review	All emission units	Addition of new equipment of modification to existing equipment. Applications to generate ERC Certificates.	August 25, 2016
<u>REGULATION XIII (RULES 1301-1305)</u> : Part 70 Operating Permits	All emission units	Dos Cuadras - South County is a major source.	August 25, 2016

Table 3.2 - Unit-Specific Federally-Enforceable District Rules

Unit-Specific Requirements	Affected Emission Units	Basis for Applicability	Adoption Date
<u>RULE 325</u> : Crude Oil Production and Separation	ID #'s 005541, 005558, 102467, 102468, 102469, 005539, 005540, 102429, 102430, 102428, 102431	All pre-custody production and processing emission units	January 18, 2001
<u>RULE 331</u> : Fugitive Emissions Inspection & Maintenance	All components (valves, flanges, seals, compressors and pumps) used to handle oil and gas : ID #'s 102459, 102460, 105248, 102461, 102462, 105249	Components emit fugitive ROCs.	Dec 10, 1991
<u>RULE 333</u> : Control of Emissions from Reciprocating IC Engines	Piston IC engines only; ID #s 004907, 004908, 004906, 004905, 004904	IC engines exceeding 50 bhp rating.	June 19, 2008
<u>RULE 359</u> : Flares and Thermal Oxidizers	Flare Relief System; ID # 005532	Flaring.	June 28, 1994
<u>RULE 360</u> : Emissions of Oxides of Nitrogen from Large Water Heaters and Small Boilers	None	NOx emissions from external combustion units.	October 17, 2002

Table 3.3 - Non-Federally-Enforceable District Rules

Requirement	Affected Emission Units	Basis for Applicability	Adoption Date
<u>RULE 210: Fees</u>	All emission units	Administrative	March 17, 2005
<u>RULE 212: Emission Statements</u>	All emission units	Administrative	October 20, 1992
<u>RULE 310: Odorous Organic Sulfides</u>	All emission units	Emission of organic sulfides	October 23, 1978
<u>RULE 361: Small Boilers, Steam Generators, and Process Heaters.</u>	Any boiler, steam generator, and process heater with a rated heat input capacity greater than 2 MMBtu/hr and less than 5 MMBTU/hr.	Any equipment item covered by this rule must comply with the rule emission limits.	January 17, 2008
<u>RULES 501-504: Variance Rules</u>	All emission units	Administrative	October 23, 1978
<u>RULE 505.B2, B3, C, E, F, G: Breakdown Conditions</u>	All emission units	Breakdowns where permit limits are exceeded or rule requirements are not complied with.	October 23, 1978
<u>RULES 506-519: Variance Rules</u>	All emission units	Administrative	October 23, 1978

4.0 Engineering Analysis

4.1 General

The engineering analyses performed for this permit were limited to the review of:

- facility process flow diagrams
- emission factors and calculation methods for each emissions unit
- emission control equipment (including RACT, BACT, NSPS, NESHAP, MACT)
- emission source testing, sampling, CEMS, CAM
- process monitors needed to ensure compliance

Unless noted otherwise, default ROC/THC reactivity profiles from the District's document titled "VOC/ROC Emission Factors and Reactivities for Common Source Types" dated 3/12/2001 (version 1.2) was used to determine non-methane, non-ethane fraction of THC.

4.2 Stationary Combustion Sources

The Platform Hillhouse stationary combustion sources consist of diesel-fired piston internal combustion engines and the flare relief system. Primary power on the platform is supplied by a sub-sea electric cable connected to the Southern California Edison electric grid.

Piston Internal Combustion Engines: All platform internal combustion engines are diesel-fuel fired. The North Pedestal Crane engine is subject to permit and Rule 333 requirements. The other stationary IC engines on the platform rated over 100-bhp are the South Pedestal Crane, one drilling generator, one emergency electrical generator, and an emergency fire pump. In addition to the drilling generator, temporary engines used to support drilling and well work-over activities are expected to occur during the life of the platform. The calculation methodology is similar for all stationary IC engines:

$$ER = [(EF \times BHP \times BSFC \times LCF \times HPP) \div 10^6]$$

where:

ER =	emission rate (lb/period)
EF =	pollutant specific emission factor (lb/MMBtu)
BHP =	engine rated max brake-horsepower (bhp)
BSFC =	engine brake specific fuel consumption (Btu/bhp-hr)
LCF =	liquid fuel correction factor, LHV to HHV
HPP =	operating hours per time period (hrs/period)

The emission factor is an energy based value using the higher heating value (HHV) of the fuel. As such, an energy based BSFC value must also be based on the HHV. Manufacturer BSFC data are typically based on lower heating value (LHV) data and thus require a conversion (LCF) to the HHV basis. For diesel fuel oil, the HHV values are typically 6 percent greater than the corresponding LHV data. Volume or mass based BSFC data do not need any conversions.

Crane Engines: The North Pedestal Crane is driven by a Detroit Diesel Model 6V-71 engine rated at 230 bhp equipped with "B" type injectors. The use of these injectors coupled with the low operating loads allows this engine to comply with the Rule 333 NO_x emission standard of 700 ppmv @ 15% O₂. Based on this limit, the NO_x emission factor is 2.65 lbs/MMBtu (see Section 10.1 for calculation). The emission factors for PM, CO, and ROC are from USEPA AP-42, Table 3.3-1 (10/97), and the SO_x emission factor is based on mass balance calculation.

The South Pedestal Crane is driven by a Detroit Diesel Model 3-71 engine rated at 109 bhp. This engine has B-type injectors. The emission factors for PM, CO and ROC are from USEPA AP-42, Table 3.3-1, and the SO_x emission factor is based on mass balance calculation. For NO_x, the emission factor is 3.99 lb/MMBtu based on the manufacturer-listed BSFC of 0.420 lb/bhp-hr, and an estimated emission factor of 14 g/bhp-hr.

Both the 715 hp Caterpillar diesel IC engine powering the emergency generator, the 200 hp IC engine driving the emergency fire pump, the Caterpillar 730 hp IC engine driving the emergency drilling generator, and the 49 hp IC engine driving the air compressor are emission units, not subject to any emission control requirements. All engines except for the air compressor engine are subject to District permit. The air compressor engine does not qualify as an insignificant Part 70 emissions unit. For NO_x emissions from the two Caterpillar engines, the emission factor is 14 g/hp-hr or 4.41 lb/MMBtu based on the estimated BSFC of 7000 Btu/bhp-hr; for the fire pump IC engine and the air compressor engine, the emission factor is 16 g/hp-hr or 4.41 lb/MMBtu based on the estimated BSFC of 8,000 Btu/hp-hr. The emission factors for PM, CO and ROC are from USEPA AP-42, Table 3.3-1, and the SO_x emission factor is based on mass balance calculation.

The IC engines on the platform are not equipped with diesel fuel flow metering devices. All IC engines are equipped with non-resettable hour meters. The actual engine usage is logged each time the engine is fired. Emissions are calculated using total elapsed run time, the maximum rated engine bhp rating and BSFC data (from Table 5.1-1) to determine the number of gallons consumed per unit time. Ongoing compliance with Rule 333 will be accomplished by quarterly inspections per Section F of this rule, NO_x and CO measurements with a portable emissions analyzer, and biennial source testing on the North Pedestal Crane engine.

On June 19, 2008 Rule 333 was revised. The NO_x emission limit for diesel-fired engines was reduced, and ROC and CO limits were added. Additionally, the inspection and maintenance requirements of the Rule were changed. The revised Rule came into effect on the OCS on November 21, 2008. The revised emission limits came into effect on November 21, 2010.

Flare Relief System: The flare relief system consists of both a high and low pressure header that connects to various PSVs on production and test vessels, compressors, and glycol system. Both planned and unplanned flaring events occur. The flare itself is a Kaldair open pipe flare tip, model M-400. The design heat release is 2500 MMBtu/hr. Emission factors for NO_x, CO and ROC are based on the USEPA AP-42, Table 13.5-1 (9/91). PM emission factors are based on a District flare study. Sulfur oxide emissions are based on mass balance calculations assuming both planned and pilot/purge sulfur levels at 239 ppmv and unplanned flaring sulfur levels at 239 ppmv. The emissions for both planned and unplanned flaring events are calculated. The SO_x emission factor is determined using the equation: $(0.169)(\text{ppmv S})/(\text{HHV})$. The calculation methodology for the flare is:

$$ER = [(EF \times SCFPP \times HHV) \div 10^6]$$

where: ER = emission rate (lb/period)
 EF = pollutant specific emission factor (lb/MMBtu)
 SCFPP = gas flow rate per operating period (scf/period)
 HHV = gas higher heating value (Btu/scf)

The flare header is equipped with a 10-inch Daniels orifice meter that is capable of detecting flow rates between 0.012 - 10.000 MMSCFD. The District and DCOR have agreed on a low flow, or minimum, detection limit that is equivalent to 500 scfh (based on a velocity of 0.25 std ft/sec) which is higher than the purge/pilot flow rate of 135 scfh. As such, there is no practical method for assessing flow rates between 135 and 500 scfh. Therefore, based on USEPA and CARB's data reporting guidelines, a value of half the minimum detection limit is being assumed as "continuous" planned flaring. The sulfur content of the flared gas is expected to be below 10 ppmv.

4.3 Fugitive Hydrocarbon Sources

Emissions of reactive organic compounds from piping components such as valves, flanges and connections have been assigned emission factors pursuant to District P&P 6100.061 (*Determination of Fugitive Hydrocarbon Emissions at Oil and Gas Facilities Through the Use of Facility Component Counts - Modified for Revised ROC Definition*). The component leak-path was counted consisted with P&P 6100.061. This leak-path count is not the same as the "component" count required by District Rule 331. Both gas/light liquid and oil side components are in service at this facility.

The number of emission leak-paths was re-determined in July 2002 by Avanti International under contract to Nuevo. Avanti's data were audited/verified by District staff through site checks consisting of sampling and clp counting. A total of 7,759 controlled and 23 uncontrolled oil/emulsion component leak-paths (*updated from the previous count of 8278 on March 22, 2000*) and a total of 10,403 controlled and 200 uncontrolled gas/light-liquid component leak-paths (*updated from the previous count of 10057 on March 22, 2000*) were found to exist on the platform. The calculation methodology for the fugitive emissions is:

$$ER = [(EF \times CLP \div 24) \times (1 - CE) \times (HPP)]$$

where: ER = emission rate (lb/period)
 EF = ROC emission factor (lb/clp-day)
 CLP = component leak-path (clp)
 CE = control efficiency
 HPP = operating hours per time period (hrs/period)

An emission control efficiency of 80 percent is credited to all components that are safe to monitor (as defined per Rule 331) due to the implementation of a District-approved Inspection and Maintenance program for leak detection and repair consistent with Rule 331 requirements. Unsafe to monitor components are not eligible for I&M control credit. Ongoing compliance is determined in the field by inspection with an organic vapor analyzer and verification of operator records.

4.4 Crew and Supply Vessels

Supply Boats. DCOR uses supply boats in support of Platform Hillhouse. The controlled supply boat category emissions are based on the specifications of the *M/V Santa Cruz*. The *M/V Santa Cruz* is equipped with two main propulsion diesel-fired IC engines (CAT 3516B). These engines are each rated at 2,000 bhp at 1600 rpm for continuous duty. These engines are optimized for low NO_x emissions through use of Dual Advanced Diesel Engine Management (ADEMII) modules with electronically controlled unit injectors, as well as dual turbochargers and a separate circuit after-cooler core. The NO_x emission factor was revised by ATC/PTO 11437 to 5.99 g/bhp-hr (270 lb/1000 gallons). The SO_x emission factor reflects a fuel sulfur content of 0.0015 weight percent. For Auxiliary Engines, *M/V Santa Cruz* uses two 170 kW CAT 3306B DIT generator sets each powered by identical 245 bhp diesel-fired IC engines and one bow thruster powered by a CAT 3408C DITA 510 bhp diesel-fired engine. These auxiliary engines are not controlled. The auxiliary engines' (generators and bow thruster) horsepower are combined when assessing compliance with the total horsepower limits for these engines. Emissions are based on USEPA AP-42 emission factors, except that the SO_x emission factor is based on a fuel sulfur content of 0.0015 weight percent.

The *M/V Ryan T* is also used as a supply vessel. The *M/V Ryan T* is equipped with four main propulsion diesel-fired Scania Model DI16 M engines. These Tier 2 engines are each rated at 567 bhp at 1900 rpm for continuous duty. The total horsepower of the four main engines is 2,268 bhp. There are two auxiliary engines on the *M/V Ryan T*. Both are Tier 3, 40 bhp, 30 kW diesel fired Northern Light M30CW3.2 engines. The auxiliary engines serve the generators. The *M/V Ryan T* is not equipped with a bow thruster. The same emission factors used for the *M/V Santa Cruz* are used to calculate worst case scenario emissions for the *M/V Ryan T* for all pollutants except CO. Tier 2 emission factors define the worst case scenario for CO.

The spot charter supply boat emission calculations are based on the specifications of the *M/V Santa Cruz*. The supply boat spot charter trips are limited to 10 percent of actual annual supply boat trips.

Crew Boats. DCOR has identified one type of crew boat. The primary crew boat assigned to Platform Hillhouse is the *M/V Alan T*. The *M/V Alan T* is equipped with three diesel-fired Scania Model DI16 M engines main propulsion engines. These engines are each rated at 567 bhp at 1900 rpm for continuous duty. The total horsepower of the three main engines is 1,701 bhp.

There are two auxiliary engines on the *M/V Alan T*. Both are Tier 3, 40 bhp, 30 kW Northern Light M30CW3.2 diesel fired engines. The auxiliary engines serve the generators. The auxiliary engine horsepower is combined when assessing compliance with the total horsepower limits for these engines. Emissions are based on USEPA AP-42 emissions factors, except that the SO_x emission factor reflects a fuel sulfur content of 0.0015 weight percent.

The *M/V Alan T* (and/or any approved replacement boat) may be designated as either a crew boat or a supply boat depending on the primary use of the vessel during each trip. The designation of each trip is documented on the Daily Boat Log as either "Passenger" (Crew) or "Cargo" (Supply).

Emergency Response Boats. One of four identical emergency response vessels (*M/Vs Ocean Scout, Ocean Guardian, Ocean Sentinel and Ocean Defender*) is permanently assigned to Platform Hillhouse. The total engine horsepower, including auxiliary engines, is 2,978 bhp. Emissions are calculated in a prorated fashion among the eleven OCS platforms that utilize the vessel off the Santa Barbara coast. The auxiliary engines are interim Tier 4 engines, however, Tier 2 emission factors are used to establish the PTE of the auxiliary engines to provide flexibility for circumstances that may require use of a different boat. If other emergency response boats are used, boat fuel usage (and resulting emissions) shall be assessed against this emissions category.

Emission Calculations. Emission Calculations are based solely on a single emission factor (the cruise mode). The calculation methodology for the crew and supply boat main engines emissions is:

$$ER = [(EF \times EHP \times BSFC \times EL \times TM) \div (10^3)]$$

where:

ER =	emission rate (lbs per period)
EF =	full load pollutant specific emission factor (lb/1000 gallons)
EHP =	engine max rated horsepower (bhp)
BSFC =	engine brake specific fuel consumption (gal/bhp-hr)
EL =	engine load factors (percent of max fuel consumption)
TM =	time in mode (hours/period)

The calculations for the auxiliary engines are similar, except that a 50-percent engine load factor for the generators is utilized. Compliance with the main engine controlled emission rates shall be assessed through emission source testing. Ongoing compliance will be assessed through implementation of the District-approved *Boat Monitoring and Reporting Plan* (BMRP) that was revised, updated and submitted by DCOR) on April 11, 2006 (and any subsequent District-approved versions). Total mileage from Platform Hillhouse to Port Hueneme is approximately 25 miles.

4.5 Tanks/Vessels/Sumps/Separators

Platform Hillhouse has two diesel fuel storage tanks. The diesel storage tanks service the various IC engines on the platform and are not controlled. Diesel tank emissions are very small and are assumed to be less than 0.10 tpy (200 lb/year). The detailed tank calculations for compliance will be performed using the methods presented in USEPA, AP-42, Chapter 7.

Vessels: Platform Hillhouse has several pressure vessels (e.g., production separators, test separators, treaters, and scrubbers). All PSVs, and blowdown valves are connected to the flare relief system header. Emissions from pressure vessels are due to fugitive hydrocarbon leaks from valves and connections. Emissions from pressure vessels are due to fugitive hydrocarbon leaks from valves and connections.

Sumps: There are two drain sumps (ABH-1212, ABH-1213) that recover oily liquids from the production deck and production equipment drains. Liquids collected in the drain sumps are pumped to a settling tank (MBF-1261), also located on the production deck. Two oil/water skim tanks {flotation Units} (ABM-1273, ABM-1277) process produced water from the treaters. Clean water from the floatation cell units is pumped to the floatation cell surge tank (ABM-1275). Two Baker Tanks are located on the production deck, a mud tank and a small drill water tank. All tanks and sumps are connected to either the vapor recovery system or are vented to the flare. The sump tanks, settling tank, and floatation cell surge tank emissions are based on the

CARB/KVB Report (*Emissions Characteristics of Crude Oil Production in California*, January 1983). These vessels are classified as being in secondary production and heavy oil service. The calculation is:

$$ER = [(EF \times SAREA \div 24) \times (1 - CE) \times (HPP)]$$

where: ER = emission rate (lb/period)
 EF = ROC emission factor (lb/ft²-day)
 SAREA = unit surface area (ft²)
 CE = control efficiency
 HPP = operating hours per time period (hrs/period)

Oil/water separators: Platform Hillhouse uses two oil/water separation units (flotation units) to process oily wastewater. An oil/water separator is defined as a class of waste water treatment equipment that processes known volumes of waste water on a continuous basis for treatment to remove entrained oil. The floatation cell units and the floatation cell surge tank are vented to the vapor recovery system. An uncontrolled emission factor of 560 lb ROC/MMgal of throughput from the CARB/KVB Report (*Emissions Characteristics of Crude Oil Production in California*, January 1983) is used to estimate emissions from each floatation cell unit. The control efficiency is, *assumed to be*, 95 percent. The calculation per time period is:

$$ER = (EF \times Q) \times (1 - CE)$$

where: ER = emission rate (lb/period)
 EF = ROC emission factor (lb/MMgallons/period)
 Q = throughput (gallons/period)
 CE = control efficiency

Two 500 bbl. portable tanks are located on the platform on an as needed basis. They are used on an as-needed temporary basis for the following activities: handling crude oil fluids associated with the drilling of new wells only, consistent with the Rule 325.B.1.b exemption under which these tanks are allowed to operate without use of vapor recovery. Fugitive ROC emissions result from evaporative storage losses. Evaporative emissions from the Portable tanks are based on the CARB/KVB Report (*Emissions Characteristics of Crude Oil Production in California*, January 1983). These vessels are classified as being in secondary production and heavy oil service and are not vented to the vapor recovery system. The calculation is:

$$ER = [(EF \times SAREA \div 24) \times (1 - CE) \times (HPP)]$$

where: ER = emission rate (lb/period)
 EF = ROC emission factor (lb/ft²-day)
 SAREA = unit surface area (ft²)
 HPP = operating period (period)

4.6 Vapor Recovery Systems

In addition to emissions from sumps/waste water tanks, oil/water separators and pressure relief systems, low pressure gas from the treaters and surge vessels goes through a suction scrubber (MBF-1281) to remove entrained liquids and is then compressed to about 40 psig by the vapor recovery compressors (CAE-2201 and CAE-2202). Gas discharged from the vapor recovery compressor is combined with the gas from the separators and compressed by either the Ariel compressor or Worthington compressor. A control efficiency of 95 percent is assigned to the vapor recovery system, based on the District P&P 6100.030.92.

4.7 Helicopters

Platform Hillhouse is equipped with a helipad, but helicopters are not used for routine transportation.

4.8 Other Emission Sources

The following is a brief discussion of other emission sources on Platform Hillhouse:

Pigging: Pipeline pigging operations occur on the platform. Both pig launching to Platform A and pig receiving from Platform Henry occurs. Emissions occur during the depressurization of these units, since a few ounces of back pressure remain in the chambers and ROC is emitted when chambers are opened to the atmosphere. It is stipulated in a 5/7/97 and 8/19/97 letters from Nuevo that the chambers are blanketed with sales gas before opening and the remaining pressure does not exceed 1 psig. The calculation per period is:

$$ER = [V_1 \times \rho \times wt \% \times EPP]$$

<u>where:</u>	ER =	emission rate (lb/period)
	V ₁ =	volume of vessel (ft ³)
	ρ =	density of vapor at actual conditions (lb/ft ³)
	wt % =	weight percent ROC-TOC
	EPP =	pigging events per time period (events/period)

General Solvent Cleaning/Degreasing: Solvent usage (not used as thinners for surface coating) occurring on Platform Hillhouse as part of normal daily operations includes small cold solvent degreasing and wipe cleaning. Mass balance emission calculations are used assuming all the solvent used evaporates to the atmosphere.

Surface Coating: Surface coating operations typically include normal touch up activities. Entire platform painting programs are performed once every few years. Emissions are determined based on mass balance calculations assuming all solvents evaporate into the atmosphere. Emission of PM/PM₁₀ from paint overspray are not calculated due to the lack of established calculation techniques.

Abrasive Blasting: Abrasive blasting with CARB certified sands may be performed as a preparation step prior to surface coating. Particulate matter is emitted during this process. A general emission factor of 0.01 pound PM per pound of abrasive is used (SCAQMD - Permit Processing Manual, 1989) to estimate emissions of PM and PM₁₀, when needed for compliance evaluations. A PM/PM₁₀/PM_{2.5} ratio of 1.0 is assumed.

4.9 BACT/NSPS/NESHAP/MACT

With the exception of the equipment listed in Table 4.1, none of the emission units at Platform Hillhouse has triggered Best Available Control Technology (BACT).

A National Emission Standards for Hazardous Air Pollutants (NESHAPS) for Oil and Natural Gas Production and Natural Gas Transmission and Storage was promulgated on June 17, 1999. As described in Section 3.2.4, this facility qualified for the black oil exemption and is required only to maintain the records specified in the conditions of this permit.

40 CFR Part 63 {MACT Subpart HH}: The *National Emissions Standard for Hazardous Air Pollutants for Oil and Natural Gas Production (Subpart HH)* was promulgated on June 17, 1999. Based on detailed HAP (including benzene) emissions information submitted by DCOR (Nuevo), the District determined that none of the requirements of 40 CFR 63, Subpart HH apply to Platform Hillhouse. See discussion in section 3.2.5.

40 CFR Part 63 {MACT Standards Subpart ZZZZ}: The revised National Emission Standard for Hazardous Air Pollutants (NESHAP) for reciprocating internal combustion engines (RICE) was published in the Federal Register on January 18, 2008. An affected source under the NESHAP is any existing, new, or reconstructed stationary RICE located at a major source or area source. Five engines on Platform Hillhouse are subject to this subpart.

4.10 CEMS/Process Monitoring/CAM

4.10.1 CEMS: There are no CEMS at this facility.

4.10.2 Process Monitoring: In many instances, ongoing compliance beyond a single (snap shot) source test is assessed by the use of process monitoring systems. Examples of these monitors include: engine hour meters, fuel usage meters, water injection mass flow meters, flare gas flow meters and hydrogen sulfide analyzers. Once these process monitors are in place, it is important that they be well maintained and calibrated to ensure that the required accuracy and precision of the devices are within specifications. At a minimum, the following process monitors will be required to be calibrated and maintained in good working order:

- Crew Boat Diesel Fuel Meters (main engine)
- Supply Boat Diesel Fuel Meters (main engine)
- Flare Header Flow Meter
- Hour Meters (cranes, emergency generator)

The above calibration and maintenance requirements shall be implemented according to the *Process Monitor Calibration and Maintenance Plan* (submitted 1/6/95 and any District-approved updates thereof). This Plan takes into consideration manufacturer recommended maintenance and calibration schedules. Where manufacturer guidance is not available, the recommendations of comparable equipment manufacturers and good engineering judgment shall be utilized.

4.10.3 CAM: None of the emission units at this facility are subject to the requirements of the CAM Rule, per 40 CFR 64.2 (*Applicability*).

4.11 Source Testing/Sampling

Source testing and sampling are required in order to ensure compliance with permitted emission limits, prohibitory rules, control measures and the assumptions that form the basis of this operating permit. At a minimum, the process streams as identified in Table 4.2 are required to be sampled and analyzed as indicated. Please see the *Process Stream Sampling and Analysis* condition (9.C.14) for further clarification. Table 4.3 details the pollutants, test methods and frequency of required testing. DCOR will be required to follow the *District Source Test Procedures Manual* (May 24, 1990 and all updates). The following emission units are required to be source tested.

- North Pedestal Crane Engine
- Supply Boat Main Engines
- Crew Boat Main Engines

TABLE 4.1 – BACT REQUIREMENTS

Date Approved	Rule 331 ID Number	Component Type	Location/Description	BACT Replacement	LDAR
06/08/97	96667	4" Fisher Valve	Platform Hillhouse	New stem, bonnet re-sleeving and installing "Enviro-Seal" packing, O-rings, and gaskets	500 ppm
11/05/13	96668-1.000	¼" stainless steel tube fitting.	Platform Hillhouse	Removed and replaced and ¼" stainless steel tube fitting.	100 ppm
11/05/13	97284.0000	8" valve in gas/light oil service	Platform Hillhouse	Will be replaced with a WKM 370-D4 – 4" nylon seat ball valve during next process shut-down.	100 ppm
04/14/14	97284.000	8" valve in gas/light oil service	Platform Hillhouse	Replaced with 8" – 300 370D4 Trunnion ball valve with Teflon seats.	100 ppm

Table 4.2 Process Stream Sampling Requirements

Process Stream	Parameter	Sampling Point**	Specific Location	Methods	Frequency
Produced Gas	1. H ₂ S 2. TRS 3. HHV 4. Composition	Production Separator Outlet for all samples	Point located on the 6"-E-121 gas line to Plt. HLH just after gas pig launcher (KAH-6002)-Ref. Drwg.# 1168-G-106 (Plt. 'Hlh')	1. USEPA Method 16 2. USEPA Method 16 3. D-1945 4. D-3588	1. Annual 2. Annual 3. Annual 4. Semi-annual
Produced Oil	1. True vapor pressure (TVP) 2. API Gravity	For all samples, production separator outlet	Point located on the 6x3 section of the 8"-E-240 oil line to Plt. HLH, just prior to oil pig launcher (KAH-6003)-Ref. Drwg.# 1168-G-106 (Plt. 'Hlh')	1. D-323/D-4057 (or API Bulletin 2519) 2. D-287-82	1. Biennial 2. Biennial

*** -- The above sampling locations, sampling and analytical methods may be revised upon written request from the permittee and approval by the District.*

TABLE 4.3 - SOURCE TEST REQUIREMENTS

<u>Emission Points</u>	<u>Pollutants/ Parameters</u>	<u>Test Methods</u>	<u>Allowable Exhst. Concentration</u>
- Crane Engine (North) - Crew Boat Main Engines - Supply Boat Main Engines	NO _x (ppmv, lb/hr)	CARB 1-100 or USEPA 7E	700 ppm @ 15% O ₂
	CO (ppmv, lb/hr)	CARB 1-100 or USEPA 10	
	ROC (ppmv, lb/hr)	USEPA 18	
	Fuel Flow Rate	Fuel meter for boats; day tank level for crane	
	Fuel High Heating Value	ASTM	
	Total Sulfur Content	ASTM	

Site Specific Requirements

- a. All emissions tests to consist of three 40-minute runs. Crane engine tests to consist of three 20-minute runs. Crane engine to be tested at safe maximum load. Crew and supply boat main engines to be tested at cruise load. Crew boat test runs may be shortened if the boat is used on normal trips to/from the platform. Additional testing may be required if loads are not achieved.
- b. The specific project crew and supply boat to be tested shall be determined by the District.
- c. USEPA methods 1-4 to be used to determine O₂, dry MW, moisture content, CO₂, and stack flow rate. Alternatively, USEPA 19 may be used to determine flow rate for NO_x emission rate purpose.
- d. SO_x emissions to be determined by mass balance calculation.
- e. The main engines from one crew and one supply boat shall be tested annually. The crane engine shall be tested biennially.
- f. Procedures to obtain the required operating loads shall be clearly defined in the source test plan.
- g. Note: Rule 333 limit currently is 700 ppmv @15% O₂, See the Rule 333 discussion in Section 3.4 of this permit.

5.0 Emissions

5.1 General

No permitting actions have taken place at this facility since PTO 9114-R4 was issued in December 2014. Thus no changes were made to this permit based on recent permitting actions. The emissions of PM_{2.5} have been included in the emission tables of this permit to be consistent with other permits issued by the District.

Emissions calculations are divided into "permitted" and "exempt" categories. Permit exempt equipment is determined by District Rule 202. The permitted emission for each emissions unit is based on the equipment's potential-to-emit (as defined by Rule 102). Section 5.2 details the permitted emissions for each emissions unit. Section 5.3 details the overall permitted emissions for the facility based on reasonable worst-case scenarios using the potential-to-emit for each emissions unit. Section 5.4 provides the federal potential to emit calculation using the definition of potential to emit used in Rule 1301. Section 5.5 provides the estimated emissions from permit exempt equipment, also serves as the Part 70 list of insignificant emission. In order to track accurately the emissions from a facility, the District uses a computer database. Attachment 10.3 contains the District's documentation for the information entered in that database.

5.2 Permitted Emission Limits - Emission Units

Each emissions unit associated with the facility was analyzed to determine the potential-to-emit for the following pollutants:

- Nitrogen Oxides (NO_x)³
- Reactive Organic Compounds (ROC)
- Carbon Monoxide (CO)
- Sulfur Oxides (SO_x)⁴
- Particulate Matter (PM)⁵
- Particulate Matter smaller than 10 microns (PM₁₀)
- Particulate Matter smaller than 2.5 microns (PM_{2.5})
- Greenhouse Gases (GHG)

³ Calculated and reported as nitrogen dioxide (NO₂)

⁴ Calculated and reported as sulfur dioxide (SO₂)

⁵ Calculated and reported as all particulate matter smaller than 100 µm

Permitted emissions are calculated for both short term (hourly and daily) and long term (quarterly and annual) time periods. Section 4.0 (Engineering Analysis) provides a general discussion of the basic calculation methodologies and emission factors used. The reference documentation for the specific emission calculations, as well as detailed calculation spreadsheets, may be found in Section 4 and Attachments 10.1 and 10.2 respectively. Table 5.1-1 provides the basic operating characteristics. Table 5.1-2 provides the specific emission factors. Tables 5.1-3 and 5.1-4 show the permitted short-term and permitted long-term emissions for each unit or operation. In the tables, the last column indicates whether the emission limits are federally enforceable. Those emissions limits that are federally enforceable are indicated by the symbol "FE". Those emissions limits that are District-only enforceable are indicated by the symbol "A".

5.3 Permitted Emission Limits - Facility Totals

The total potential-to-emit for all emission units associated with the facility was analyzed. This analysis looked at the reasonable worst-case operating scenarios for each operating period. The equipment operating in each of the scenarios are presented below. Unless otherwise specified, the operating characteristics defined in Table 5.1-1 for each emission unit are assumed. Table 5.2 shows the total permitted emissions for the facility.

Hourly and Daily Scenario:

- Both North and South Pedestal Crane engines and the emergency generator
- Flare purge and pilot
- Planned continuous flaring
- Supply Boat
 - Main engines operating at cruise mode
 - Generator engines on supply boat provide half of maximum engine rating
 - Bow thruster on supply boat does not operate during peak hour
- Crew Boat
 - Main engines operating at cruise mode
 - Generator engines on crew boat provide half of maximum engine rating
- Fugitive components
- Oil pig launcher
- Waste oil sump
- Flotation cell unit
- Skimmer tank
- Waste water tank
- Solvent usage

Quarterly and Annual Scenario:

- Both North and South Pedestal Crane engines and the emergency generator
- Flare purge and pilot
- Planned continuous flaring
- Planned intermittent (other) flaring
- Unplanned flaring
- Supply Boat
 - Main engines operating at cruise mode
 - Generator engines on supply boat provide half of maximum engine rating
 - Bow thruster
- Crew Boat
 - Main engines operating at cruise mode

Auxiliary engines on crew boat provide half of maximum engine rating

- Fugitive components
- Pig launchers and receivers
- Waste oil sump
- Flotation cell unit
- Skimmer tank
- Waste water tank
- Solvent usage

5.4 Part 70: Federal Potential to Emit for the Facility

Table 5.3 lists the federal Part 70 potential to emit. Being subject to the OCS Air Regulation, all project emissions, except fugitive emissions, are counted in the federal definition of potential to emit. However, fugitives are counted in the federal PTE if the facility is subject to any applicable NSPS or NESHAP requirement promulgated before August 7, 1980. Five internal combustion engines on Platform Hillhouse are subject to NESHAP per *40 CFR Part 63 {MACT Standards Subpart ZZZZ}*.

5.5 Exempt Emission Sources/Part 70 Insignificant Emissions

Equipment/activities exempt from District permits pursuant to Rule 202 include:

- 49 hp IC engine powering the portable air compressor
- Two Diesel fuel #2 storage tanks, 6,000 and 300 gallons capacity respectively
- Maintenance operations involving surface coating/solvents (painting operations/wipe cleaning)
- Solvents used for wipe cleaning.

Insignificant emission units are defined under District Rule 1301 as any regulated air pollutant emitted from the unit, excluding HAPs, that are less than 2 tons per year based on the unit's potential to emit and any HAP regulated under section 112(g) of the Clean Air Act that does not exceed 0.5 ton per year based on the unit's potential to emit. The following emission units are exempt from permit per Rule 202, but are not considered insignificant emission units:

- Coating/Solvents used for maintenance type operations, if usage exceeds 1,150 gallons/year,
- 49 hp IC engine powering the portable air compressor.

Table 5.4 presents the estimated annual emissions from these exempt equipment items, not including those exempt items considered significant. This permit covers the Solvents/Surface coating operations not classed as maintenance operations (see Section 9.C). *Please note that non-maintenance activities using solvents and surface coating are not permit-exempt.*

Table 5.1-1
 Dos Cuadras Platform Hillhouse - Part70/PTO 9114-R5
 Operating Equipment Description

Equipment Category	Description	District Device No.	Device Specifications				Usage Data				Maximum Operating Schedule				References
			Fuel	% S	Size	Units	Capacity	Units	Load	hr	day	qtr	year		
Combustion - Engines	North Crane	004905	D2	0.0015	238	bhp	7,241	Btu/bhp-hr	--	1.0	24	500	1,000	A	
	South Crane	004904	D2	0.0015	109	bhp	7,700	Btu/bhp-hr	--	1.0	24	100	200	A	
	Emergency Power Generator	004906	D2	0.0015	715	bhp	7,000	Btu/bhp-hr	--	1.0	2	200	200	A	
	Emergency Fire Pump	004908	D2	0.0015	200	bhp	8,000	Btu/bhp-hr	--	1.0	2	200	200		
Combustion - Flare	Emergency Drill Rig Gen	004907	D2	0.0015	730	bhp	7,000	Btu/bhp-hr	--	1.0	2	200	200		
	Purge and Pilot	112631	PG	0.0239	135	scfh	0.149	MMBtu/hr	--	1.0	24	2,190	8,760	B	
	Planned - continuous	--	PG	0.0239	250	scfh	0.275	MMBtu/hr	--	1.0	24	2,190	8,760		
	Planned - other	--	PG	0.0239	2,500	MMBtu/hr	26.393	MMscf/yr	--	--	--	1	1		
Fugitive Components	Unplanned	--	PG	0.0239	2,500	MMBtu/hr	26.393	MMscf/yr	--	--	--	1	1		
	Oil - controlled	102461	--	--	7,759	comp-lp	--	--	--	1.0	24	2,190	8,760	C	
	Oil - unsafe	102462	--	--	23	comp-lp	--	--	--	1.0	24	2,190	8,760		
	Gas - controlled	102459	--	--	10,403	comp-lp	--	--	--	1.0	24	2,190	8,760		
Supply Boat	Gas - unsafe	102460	--	--	200	comp-lp	--	--	--	1.0	24	2,190	8,760		
	Main Engines - controlled	005533	D2	0.0015	4,000	bhp-total	0.049	gal/bhp-hr	0.65	1.0	11	57	114	D	
	Generator Engines	102465	D2	0.0015	490	bhp-total	0.055	gal/bhp-hr	0.50	1.0	11	57	114		
	Bow Thruster	005535	D2	0.0015	515	bhp-total	0.055	gal/bhp-hr	1.00	1.0	2	10	21		
Emergency Response	Main Engines - controlled	005536	D2	0.0015	2,900	bhp-total	0.055	gal/bhp-hr	0.65	--	--	18	72	D	
	Auxiliary Engines	005536	D2	0.0015	78	bhp-total	0.055	gal/bhp-hr	0.50	1.0	24	18	72		
Crew Boat	Main Engines - controlled	005537	D2	0.0015	1,701	bhp-total	0.055	gal/bhp-hr	0.85	1.0	17.5	262.5	1,050	E	
	Auxiliary Engines	005538	D2	0.0015	218	bhp-total	0.055	gal/bhp-hr	0.50	1.0	17.5	262.5	1,050		
Pigging Equipment	Oil Launcher	102428	--	--	4.99	cf	1	psig	--	1.0	1.0	26	104	F	
	Oil Receiver	102431	--	--	8.29	cf	1	psig	--	1.0	1.0	26	104		
	Gas Launcher	114004	--	--	3.00	cf	1	psig	--	1.0	1.0	39	156		
	Gas Receiver	102430	--	--	1.65	cf	1	psig	--	1.0	1.0	26	104		
Sumps/Tanks/Separators	Floation Cell	005556	--	--	0.42	MMgal/day	--	--	--	1.0	24	2,190	8,760	G	
	Floation Cell	008225	--	--	0.42	MMgal/day	--	--	--	1.0	24	2,190	8,760		
	Wemco Surge Tank	005541	--	--	113.10	ft2	--	--	--	1.0	24	2,190	8,760		
	Settling Tank	005558	--	--	50.30	ft2	--	--	--	1.0	24	2,190	8,760		
	Sm,Drill Water Tank	102467	--	--	210.00	ft2	--	--	--	1.0	24	2,190	8,760		
	Mud Tank	102468	--	--	78.50	ft2	--	--	--	1.0	24	2,190	8,760		
Solvent Usage	Hor. Surge Tank	005539	--	--	32.00	ft2	--	--	--	1.0	24	2,190	8,760		
	Hor. Surge Tank	005540	--	--	32.00	ft2	--	--	--	1.0	24	2,190	8,760		
Permit-exempt/Fed. Significant Unit	Cleaning/degreasing (estd.)	004920	--	--	--	--	3,490	gal/yr	--	1.0	24	2,190	8,760	H	
	Exempt Air Compressor	110757	D2	0.0015	49	bhp	8,000	Btu/hp-hr	--	1.0	24	2,190	8,760		

Table 5.1-2
 Dos Cuadras Platform Hillhouse - Part70/PTO 9114-R5
 Equipment Emission Factors

Equipment Category	Description	District Device No.	Emission Factors							GHG	Units	References
			NO _x	ROC	CO	SO _x	PM	PM ₁₀	PM _{2.5}			
Combustion - Engines	North Crane	004905	2.65	0.30	0.95	0.00	0.31	0.31	0.31	163.6	lb/MMBtu	A
	South Crane	004904	3.99	0.30	0.95	0.00	0.31	0.31	0.31	163.6	lb/MMBtu	A
	Emergency Power Generator	004906	14.06	1.12	3.03	0.00	0.98	0.98	0.98	556.6	g/bhp-hr	A
	Emergency Fire Pump	004908	14.06	1.12	3.03	0.00	0.98	0.98	0.98	556.6	g/bhp-hr	
	Emergency Drill Rig Gen	004907	14.06	1.12	3.03	0.00	0.98	0.98	0.98	556.6	g/bhp-hr	
Combustion - Flare	Purge and Pilot	112631	0.07	0.06	0.37	0.04	0.02	0.02	0.02	117.1	lb/MMBtu	B
	Planned - continuous	--	0.07	0.06	0.37	0.04	0.02	0.02	0.02	117.1	lb/MMBtu	
	Planned - other	--	0.07	0.06	0.37	0.04	0.02	0.02	0.02	117.1	lb/MMBtu	
Fugitive Components	Unplanned	--	0.07	0.06	0.37	0.04	0.02	0.02	0.02	117.1	lb/MMBtu	
	Oil - controlled	102461	--	0.0009	--	--	--	--	--	--	lb/day-clip	C
	Oil - unsafe	102462	--	0.0044	--	--	--	--	--	--	lb/day-clip	
	Gas - controlled	102459	--	0.0147	--	--	--	--	--	--	lb/day-clip	
Supply Boat	Gas - unsafe	102460	--	0.0736	--	--	--	--	--	--	lb/day-clip	
	Main Engines - controlled	005533	269.85	16.80	148.30	0.2113	33.00	33.00	33.00	22,309.6	lb/1000 gal	D
	Generator Engines	102465	604.17	41.32	130.15	0.2113	42.47	42.47	42.47	22,309.6	lb/1000 gal	
Emergency Response	Bow Thruster	005535	604.17	41.32	130.15	0.2113	42.47	42.47	42.47	22,309.6	lb/1000 gal	
	Main Engines - controlled	005536	271.00	16.80	148.30	0.2113	6.00	6.00	6.00	22,309.6	lb/1000 gal	D
Crew Boat	Auxiliary Engines	005536	202.00	22.45	148.30	0.2113	12.03	12.03	12.03	22,309.6	lb/1000 gal	
	Main Engines - controlled	005537	234.50	26.05	148.26	0.2113	14.83	14.83	14.83	22,309.6	lb/1000 gal	E
Pigging Equipment	Auxiliary Engines	005538	604.17	41.32	148.30	0.2113	42.47	42.47	40.77	22,309.6	lb/1000 gal	
	Oil Launcher	102428	--	0.01	--	--	--	--	--	--	lb/acf-evtnt	F
	Oil Receiver	102431	--	0.01	--	--	--	--	--	--	lb/acf-evtnt	
Sumps/Tanks/Separators	Gas Launcher	114004	--	0.01	--	--	--	--	--	--	lb/acf-evtnt	
	Gas Receiver	102430	--	0.01	--	--	--	--	--	--	lb/acf-evtnt	
	Floatation Cell	005556	--	28.00	--	--	--	--	--	--	lb/MMgal-di	G
	Floatation Cell	008225	--	28.00	--	--	--	--	--	--	lb/MMgal-day	
	Wemco Surge Tank	005541	--	0.00	--	--	--	--	--	--	lb/ft2-day	
	Settling Tank	005558	--	0.00	--	--	--	--	--	--	lb/ft2-day	
	Sm.Drill Water Tank	102467	--	0.00	--	--	--	--	--	--	lb/ft2-day	
	Mud Tank	102468	--	0.01	--	--	--	--	--	--	lb/ft2-day	
	Hor. Surge Tank	005539	--	0.00	--	--	--	--	--	--	lb/ft2-day	
	Hor. Surge Tank	005540	--	0.00	--	--	--	--	--	--	lb/ft2-day	
Solvent Usage	Cleaning/degreasing	004920	--	6.6	--	--	--	--	--	--	lb/gal	H
Permit-exempt/Fed. Significant Unit	Exempt Air Compressor	110757	4.41	0.30	0.95	0.00	0.31	0.30	0.30	163.6	lb/MMBtu	

Table 5.1-3
 Dos Cuadras Platform Hillhouse - Part70/PTO 9114-R5
 Hourly and Daily Emissions

Equipment Category	Description	District Device No.	NO _x lb/hr	NO _x lb/day	ROC lb/hr	ROC lb/day	CO lb/hr	CO lb/day	SO _x lb/hr	SO _x lb/day	PM lb/hr	PM lb/day	PM ₁₀ lb/hr	PM ₁₀ lb/day	PM _{2.5} lb/hr	PM _{2.5} lb/day	GHG lb/hr	GHG lb/day	Federally Enforceable
Combustion - Engines	North Crane	004905	4.84	116.19	0.55	13.22	1.74	0.00	0.00	0.00	0.57	13.59	0.57	13.59	0.57	13.59	298.9	7,173.4	FE
	South Crane	004904	3.55	85.23	0.27	6.44	0.85	0.00	0.00	0.00	0.28	6.62	0.28	6.62	0.28	6.62	145.6	3,493.2	FE
	Emergency Power Generator	004906	22.16	44.33	1.77	3.53	4.78	9.55	0.00	0.00	1.54	3.09	1.54	3.09	1.54	3.09	2,952.9	5,905.9	FE
	Emergency Fire Pump	004908	22.16	44.33	1.77	3.53	4.78	9.55	0.00	0.00	1.54	3.09	1.54	3.09	1.54	3.09	944.0	1,888.0	FE
	Emergency Drill Rig Gen	004907	22.16	44.33	1.77	3.53	4.78	9.55	0.00	0.00	1.54	3.09	1.54	3.09	1.54	3.09	3,014.9	6,029.8	FE
Combustion - Flare	Purge and Pilot	112631	0.01	0.24	0.01	0.20	0.05	1.32	0.01	0.13	0.00	0.07	0.00	0.07	0.00	0.07	17.4	417.3	FE
	Planned - continuous	--	0.02	0.45	0.02	0.38	0.10	2.44	0.01	0.24	0.01	0.13	0.01	0.13	0.01	0.13	32.2	772.9	FE
	Planned - other Unplanned	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Fugitive Components	Oil - controlled	102461	--	--	0.28	6.81	--	--	--	--	--	--	--	--	--	--	--	--	FE
	Oil - unsafe	102462	--	--	0.00	0.10	--	--	--	--	--	--	--	--	--	--	--	--	FE
	Gas - controlled	102459	--	--	6.38	153.11	--	--	--	--	--	--	--	--	--	--	--	--	FE
	Gas - unsafe	102460	--	--	0.61	14.72	--	--	--	--	--	--	--	--	--	--	--	--	FE
Supply Boat	Main Engines - controlled	005533	34.33	377.68	2.14	23.51	18.87	207.56	0.03	0.30	4.20	46.19	4.20	46.19	4.20	46.19	2,838.5	31,223.9	FE
	Generator Engines	102465	8.14	89.55	0.56	6.12	1.75	19.29	0.00	0.03	0.57	6.30	0.57	6.30	0.57	6.30	300.6	3,306.8	FE
	Bow Thruster	005535	17.11	34.23	1.17	2.34	3.69	7.37	0.01	0.01	1.20	2.41	1.20	2.41	1.20	2.41	631.9	1,263.8	FE
Emergency Response	Main Engines - controlled Auxiliary Engines	005536 005536	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	FE
	Crew Boat	Main Engines - controlled	005537	18.65	326.34	2.07	36.25	11.79	206.32	0.02	0.29	1.18	20.64	1.18	20.64	1.18	20.64	1,774.1	31,046.7
Auxiliary Engines		005538	3.62	63.38	0.25	4.33	0.89	15.66	0.00	0.02	0.25	4.46	0.24	4.28	0.24	4.28	133.7	2,340.6	FE
Pigging Equipment	Oil Launcher	102428	--	--	0.04	0.04	--	--	--	--	--	--	--	--	--	--	--	--	FE
	Oil Receiver	102431	--	--	0.07	0.07	--	--	--	--	--	--	--	--	--	--	--	--	FE
	Gas Launcher	114004	--	--	0.02	0.02	--	--	--	--	--	--	--	--	--	--	--	--	FE
	Gas Receiver	102430	--	--	0.01	0.01	--	--	--	--	--	--	--	--	--	--	--	--	FE
Sumps/Tanks/Separators	Floatation Cell	005556	--	--	0.49	11.76	--	--	--	--	--	--	--	--	--	--	--	--	FE
	Floatation Cell	008225	--	--	0.49	11.76	--	--	--	--	--	--	--	--	--	--	--	--	FE
	Wemco Surge Tank	005541	--	--	0.00	0.03	--	--	--	--	--	--	--	--	--	--	--	--	FE
	Settling Tank	005558	--	--	0.00	0.03	--	--	--	--	--	--	--	--	--	--	--	--	FE
	Sm.Drill Water Tank	102467	--	--	0.01	0.13	--	--	--	--	--	--	--	--	--	--	--	--	FE
	Mud Tank	102468	--	--	0.05	1.11	--	--	--	--	--	--	--	--	--	--	--	--	FE
	Hor. Surge Tank	005539	--	--	0.00	0.02	--	--	--	--	--	--	--	--	--	--	--	--	FE
Solvent Usage	Hor. Surge Tank	005540	--	--	0.00	0.01	--	--	--	--	--	--	--	--	--	--	--	--	FE
	Cleaning/degreasing	004920	--	--	7.89	63.11	--	--	--	--	--	--	--	--	--	--	--	--	FE
Permit-exempt/Fed.Significant Unit	Exempt Air Compressor	110757	1.83	43.98	0.12	2.99	0.39	9.47	0.00	0.02	0.13	3.09	0.12	2.99	0.12	2.99	68.0	1,631.6	FE

Table 5.1-4
 Dos Cuadras Platform Hillhouse - Part70/PTO 9114-R5
 Quarterly and Annual Emissions

Equipment Category	Description	District Device No.	NO _x		CO		SO _x		PM		PM ₁₀		PM _{2.5}		GHG		Federally Enforceable
			TPQ	TPY	TPQ	TPY	TPQ	TPY	TPQ	TPY	TPQ	TPY	TPQ	TPY	TPQ	TPY	
Combustion - Engines	North Crane	004905	1.21	2.42	0.14	0.28	0.43	0.87	0.00	0.00	0.14	0.28	0.14	0.28	74.7	149.4	FE
	South Crane	004904	0.18	0.36	0.01	0.03	0.04	0.08	0.00	0.00	0.01	0.03	0.01	0.03	7.3	14.6	FE
	Emergency Power Generator	004906	2.22	2.22	0.18	0.18	0.48	0.48	0.00	0.00	0.15	0.15	0.15	0.15	295.3	295.3	FE
	Emergency Fire Pump	004908	2.22	2.22	0.18	0.18	0.48	0.48	0.00	0.00	0.15	0.15	0.15	0.15	94.4	94.4	FE
	Emergency Drill Rig Gen	004907	2.22	2.22	0.18	0.18	0.48	0.48	0.00	0.00	0.15	0.15	0.15	0.15	301.5	301.5	FE
Combustion - Flare	Purge and Pilot	112631	0.01	0.04	0.01	0.04	0.06	0.24	0.01	0.02	0.00	0.01	0.00	0.01	19.0	76.2	FE
	Planned - continuous	--	0.02	0.08	0.02	0.07	0.11	0.45	0.01	0.04	0.01	0.02	0.01	0.02	35.3	141.0	FE
	Planned - other	--	1.18	1.18	1.00	1.00	6.44	6.44	0.64	0.64	0.35	0.35	0.35	0.35	146.4	146.4	FE
	Unplanned	--	1.18	1.18	1.00	1.00	6.44	6.44	0.64	0.64	0.35	0.35	0.35	0.35	146.4	146.4	FE
Fugitive Components	Oil - controlled	102461	--	--	0.31	1.24	--	--	--	--	--	--	--	--	--	--	FE
	Oil - unsafe	102462	--	--	0.00	0.02	--	--	--	--	--	--	--	--	--	--	FE
	Gas - controlled	102459	--	--	6.99	27.94	--	--	--	--	--	--	--	--	--	--	FE
Supply Boat	Gas - unsafe	102460	--	--	0.67	2.69	--	--	--	--	--	--	--	--	--	--	FE
	Main Engines - controlled	005533	0.98	1.96	0.06	0.12	0.54	1.08	0.00	0.00	0.12	0.24	0.12	0.24	81.2	162.4	FE
	Generator Engines	102465	0.23	0.47	0.02	0.03	0.05	0.10	0.00	0.00	0.02	0.03	0.02	0.03	8.6	17.2	FE
	Bow Thruster	005535	0.09	0.18	0.01	0.01	0.02	0.04	0.00	0.00	0.01	0.01	0.01	0.01	3.3	6.6	FE
Emergency Response	Main Engines - controlled	005536	0.25	1.01	0.02	0.06	0.14	0.55	0.00	0.00	0.01	0.02	0.01	0.02	20.8	83.3	FE
	Auxiliary Engines	005536	0.00	0.02	0.00	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.4	1.7	FE
Crew Boat	Main Engines - controlled	005537	2.45	9.79	0.27	1.09	1.55	6.19	0.00	0.01	0.15	0.62	0.15	0.62	232.9	931.4	FE
	Auxiliary Engines	005538	0.48	1.90	0.03	0.13	0.12	0.47	0.00	0.00	0.03	0.13	0.03	0.13	17.6	70.2	FE
Pigging Equipment	Oil Launcher	102428	--	--	0.00	0.00	--	--	--	--	--	--	--	--	--	--	FE
	Oil Receiver	102431	--	--	0.00	0.00	--	--	--	--	--	--	--	--	--	--	FE
	Gas Launcher	114004	--	--	0.00	0.00	--	--	--	--	--	--	--	--	--	--	FE
	Gas Receiver	102430	--	--	0.00	0.00	--	--	--	--	--	--	--	--	--	--	FE
Sumps/Tanks/Separators	Flotation Cell	005556	--	--	0.54	2.15	--	--	--	--	--	--	--	--	--	--	FE
	Flotation Cell	008225	--	--	0.54	2.15	--	--	--	--	--	--	--	--	--	--	FE
	Wemco Surge Tank	005541	--	--	0.00	0.01	--	--	--	--	--	--	--	--	--	--	FE
	Settling Tank	005558	--	--	0.00	0.01	--	--	--	--	--	--	--	--	--	--	FE
	Sm.Drill Water Tank	102467	--	--	0.01	0.02	--	--	--	--	--	--	--	--	--	--	FE
	Mud Tank	102468	--	--	0.05	0.20	--	--	--	--	--	--	--	--	--	--	FE
	Hor. Surge Tank	005539	--	--	0.00	0.00	--	--	--	--	--	--	--	--	--	--	FE
	Hor. Surge Tank	005540	--	--	0.00	0.00	--	--	--	--	--	--	--	--	--	--	FE
Solvent Usage	Cleaning/degreasing	004920	--	--	2.88	11.52	--	--	--	--	--	--	--	--	--	--	FE
	Exempt Air Compressor	110757	2.01	8.03	0.14	0.55	0.43	1.73	0.00	0.00	0.14	0.56	0.14	0.55	74.4	297.8	FE

Table 5.2
Dos Cuadras Platform Hillhouse - Part70/PTO 9114-R5
Total Permitted Facility Emissions

A. HOURLY (lb/hr)

Equipment Category	NO _x	ROC	CO	SO _x	PM	PM ₁₀	PM _{2.5}	GHG
Combustion - Engines	74.88	6.12	16.91	0.00	5.48	5.48	5.48	7,356.2
Combustion - Flare	0.03	0.02	0.16	0.02	0.01	0.01	0.01	49.6
Fugitive Components	--	7.28	--	--	--	--	--	--
Supply Boat	59.59	3.86	24.31	0.04	5.97	5.97	5.97	3,771.1
Emergency Response	--	--	--	--	--	--	--	--
Crew Boat	22.27	2.32	12.68	0.02	1.43	1.42	1.42	1,907.8
Pigging	--	0.15	--	--	--	--	--	--
Sumps/Tanks/Separators	--	1.04	--	--	--	--	--	--
Solvent Usage	--	7.89	--	--	--	--	--	--
	156.77	28.68	54.05	0.07	12.89	12.88	12.88	13,084.8

B. DAILY (lb/day)

Equipment Category	NO _x	ROC	CO	SO _x	PM	PM ₁₀	PM _{2.5}	GHG
Combustion - Engines	334.39	30.26	28.66	0.00	29.48	29.48	29.48	24,490.2
Combustion - Flare	0.69	0.58	3.76	0.37	0.20	0.20	0.20	1,190.2
Fugitive Components	--	174.74	--	--	--	--	--	--
Supply Boat	501.45	31.98	234.22	0.34	54.89	54.89	54.89	35,794.6
Emergency Response	--	--	--	--	--	--	--	--
Crew Boat	389.72	40.59	221.88	0.32	25.09	24.92	24.92	33,387.3
Pigging	--	0.15	--	--	--	--	--	--
Sumps/Tanks/Separators	--	24.85	--	--	--	--	--	--
Solvent Usage	--	63.11	--	--	--	--	--	--
	1,226.26	366.25	488.52	1.03	109.66	109.48	109.48	94,862.4

C. QUARTERLY (tpq)

Equipment Category	NO _x	ROC	CO	SO _x	PM	PM ₁₀	PM _{2.5}	GHG
Combustion - Engines	8.04	0.68	1.91	0.00	0.62	0.62	0.62	773.2
Combustion - Flare	2.40	2.02	13.04	1.29	0.70	0.70	0.70	347.1
Fugitive Components	--	7.97	--	--	--	--	--	--
Supply Boat	1.30	0.08	0.61	0.00	0.14	0.14	0.14	93.1
Emergency Response	0.26	0.02	0.14	0.00	0.01	0.01	0.01	21.2
Crew Boat	2.92	0.30	1.66	0.00	0.19	0.19	0.19	250.4
Pigging	--	0.00	--	--	--	--	--	--
Sumps/Tanks/Separators	--	1.13	--	--	--	--	--	--
Solvent Usage	--	2.88	--	--	--	--	--	--
	14.92	15.10	17.37	1.30	1.66	1.66	1.66	1,485.0

D. ANNUAL (tpy)

Equip Equipment Category	NO _x	ROC	CO	SO _x	PM	PM ₁₀	PM _{2.5}	GHG
Combustion - Engines	9.42	0.83	2.39	0.00	0.77	0.77	0.77	855.2
Combustion - Flare	2.49	2.10	13.56	1.35	0.73	0.73	0.73	510.0
Fugitive Components	--	31.89	--	--	--	--	--	--
Supply Boat	2.61	0.17	1.22	0.00	0.29	0.29	0.29	186.1
Emergency Response	1.03	0.56	0.56	0.00	0.02	0.02	0.02	85.0
Crew Boat	11.69	1.22	6.66	0.01	0.75	0.75	0.75	1,001.6
Pigging	--	0.01	--	--	--	--	--	--
Sumps/Tanks/Separators	--	4.54	--	--	--	--	--	--
Solvent Usage	--	11.52	--	--	--	--	--	--
	27.24	52.84	24.38	1.36	2.57	2.56	2.56	2,637.9

**Table 5.3
Dos Cuadras Platform Hillhouse - Part70/PTO 9114-R5
Federal Potential to Emit**

A. PEAK HOURLY (lb/hr)

Equipment Category	NO _x	ROC	CO	SO _x	PM	PM ₁₀	PM _{2.5}	GHG
Combustion - Engines	74.88	6.12	16.91	0.00	5.48	5.48	5.48	7,356.2
Combustion - Flare	0.03	0.02	0.16	0.02	0.01	0.01	0.01	49.6
Fugitive Components	--	--	--	--	--	--	--	--
Supply Boat	59.59	3.86	24.31	0.04	5.97	5.97	5.97	3,771.1
Emergency Response	--	--	--	--	--	--	--	--
Crew Boat	22.27	2.32	12.68	0.02	1.43	1.42	1.42	1,907.8
Pigging	--	0.15	--	--	--	--	--	--
Sumps/Tanks/Separators	--	--	--	--	--	--	--	--
Solvent Usage	--	7.89	--	--	--	--	--	--
	156.77	20.36	54.05	0.07	12.89	12.88	12.88	13,084.8

B. PEAK DAILY (lb/day)

Equipment Category	NO _x	ROC	CO	SO _x	PM	PM ₁₀	PM _{2.5}	GHG
Combustion - Engines	334.39	30.26	28.66	0.00	29.48	29.48	29.48	24,490.2
Combustion - Flare	0.69	0.58	3.76	0.37	0.20	0.20	0.20	1,190.2
Fugitive Components	--	--	--	--	--	--	--	--
Supply Boat	501.45	31.98	234.22	0.34	54.89	54.89	54.89	35,794.6
Emergency Response	--	--	--	--	--	--	--	--
Crew Boat	389.72	40.59	221.88	0.32	25.09	24.92	24.92	33,387.3
Pigging	--	0.15	--	--	--	--	--	--
Sumps/Tanks/Separators	--	--	--	--	--	--	--	--
Solvent Usage	--	63.11	--	--	--	--	--	--
	1,226.26	166.66	488.52	1.03	109.66	109.48	109.48	94,862.4

C. PEAK QUARTERLY (tpq)

Equipment Category	NO _x	ROC	CO	SO _x	PM	PM ₁₀	PM _{2.5}	GHG
Combustion - Engines	8.04	0.68	1.91	0.00	0.62	0.62	0.62	773.2
Combustion - Flare	2.40	2.02	13.04	1.29	0.70	0.70	0.70	347.1
Fugitive Components	--	--	--	--	--	--	--	--
Supply Boat	1.30	0.08	0.61	0.00	0.14	0.14	0.14	93.1
Emergency Response	0.26	0.02	0.14	0.00	0.01	0.01	0.01	21.2
Crew Boat	2.92	0.30	1.66	0.00	0.19	0.19	0.19	250.4
Pigging	--	0.00	--	--	--	--	--	--
Sumps/Tanks/Separators	--	--	--	--	--	--	--	--
Diesel Storage Tanks	--	0.10	--	--	--	--	--	--
Surface Coating - Maintenance	--	0.13	--	--	--	--	--	--
Solvent Usage	--	2.88	--	--	--	--	--	--
	14.92	6.22	17.37	1.30	1.66	1.66	1.66	1,485.0

D. PEAK ANNUAL (tpy)

Equipment Category	NO _x	ROC	CO	SO _x	PM	PM ₁₀	PM _{2.5}	GHG
Combustion - Engines	9.42	0.83	2.39	0.00	0.77	0.77	0.77	855.2
Combustion - Flare	2.49	2.10	13.56	1.35	0.73	0.73	0.73	510.0
Fugitive Components	--	--	--	--	--	--	--	--
Supply Boat	2.61	0.17	1.22	0.00	0.29	0.29	0.29	186.1
Emergency Response	1.03	0.06	0.56	0.00	0.02	0.02	0.02	85.0
Crew Boat	11.69	1.22	6.66	0.01	0.75	0.75	0.75	1,001.6
Pigging	--	0.01	--	--	--	--	--	--
Sumps/Tanks/Separators	--	--	--	--	--	--	--	--
Diesel Storage Tanks	--	0.10	--	--	--	--	--	--
Surface Coating - Maintenance	--	0.13	--	--	--	--	--	--
Solvent Usage	--	11.52	--	--	--	--	--	--
	27.24	16.14	24.38	1.36	2.57	2.56	2.56	2,637.9

Table 5.4
Dos Cuadras Platform Hillhouse - Part70/PTO 9114-R5
Estimated Permit Exempt Emissions

A. QUARTERLY (tpq)

Equipment Category	NO _x	ROC	CO	SO _x	PM	PM ₁₀	PM _{2.5}
Air Compressor	2.01	0.14	0.43	0.00	0.14	0.14	0.14
Diesel Storage Tanks	--	0.10	--	--	--	--	--
Surface Coating - Maintenance	--	0.13	--	--	--	--	--
	2.01	0.37	0.43	0.00	0.14	0.14	0.14

B. ANNUAL (tpy)

Equipment Category	NO _x	ROC	CO	SO _x	PM	PM ₁₀	PM _{2.5}
Air Compressor	8.03	0.55	1.73	0.00	0.56	0.55	0.55
Diesel Storage Tanks	--	0.10	--	--	--	--	--
Surface Coating - Maintenance	--	0.13	--	--	--	--	--
	8.03	0.78	1.73	0.00	0.56	0.55	0.55

Table 5.6-1
 Dos Cuadras Platform Hillhouse - Part70/PTO 9114-R5
 HAP - Emission Factors

Equipment Category	Description	Benzene	Oxhydrocarbons	Naphthalene	Acetylene	Beryllium	Cadmium	Chromium	Cobalt	Lead	Manganese	Mercury	Nickel	Selenium	Acetaldehyde	Acrolein	1,3-butadiene	Chlorobenzene	Ethylbenzene	HCl	Toluene	Xylene	Formaldehyde	HCs	Units	References			
Combustion - Engines	North Crane	1.86E-01	1.97E-02	1.60E-03	1.97E-02	1.60E-03	1.50E-03	6.00E-04	8.30E-03	8.30E-03	3.10E-03	2.00E-03	3.90E-03	2.20E-03	7.89E-01	3.39E-02	2.17E-01	2.00E-04	1.09E-02	1.86E-01	1.09E-01	4.24E-02	1.73E-00	5.99E-02	2.69E-02	lb/1000 gal	A		
	South Crane	1.86E-01	1.97E-02	1.60E-03	1.97E-02	1.60E-03	1.90E-03	6.00E-04	8.30E-03	8.30E-03	3.10E-03	2.00E-03	3.90E-03	2.20E-03	7.89E-01	3.39E-02	2.17E-01	2.00E-04	1.09E-02	1.86E-01	1.09E-01	4.24E-02	1.73E-00	5.99E-02	2.69E-02	lb/1000 gal	A		
	Emergency Power Generator	1.86E-01	1.97E-02	1.60E-03	1.97E-02	1.60E-03	1.90E-03	6.00E-04	8.30E-03	8.30E-03	3.10E-03	2.00E-03	3.90E-03	2.20E-03	7.89E-01	3.39E-02	2.17E-01	2.00E-04	1.09E-02	1.86E-01	1.09E-01	4.24E-02	1.73E-00	5.99E-02	2.69E-02	lb/1000 gal	A		
	Emergency Fire Pump	1.86E-01	1.97E-02	1.60E-03	1.97E-02	1.60E-03	1.90E-03	6.00E-04	8.30E-03	8.30E-03	3.10E-03	2.00E-03	3.90E-03	2.20E-03	7.89E-01	3.39E-02	2.17E-01	2.00E-04	1.09E-02	1.86E-01	1.09E-01	4.24E-02	1.73E-00	5.99E-02	2.69E-02	lb/1000 gal	A		
Combustion - Flare	Emergency Drill Rig Gen	1.86E-01	1.97E-02	1.60E-03	1.97E-02	1.60E-03	1.90E-03	6.00E-04	8.30E-03	8.30E-03	3.10E-03	2.00E-03	3.90E-03	2.20E-03	7.89E-01	3.39E-02	2.17E-01	2.00E-04	1.09E-02	1.86E-01	1.09E-01	4.24E-02	1.73E-00	5.99E-02	2.69E-02	lb/1000 gal	A		
	Purge and Pilot	2.00E-06	1.18E-06	5.98E-07	1.96E-07	1.18E-06	1.08E-06	1.37E-06	8.24E-08	3.73E-07	2.55E-07	2.06E-06	2.35E-08	2.06E-06	2.35E-08	3.73E-07	2.55E-07	2.06E-06	2.35E-08	3.73E-07	2.55E-07	2.06E-06	2.35E-08	3.73E-07	2.55E-07	2.06E-06	2.35E-08	lb/MMBtu	B, C
	Planned - continuous	2.10E-03	1.20E-03	6.10E-04	2.00E-04	1.20E-03	1.10E-03	1.40E-03	8.40E-05	3.80E-04	2.60E-04	2.10E-03	2.40E-05	2.10E-03	2.40E-05	3.80E-04	2.60E-04	2.10E-03	2.40E-05	3.80E-04	2.60E-04	2.10E-03	2.40E-05	3.80E-04	2.60E-04	2.10E-03	2.40E-05	lb/MMBtu	B, C
	Planned - other	2.10E-03	1.20E-03	6.10E-04	2.00E-04	1.20E-03	1.10E-03	1.40E-03	8.40E-05	3.80E-04	2.60E-04	2.10E-03	2.40E-05	2.10E-03	2.40E-05	3.80E-04	2.60E-04	2.10E-03	2.40E-05	3.80E-04	2.60E-04	2.10E-03	2.40E-05	3.80E-04	2.60E-04	2.10E-03	2.40E-05	lb/MMBtu	B, C
	Unplanned	2.10E-03	1.20E-03	6.10E-04	2.00E-04	1.20E-03	1.10E-03	1.40E-03	8.40E-05	3.80E-04	2.60E-04	2.10E-03	2.40E-05	2.10E-03	2.40E-05	3.80E-04	2.60E-04	2.10E-03	2.40E-05	3.80E-04	2.60E-04	2.10E-03	2.40E-05	3.80E-04	2.60E-04	2.10E-03	2.40E-05	lb/MMBtu	B, C
Fugitive Components	Oil - controlled	1.79E-03																									lb/lb ROC	D	
	Oil - unsafe	1.79E-03																									lb/lb ROC	D	
	Gas - controlled	3.25E-03																									lb/lb ROC	E	
Supply Boat	Gas - unsafe	3.25E-03																									lb/lb ROC	E	
	Generator Engines	1.86E-01	1.97E-02	1.60E-03	1.97E-02	1.60E-03	1.50E-03	6.00E-04	8.30E-03	8.30E-03	3.10E-03	2.00E-03	3.90E-03	2.20E-03	7.89E-01	3.39E-02	2.17E-01	2.00E-04	1.09E-02	1.86E-01	1.09E-01	4.24E-02	1.73E-00	5.99E-02	2.69E-02	lb/1000 gal	A		
Emergency Response	Generator Engines	1.86E-01	1.97E-02	1.60E-03	1.97E-02	1.60E-03	1.50E-03	6.00E-04	8.30E-03	8.30E-03	3.10E-03	2.00E-03	3.90E-03	2.20E-03	7.89E-01	3.39E-02	2.17E-01	2.00E-04	1.09E-02	1.86E-01	1.09E-01	4.24E-02	1.73E-00	5.99E-02	2.69E-02	lb/1000 gal	A		
	Bow Thruster	1.86E-01	1.97E-02	1.60E-03	1.97E-02	1.60E-03	1.50E-03	6.00E-04	8.30E-03	8.30E-03	3.10E-03	2.00E-03	3.90E-03	2.20E-03	7.89E-01	3.39E-02	2.17E-01	2.00E-04	1.09E-02	1.86E-01	1.09E-01	4.24E-02	1.73E-00	5.99E-02	2.69E-02	lb/1000 gal	A		
Crew Boat	Main Engines - con	1.86E-01	1.97E-02	1.60E-03	1.97E-02	1.60E-03	1.50E-03	6.00E-04	8.30E-03	8.30E-03	3.10E-03	2.00E-03	3.90E-03	2.20E-03	7.89E-01	3.39E-02	2.17E-01	2.00E-04	1.09E-02	1.86E-01	1.09E-01	4.24E-02	1.73E-00	5.99E-02	2.69E-02	lb/1000 gal	A		
	Auxiliary Engines	1.86E-01	1.97E-02	1.60E-03	1.97E-02	1.60E-03	1.50E-03	6.00E-04	8.30E-03	8.30E-03	3.10E-03	2.00E-03	3.90E-03	2.20E-03	7.89E-01	3.39E-02	2.17E-01	2.00E-04	1.09E-02	1.86E-01	1.09E-01	4.24E-02	1.73E-00	5.99E-02	2.69E-02	lb/1000 gal	A		
	Main Engines - con	1.86E-01	1.97E-02	1.60E-03	1.97E-02	1.60E-03	1.50E-03	6.00E-04	8.30E-03	8.30E-03	3.10E-03	2.00E-03	3.90E-03	2.20E-03	7.89E-01	3.39E-02	2.17E-01	2.00E-04	1.09E-02	1.86E-01	1.09E-01	4.24E-02	1.73E-00	5.99E-02	2.69E-02	lb/1000 gal	A		
Pigging Equipment	Auxiliary Engines	1.86E-01	1.97E-02	1.60E-03	1.97E-02	1.60E-03	1.50E-03	6.00E-04	8.30E-03	8.30E-03	3.10E-03	2.00E-03	3.90E-03	2.20E-03	7.89E-01	3.39E-02	2.17E-01	2.00E-04	1.09E-02	1.86E-01	1.09E-01	4.24E-02	1.73E-00	5.99E-02	2.69E-02	lb/1000 gal	A		
	Main Engines - con	1.86E-01	1.97E-02	1.60E-03	1.97E-02	1.60E-03	1.50E-03	6.00E-04	8.30E-03	8.30E-03	3.10E-03	2.00E-03	3.90E-03	2.20E-03	7.89E-01	3.39E-02	2.17E-01	2.00E-04	1.09E-02	1.86E-01	1.09E-01	4.24E-02	1.73E-00	5.99E-02	2.69E-02	lb/1000 gal	A		
	Auxiliary Engines	1.86E-01	1.97E-02	1.60E-03	1.97E-02	1.60E-03	1.50E-03	6.00E-04	8.30E-03	8.30E-03	3.10E-03	2.00E-03	3.90E-03	2.20E-03	7.89E-01	3.39E-02	2.17E-01	2.00E-04	1.09E-02	1.86E-01	1.09E-01	4.24E-02	1.73E-00	5.99E-02	2.69E-02	lb/1000 gal	A		
	Main Engines - con	1.86E-01	1.97E-02	1.60E-03	1.97E-02	1.60E-03	1.50E-03	6.00E-04	8.30E-03	8.30E-03	3.10E-03	2.00E-03	3.90E-03	2.20E-03	7.89E-01	3.39E-02	2.17E-01	2.00E-04	1.09E-02	1.86E-01	1.09E-01	4.24E-02	1.73E-00	5.99E-02	2.69E-02	lb/1000 gal	A		
Sumps/Tanks/Separators	Oil Launcher	1.79E-03																									lb/lb ROC	D	
	Oil Receiver	1.79E-03																									lb/lb ROC	D	
	Gas Launcher	3.25E-03																									lb/lb ROC	E	
	Gas Receiver	3.25E-03																									lb/lb ROC	E	
	Floitation Cell	2.64E-02																									lb/lb ROC	F	
	Floitation Cell	2.64E-02																									lb/lb ROC	F	
Solvent Usage	Wormco Surge Tank	2.64E-02																									lb/lb ROC	F	
	Sedling Tank	2.64E-02																									lb/lb ROC	F	
	Surge Tank	2.64E-02																									lb/lb ROC	F	
	Surge Tank	2.64E-02																									lb/lb ROC	F	
	Surge Tank	2.64E-02																									lb/lb ROC	F	
	Surge Tank	2.64E-02																									lb/lb ROC	F	
	Surge Tank	2.64E-02																									lb/lb ROC	F	
	Surge Tank	2.64E-02																									lb/lb ROC	F	
	Cleaning/degreasing (est.)	5.00E-02																									lb/lb ROC	G	

References:
 A. VCAPCD AB 2588 Diesel Internal Combustion Emission Factors
 B. US EPA AP-42, Table 1.4-3 - Emission Factors for Speciated Organic Compounds from Natural Gas Combustion (7/99)
 C. US EPA AP-42, Table 1.4-4 - Emission Factors for Metals from Natural Gas Combustion (7/99)
 D. CARB Speciation Manual Second Edition (1991) Profile Number 7156 - Oil & Gas Production Fugitives - Liquid Service
 E. CARB Speciation Manual Second Edition (1991) Profile Number 7157 - Oil & Gas Production Fugitives - Gas Service
 F. CARB Speciation Manual Second Edition (1991) Profile Number 297 - Crude Oil Evaporation - Vapor Composite from Fixed Roof Tanks
 G. AFCD: Solvents assumed to contain 5% benzene, 5% toluene, 5% xylene

Table 5.6-2
 Dos Cuadras Platform Hillhouse - Part70/PTO 9114-R5
 Hazardous Air Pollutant Emissions (tpy)

Equipment Category	Description	Benzene	Dichlorobenzene	Naphthalene	Acetic	Beryllium	Cadmium	Chromium	Cobalt	Lead	Manganese	Nickel	Selenium	Acetaldehyde	Acrolein	1,3-butadiene	Chlorobenzene	Ethylbenzene	HCL	Toluene	Xylene	Formaldehyde	Hexane		
Combustion - Engines	North Crane	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.00	
	South Crane	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
	Emergency Power Generator	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
	Emergency Fire Pump	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
Combustion - Flare	Emergency Drill Rig Gen	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
	Purge and Pilot	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
	Planned - continuous	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
	Planned - other	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
Fugitive Components	Unplanned	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
	Oil - controlled	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
	Oil - unsafe	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
	Gas - controlled	0.09	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
Supply Boat	Gas - unsafe	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
	Main Engines - con	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
	Generator Engines	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
	Bow Thruster	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
Emergency Response	Main Engines - con	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
	Auxiliary Engines	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
Crew Boat	Main Engines - con	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
	Auxiliary Engines	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
Pigging Equipment	Oil Launcher	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
	Oil Receiver	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
	Gas Launcher	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
	Gas Receiver	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
Sumps/Tanks/Separators	Floitation Cell	0.06	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
	Floitation Cell	0.06	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
	Wemco Surge Tank	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
	Settling Tank	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
	Sm.Drill Water Tank	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
	Mud Tank	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
	Hor. Surge Tank	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
Solvent Usage	Hor. Surge Tank	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
	Cleaning/degreasing (estd.)	0.58	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
Sub Total HAPs (tpy)		0.81	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
Total HAPs (tpy)		8.00																							

Notes:
 1. These are estimates only, and are not intended to represent emission limits.
 2. Based on CAAA, Section 112 (n) (4) stipulations, the HAP emissions listed above can not be aggregated at the source for any purpose, including determination of HAP major source status for MACT applicability.

Table 5.6-3
 Dos Cuadras Platform Hillhouse - Part70/PTO 9114-R5
 Stationary Source HAP Emissions ¹

Facility	FID	Benzene	Dichlorobenzene	Naphthalene	Arsenic	Beryllium	Cadmium	Chromium	Cobalt	Lead	Manganese	Mercury	Nickel	Selenium	Acetaldehyde	Acrolein	1,3-butadiene	Chlorobenzene	Ethylbenzene	HCl	Toluene	Xylene	Formaldehyde	PAH	Hexane	Total HAPs	
Platform A	8003	0.78	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.09	0.00	0.02	0.00	0.00	0.02	0.62	0.49	0.21	0.01	0.01	4.61	6.84
Platform B	8004	0.81	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.08	0.00	0.02	0.00	0.00	0.02	0.65	0.51	0.20	0.01	0.01	4.54	6.86
Platform Hillhouse	8005	0.81	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.06	0.00	0.02	0.00	0.00	0.01	0.66	0.58	0.15	0.00	0.00	5.71	8.00
Platform C	8006	0.78	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.08	0.00	0.02	0.00	0.00	0.02	0.72	0.72	0.20	0.01	0.01	2.70	5.27
Platform Henry	8007	0.19	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.09	0.00	0.03	0.00	0.00	0.02	0.14	0.13	0.22	0.01	0.01	2.36	3.19

Stationary Source Total HAPs (tpy) = 30.17

1. These are estimates only, and are not intended to represent emission limits.

6.0 Air Quality Impact Analyses

6.1 *Modeling*

Air quality modeling was not required for this stationary source.

6.2 *Increments*

An air quality increment analysis was not required for this stationary source.

6.3 *Monitoring*

Air quality monitoring is not required for this stationary source.

6.4 *Health Risk Assessment*

A Health Risk Assessment was not required for this stationary source.

7.0 CAP Consistency, Offset Requirements and ERCs

7.1 General

The stationary source is located in an ozone nonattainment area. Santa Barbara County has not attained the state ozone ambient air quality standards. The County also does not meet the state PM₁₀ ambient air quality standards. Therefore, emissions from all emission units at the stationary source and its constituent facilities must be consistent with the provisions of the USEPA and State approved Clean Air Plans (CAP) and must not interfere with progress toward attainment of federal and state ambient air quality standards. Under District regulations, any modifications at the source that result in an emissions increase of any nonattainment pollutant exceeding 25 lbs/day must apply BACT (NAR). Increases above offset thresholds will trigger offsets at the source or elsewhere so that there is a net air quality benefit for Santa Barbara County. These offset threshold levels are 240 lbs/day for all attainment pollutants and precursors (except carbon monoxide and PM_{2.5}) and 25 tons/year for all non-attainment pollutants and precursors (except carbon monoxide and PM_{2.5}).

7.2 Clean Air Plan

The 2007 Clean Air Plan, adopted by the District Board on August 16, 2007, addressed both federal and state requirements, serving as the maintenance plan for the federal eight-hour ozone standard and as the state triennial update required by the Health and Safety Code to demonstrate how the District will expedite attainment of the state eight-hour ozone standard. The plan was developed for Santa Barbara County as required by both the 1998 California Clean Air Act and the 1990 Federal Clean Air Act Amendments.

In March 2015 the District Board adopted the 2013 Clean Air Plan. The 2013 Plan provides a three-year update to the 2010 Clean Air Plan. As Santa Barbara County has yet to attain the state eight-hour ozone standard, the 2013 Clean Air Plan demonstrates how the District plans to attain that standard. The 2013 Clean Air Plan therefore satisfies all state triennial planning requirements.

7.3 Offset Requirements

The *Dos Cuadras - South County* stationary source does not currently require emission offsets. Under revised Rule 802, which was revised in August 2016, the *Dos Cuadras - South County* stationary source exceeds the offset thresholds for NO_x, ROC, PM, and PM₁₀. Any future modifications to Platform Hillhouse will require emission offsets.

7.4 Emission Reduction Credits

The *Dos Cuadras - South County* stationary source does not generate or provide emission reduction credits.

8.0 Lead Agency Permit Consistency

The United States Department of Interior's Minerals Management Service approved the *Plan of Development* for DCOR's Platform Hillhouse on July 2, 1991. The platform *installation* had previously been approved by the MMS in the 1960's under a previous operator.

9.0 Permit Conditions

This section lists the applicable permit conditions for Platform Hillhouse. Section A lists the standard administrative conditions. Section B lists 'generic' permit conditions, including emission standards, for all equipment in this permit. Section C lists conditions affecting specific equipment. Section D lists non-federally enforceable (i.e., District only) permit conditions. Conditions listed in Sections A, B, and C are enforceable by the USEPA, the District, the State of California and the public. Conditions listed in Section D are enforceable only by the District and the State of California. Where any reference contained in Sections 9.A, 9.B, or 9.C refers to any other part of this permit, that part of the permit referred to is federally enforceable. In case of a discrepancy between the wording of a condition and the applicable federal or District rule(s), the wording of the rule shall control.

For the purposes of submitting compliance certifications or establishing whether or not a person has violated or is in violation of any standard in this permit, nothing in the permit shall preclude the use, including the exclusive use, of any credible evidence or information, relevant to whether a source would have been in compliance with applicable requirements if the appropriate performance or compliance test had been performed.

9.A Standard Administrative Conditions

The following federally enforceable administrative permit conditions apply to Platform Hillhouse:

- A.1 **Consistency with Analysis.** Operation under this permit shall be conducted by DCOR consistent with all written data, specifications and assumptions included with the application and supplements thereof (as documented in the District's project file) and with the District's analyses under which this permit is issued as documented in the permit analyses prepared for and issued with this permit. [Re: PTO 9114]
- A.2 **Grounds for Revocation.** Failure to abide by and faithfully comply with this permit shall constitute grounds for the APCO to petition for permit revocation pursuant to California Health & Safety Code Section 42307 *et seq.* [Re: PTO 9114]
- A.3 **Equipment Maintenance.** The equipment listed in this permit shall be properly maintained and kept in good condition at all times. The equipment manufacturer's maintenance manual, maintenance procedures and/or maintenance checklists (if any) shall be kept on site.
- A.4 **Reimbursement of Costs.** All reasonable expenses, as defined in District Rule 210, incurred by the District, District contractors, and legal counsel for all activities that follow the issuance of this PTO permit, including but not limited to permit condition implementation, compliance verification and emergency response, directly and necessarily related to enforcement of the permit shall be reimbursed by DCOR as required by Rule 210. [Re: PTO 9114, District Rule 210]
- A.5 **Access to Records and Facilities.** As to any condition that requires for its effective enforcement the inspection of records or facilities by the District or its agents, DCOR shall make such records available or provide access to such facilities upon notice from the District. Access shall mean access consistent with California Health and Safety Code Section 41510 and Clean Air Act Section 114A. [Re: PTO 9114]

- A.6 **Compliance.** Nothing contained within this permit shall be construed by DCOR to allow the violation of any local, State or Federal rule, regulation, ambient air quality standard or air quality increment. [Re: PTO 9114]
- A.7 **Conflict between Permits.** The requirements or limits that are more protective of air quality shall apply if any conflict arises between the requirements and limits of this permit and any other permitting actions associated with the equipment permitted herein.
- A.8 **Consistency with State and Local Permits.** Nothing in this permit shall relax any air pollution control requirement imposed on the Platform Hillhouse by the State of California or the California Coastal Commission in any consistency determination for the Project with the California Coastal Act. [Re: PTO 9114]
- A.9 **Compliance with Department of Interior Permits.** DCOR shall comply with all air quality control requirements imposed by the Department of the Interior in the *Plan of Development* approved for Platform Hillhouse in July 1991, and any subsequent modifications. Such requirements shall be enforceable by the District. [Re: PTO 9114]
- A.10 **Compliance with Permit Conditions.**
- (a) DCOR shall comply with all permit conditions.
 - (b) This permit does not convey property rights or exclusive privilege of any sort.
 - (c) Noncompliance with any permit conditions is grounds for permit termination, revocation and re-issuance, modification, enforcement action, or for denial of permit renewal. Any permit non-compliance constitutes a violation of the Clean Air Act and its implementing regulations or of District Rules or both, as applicable.
 - (d) The permittee shall not use the "need to halt or reduce a permitted activity in order to maintain compliance" as a defense for noncompliance with any permit condition.
 - (e) A pending permit action or notification of anticipated noncompliance by DCOR does not stay any permit condition.
 - (f) Within a reasonable time period, DCOR shall furnish any information requested by the Control Officer, in writing, for the purpose of determining:
 - (i) compliance with the permit, or
 - (ii) whether or not cause exists to modify, revoke and reissue, or terminate a permit or for an enforcement action.
 - (g) In the event that any condition herein is determined to be in conflict with any other condition contained herein, then, if principles of law do not provide to the contrary, the condition most protective of air quality and public health and safety shall prevail to the extent feasible. [Re: 40 CFR Part 70.6.(a)(6), District Rule 1303.D.1]

A.11 **Emergency Provisions.** DCOR shall comply with the requirements of the District, Rule 505 (Upset/Breakdown rule) and/or District Rule 1303.F, whichever is applicable to the emergency situation. In order to maintain an affirmative defense under Rule 1303.F, DCOR shall provide the District, in writing, a “notice of emergency” within 2 working days of the emergency. The “notice of emergency” shall contain the information/documentation listed in Sections (1) through (5) of Rule 1303.F. [*Re: 40 CFR 70.6(g), District Rule 1303.F*]

A.12 **Compliance Plan.**

(a) DCOR shall comply with all federally enforceable requirements that become applicable during the permit term, in a timely manner.

(b) For all applicable equipment, DCOR shall implement and comply with any specific compliance plan required under any federally-enforceable rules or standards.
[*Re: District Rule 1302.D.2*]

A.13 **Right of Entry.** The Regional Administrator of USEPA, the Control Officer, or their authorized representatives, upon the presentation of credentials, shall be permitted by DCOR to enter upon the premises where its Part 70 Source is located or where records must be kept:

(a) To inspect the stationary source, including monitoring and control equipment, work practices, operations, and emission-related activity;

(b) To inspect and duplicate, at reasonable times, records required by this Permit to Operate;

(c) To sample substances or monitor emissions from the source or assess other parameters to assure compliance with the permit or applicable requirements, at reasonable times. Monitoring of emissions can include source testing.
[*Re: District Rule 1303.D.2*]

A.14 **Severability.** In the event that any condition herein is determined to be invalid, all other conditions shall remain in force. [*Re: District Rules 103 and 1303.D.1*]

A.15 **Permit Life.** The Part 70 permit shall become invalid three years from the date of issuance, unless a timely and complete renewal application is submitted to the District. Any operation of the source by DCOR to which this Part 70 permit is issued beyond the expiration date of this Part 70 permit and without a valid Part 70 operating permit (or a complete Part 70 permit renewal application) shall be a violation of the CAAA, § 502(a) and 503(d) and of the District rules.

DCOR shall apply for renewal of the Part 70 permit no later than 6 months before the date of the permit expiration. Upon submittal of a timely and complete renewal application, the Part 70 permit shall remain in effect until the Control Officer issues or denies the renewal application.
[*Re: District Rule 1304.D.1*]

- A.16 **Payment of Fees.** DCOR shall reimburse the District for all its Part 70 permit processing and compliance monitoring expenses for the stationary source on a timely basis. Failure to reimburse on a timely basis shall be a violation of this permit and of applicable requirements and can result in forfeiture of the Part 70 permit. Operation without a Part 70 permit subjects the source to potential enforcement action by the District and the USEPA pursuant to section 502(a) of the Clean Air Act. [*Re: District Rules 1303.D.1 and 1304.D.11, 40 CFR 70.6(a)(7)*]
- A.17 **Deviations from Permit Requirements.** DCOR shall submit a written report to the District documenting each and every deviation from the requirements of this permit or any applicable federal requirements within 7 days after discovery of the violation, but not later than 180 days after the date of occurrence. The report shall clearly document 1) the probable cause and extent of the deviation; 2) equipment involved; 3) the quantity of excess pollutant emissions, if any; and 4) actions taken to correct the deviation. The requirements of this condition shall not apply to deviations reported to District in accordance with Rule 505, *Breakdown Conditions*, or Rule 1303.F *Emergency Provisions*. [District Rule 1303.D.1, 40 CFR 70.6(a) (3)]
- A.18 **Reporting Requirements/Compliance Certifications.** DCOR shall submit compliance certification reports to the USEPA *annually* and to the Control Officer every six months. These reports shall be submitted on District forms and shall identify each applicable requirement/condition of the permit, the compliance status with each requirement/condition, the monitoring methods used to determine compliance, whether the compliance was continuous or intermittent, and include detailed information on the occurrence and correction of any deviations (excluding emergency upsets) from permit requirement. The reporting periods shall be each half of the calendar year, e.g., January through June for the first half of the year. These reports shall be submitted by September 1st and March 1st, respectively, each year. Supporting monitoring data shall be submitted in accordance with the "Semi-Annual Monitoring/Compliance Verification Report" condition in section 9.C. DCOR shall include a written statement from the responsible official, which certifies the truth, accuracy, and completeness of the reports. [*Re: District Rules 1303.D.1, 1302.D.3, 1303.2.c*]
- A.19 **Federally-enforceable Conditions.** Each federally enforceable condition in this permit shall be enforceable by the USEPA and members of the public. None of the conditions in the District-only enforceable section of this permit are federally enforceable or subject to the public/USEPA review. [*Re: CAAA, § 502(b)(6), 40 CFR 70.6(b)*]
- A.20 **Recordkeeping Requirements.** DCOR shall maintain records of required monitoring information that include the following:
- (a) The date, place, and time of sampling or measurements or maintenance activity;
 - (b) Operating conditions at the time of sampling or measurement or maintenance activity;
 - (c) Date, place, name of company or entity that performed the analyses or measurement or maintenance activity and the methods used; and
 - (d) Results of the analyses or measurement or maintenance. Additionally, records must be kept that document the date of analysis and the analytical techniques or methods used.

The records (electronic or hard copy), as well as all supporting information including calibration and maintenance records, shall be maintained for a minimum of five (5) years from date of initial entry by DCOR and shall be made available to the District upon request. [Re: District Rule 1303.D.1.f, 40 CFR 70.6(a)(3)(ii)(A)]

A.21 **Conditions for Permit Reopening.** The permit shall be reopened and revised for cause under any of the following circumstances:

- (a) **Additional Requirements:** If additional applicable requirements (e.g., NSPS or MACT) become applicable to the source which has an unexpired permit term of three (3) or more years, the permit shall be reopened. Such a reopening shall be completed no later than 18 months after promulgation of the applicable requirement. However, no such reopening is required if the effective date of the requirement is later than the date on which the permit is due to expire, unless the original permit or any of its terms and conditions has been extended. All such re-openings shall be initiated only after a 30 day notice of intent to reopen the permit has been provided to DCOR, except that a shorter notice may be given in case of an emergency.
- (b) **Inaccurate Permit Provisions:** If the District or the USEPA determines that the permit contains a material mistake or that inaccurate statements were made in establishing the emission standards or other terms or conditions of the permit, the permit shall be reopened. Such re-openings shall be made as soon as practicable.
- (c) **Applicable Requirement:** If the District or the USEPA determines that the permit must be revised or revoked to assure compliance with any applicable requirement including a federally enforceable requirement, the permit shall be reopened. Such re-openings shall be made as soon as practicable.

Administrative procedures to reopen and revise/revoke/reissue a permit shall follow the same procedures as apply to initial permit issuance. Re-openings shall affect only those parts of the permit for which causes to reopen exist. If the permit is reopened, and revised, it will be reissued with the expiration date that was listed in the permit before the re-opening.
[Re: 40 CFR 70.7(f), 40 CFR 70.6(a)]

9.B. Generic Conditions

The generic conditions listed below apply to all emission units, regardless of their category or emission rates. In case of a discrepancy between the wording of a condition and the applicable federal or District rule(s), the wording of the rule shall control.

- B.1 **Circumvention (Rule 301).** A person shall not build, erect, install, or use any article, machine, equipment or other contrivance, the use of which, without resulting in a reduction in the total release of air contaminants to the atmosphere, reduces or conceals an emission which would otherwise constitute a violation of Division 26 (Air Resources) of the Health and Safety Code of the State of California or of these Rules and Regulations. This Rule shall not apply to cases in which the only violation involved is of Section 41700 of the Health and Safety Code of the State of California or of District Rule 303 [*Re: District Rule 301*].
- B.2 **Visible Emissions (Rule 302).** DCOR shall not discharge into the atmosphere from any single source of emission any air contaminants for a period or periods aggregating more than three minutes in any one hour which is:
- (a) As dark or darker in shade as that designated as No. 1 on the Ringlemann Chart, as published by the United States Bureau of Mines, or
 - (b) Of such opacity as to obscure an observer's view to a degree equal to or greater than does smoke described in subsection B.2.(a) above.

For the equipment listed below, DCOR shall determine compliance with this condition as specified below:

- (c) Diesel Fueled IC Engines: Once per calendar quarter, DCOR shall perform a visible emissions inspection for a one-minute period on each engine when operating. If an engine does not operate during a calendar quarter, no monitoring is required. If visible emissions are detected during any inspection then an USEPA Method 9 visible emission evaluations (VEE) shall immediately be performed for a six-minute period. DCOR staff or hired contractor certified in VEE shall perform the VEE and maintain logs in accordance with USEPA Method 9. The start-time and end-time of each visible emissions inspection shall be recorded in a log, along with a notation identifying whether visible emissions were detected. [*Re: District Rule 302*]
- (d) Offshore Platform Crane: During biennial source testing of the North Pedestal Crane, DCOR shall perform a visible emissions inspection on the crane for a one-minute period. If visible emissions are detected during any inspection, then a USEPA Method 9 visible emission evaluation (VEE) shall immediately be performed for a six-minute period. DCOR staff or hired contractor certified in VEE shall perform the VEE and maintain logs in accordance with USEPA Method 9. The start-time and end-time of each visible emissions inspection shall be recorded in a log, along with a notation identifying whether visible emissions were detected. [*Re: District Rule 302*].

- B.3 **PM Concentration - South Zone (Rule 305).** DCOR shall not discharge into the atmosphere, from any source, particulate matter in excess of the concentrations listed in Table 305(a) of Rule 305. [*Re: District Rule 305*]
- B.4 **Specific Contaminants (Rule 309).** DCOR shall not discharge into the atmosphere from any single emission source sulfur compounds, carbon monoxide and combustion contaminants in excess of the applicable standards listed in Sections A, E and G of Rule 309 [*Re: District Rule 309*].
- B.5 **Sulfur Content of Fuels (Rule 311).** The permittee shall not burn fuels with sulfur content in excess of 0.5% (by weight) for liquid fuels. Compliance with this condition shall be based on diesel fuel billing records or other data showing the certified sulfur content for each shipment. DCOR shall submit such statement *semi-annually* as a part of its semi-annual Part 70 compliance verification report to the District. [*Re: District Rule 311*]
- B.6 **Organic Solvents (Rule 317).** DCOR shall comply with the emission standards listed in Section B of Rule 317. Compliance with this condition shall be based on DCOR's compliance with Condition 9.C.7 of this permit. [*Re: District Rule 317*]
- B.7 **Metal Surface Coating Thinner and Reducer (Rule 322).** The use of photochemically reactive solvents as thinners or reducers in metal surface coatings is prohibited. Compliance with this condition shall be based on DCOR's compliance with Condition 9.C.7 of this permit and facility inspections. [*Re: District Rule 322*]
- B.8 **Architectural Coatings (Rule 323.1):** DCOR shall comply with the rule requirements for any architectural coating that is supplied, sold, offered for sale, or manufactured for use within the District. [*Re: District Rule 323.1*]
- B.9 **Disposal and Evaporation of Solvents (Rule 324).** DCOR shall not dispose through atmospheric evaporation of more than one and a half gallons of any photochemically reactive solvent per day. Compliance with this condition shall be based on DCOR's compliance with Condition 9.C.7 of this permit and facility inspections. [*Re: District Rule 324*]
- B.10 **Adhesives and Sealants (Rule 353).** The permittee shall not use adhesives, adhesive bonding primers, adhesive primers, sealants, sealant primers, or any other primers, unless the permittee complies with the following:
- (a) Such materials used are purchased or supplied by the manufacturer or suppliers in containers of 16 fluid ounces or less; or alternately
 - (b) When the permittee uses such materials from containers larger than 16 fluid ounces and the materials are not exempt by Rule 353, Section B.1, the total reactive organic compound emissions from the use of such material shall not exceed 200 pounds per year unless the substances used and the operational methods comply with Sections D, E, F, G, and H of Rule 353. Compliance shall be demonstrated by record keeping in accordance with Section B.2 and/or Section O of Rule 353. [*Re: District Rule 353*]

- B.11 **Emissions of Oxides of Nitrogen from Large Water Heaters and Small Boilers (Rule 360).** The permittee shall comply with the requirements of this rule whenever a new boiler, process heater or other external combustion device is added or an existing unit is replaced. An ATC/PTO permit shall be obtained prior to installation of any grouping of Rule 360 applicable boilers or hot water heaters whose combined system design heat input rating exceeds 2.000 MMBtu/hr. An ATC shall be obtained for any size boiler or water heater if the unit is not fired on natural gas or propane. [*Re: District Rule 360*].
- B.12 **Breakdowns (Rule 505).** DCOR shall promptly report breakdowns that result in violations of emission limitations or restrictions prescribed by District Rules or by this permit; such reporting shall be made in conformance with the requirements of Rule 505, Sections A, B1, and D.
- B.13 **Oil & Natural Gas Production MACT:** DCOR shall comply with all applicable recordkeeping requirements listed in Appendix A of this MACT to demonstrate its exemption under the 'black oil' provision of the MACT. [*Re: 40 CFR 63, Subpart HH*]
- B.14 **CARB Registered Portable Equipment.** State registered portable equipment (e.g., IC engines) shall comply with State registration requirements. A copy of the State registration shall be readily available whenever the equipment is at the facility. [*Re: District Rule 202*]
- B.15 **Emergency Episode Plan (Rule 603).** During emergency episodes, DCOR shall implement the Emergency Episode Plan as approved by the District in April 1997. {*Re: District Rule 603*}

9.C Equipment Specific Conditions

This section includes non-generic federally-enforceable conditions, including conditions for emissions and operations limits, monitoring, record-keeping and reporting for each specific equipment group.

- C.1 **Internal Combustion Engines.** The following equipment items are included in this emissions unit category:

District Device No.	Name
004904	South Pedestal Crane (109 bhp, DD 3-71)
004905	North Pedestal Crane (238 bhp, DD 6-71)
004906	Emergency Power Generator (715 bhp)
004908	Emergency Fire Pump (200 hp)
004907	Emergency generator powering drilling rigs (730 hp)
<i>110757</i>	<i>Portable Air Compressor (49 hp)</i>

Italics indicate that the equipment items are District-permit exempt; however federally enforceable

- (a) **Emission Limits:** Mass emissions from the North and South Pedestal Crane IC engines and emergency engines listed above shall not exceed the limits listed in Tables 5.1-3 and 5.1-4. In addition, the following specific emission limits apply:
- (i) **North Pedestal Crane Engine** - Controlled emissions of NO_x from the North Pedestal Crane engine shall not exceed the applicable Rule 333 concentration limit. Beginning November 21, 2010, the NO_x, ROC and CO concentration in the exhaust from the North Pedestal Crane engine shall not exceed the applicable revised Rule 333 concentration limits. Compliance shall be based on quarterly portable analyzer inspections and in accordance with Rule 333.
- (b) **Operational Limits:** The following operational limits apply to all the South Pedestal Crane, North Pedestal Crane, Emergency Power Generator, Emergency Fire Pump, and Emergency Drilling Generator IC engines:
- (i) **Fuel and Fuel Additive Requirements** - The permittee may only add CARB Diesel, or an alternative diesel fuel that meets the requirements of the Stationary Diesel ATCM Verification Procedure, or CARB Diesel fuel used with additives that meet the requirements of the Stationary Diesel ATCM Verification Procedure, or any combination of the above to each IC engine or any fuel tank directly attached to each IC engine. Diesel fuel used by all IC engines shall have a sulfur content no greater than 0.0015 weight percent.
- (ii) **Operating Limits** - DCOR shall comply with the following operating limits:
- The North Pedestal Crane engine shall use no more than: 320 gallons per day; 6,667 gallons per quarter; 13,334 gallons per year of diesel fuel.

- The South Pedestal Crane engine shall operate no more than 24 hours per day; 100 hours per quarter; 200 hours per year, which is equivalent to 156 gallons per day; 649 gallons per quarter; 1,299 gallons per year of diesel fuel use.
- The Emergency Power Generator, Emergency Fire Pump, and Emergency Drilling Generator shall limit maintenance and testing⁶ operations to no more than 200 hours per year. Emergency use operations, as defined in Section 93115.4 (30) of the ATCM⁷, have no operational hours limitations.

(iii) *Engine Identification and Maintenance* - Each IC engine shall be identified with a permanently-affixed plate, tag or marking, referencing either: (i) the IC engine's make, model, serial number, rated BHP and corresponding RPM; or (ii) the operator's unique tag number. The tag shall be made accessible and legible to facilitate District inspection of the IC engine.

(iv) *Compliance Plan* – DCOR shall implement the District-approved Compliance Plan consistent with the requirements of Rule 333, Section G. This plan and any subsequent District-approved revisions, is incorporated by reference as an enforceable part of this permit.

(v) *Crane Operating Requirements* - The North Pedestal Crane engine (ID 004905) and the South Pedestal Crane engine (ID 004904) are subject to the following operating requirements:

1. Change the oil and filter every 1,000 hours of operation or annually, whichever comes first; and
2. Inspect the air cleaner every 1,000 hours of operation or annually, whichever comes first; and
3. Inspect all hoses and belts every 500 hours of operation or annually, whichever comes first.

In lieu of changing the oil and filter, the permittee may analyze the oil of each engine every 1,000 hours of operation or annually, whichever occurs first. The analysis shall measure the Total Base Number, the oil viscosity, and the percent water content. The oil and filter shall be changed if any of the following limits are exceeded:

- The tested Total Base Number is less than 30 percent of the Total Base Number of the oil when new.
- The tested oil viscosity has changed by more than 20 percent from the oil viscosity when new.
- The tested percent water content (by volume) is greater than 0.5 percent.

⁶ "maintenance and testing" is defined in Section (d)(41) of the ATCM

⁷ As used in the permit, "ATCM" means Section 93115, Title 17, California Code of Regulations. Airborne Toxic Control Measure for Stationary Compression Ignition (CI) Engines

During periods of startup the operator must minimize the engine's time spent at idle and minimize the engine's startup time at startup to a period needed for appropriate and safe loading of the engine, not to exceed 30 minutes, after which time the non-startup emission limitations apply.

(vi) *Backup Generator, Fire Water Pump, and the Emergency Rig Generator Requirements* - Three engines, the diesel fired 715 bhp backup generator (ID 004906), the 200 bhp fire water pump (ID 004908), and the 730 bhp emergency rig generator (ID 004906) are each subject to the following requirements:

1. Change the oil and filter every 500 hours of operation or annually, whichever comes first; and
2. Inspect the air cleaner every 1,000 hours of operation or annually, whichever comes first; and
3. Inspect all hoses and belts every 500 hours of operation or annually, whichever comes first.

In lieu of changing the oil and filter, the permittee may analyze the oil of each engine every 500 hours of operation or annually, whichever occurs first. The analysis shall measure the Total Base Number, the oil viscosity, and the percent water content. The oil and filter shall be changed if any of the following limits are exceeded:

- The tested Total Base Number is less than 30 percent of the Total Base Number of the oil when new.
- The tested oil viscosity has changed by more than 20 percent from the oil viscosity when new.
- The tested percent water content (by volume) is greater than 0.5 percent.

(c) Monitoring: The following source testing and periodic monitoring conditions apply to the North and South Pedestal Crane IC engines:

- (i) *Non-Resettable Hour Meter* – Each engine shall have installed a non-resettable hour meter with a minimum display capability of 9,999 hours, unless the District has determined (in writing) that a non-resettable hour meter with a different minimum display capability is appropriate in consideration of the historical use of the engine and the owner or operator's compliance history. A monthly log shall be maintained that records the hours of operation of each engine.
- (ii) *Inspection and Maintenance Plan (I&M Plan)* - DCOR shall implement quarterly inspections on the North Pedestal Crane engine according to the District-approved Engine Inspection and Maintenance Plan consistent with the requirements of Rule 333, Section E. This Plan, and any subsequent District-approved revisions, is incorporated by reference as an enforceable part of this permit.

- (iii) *Source Testing* - For the North Pedestal Crane engine, DCOR shall perform source testing of air emissions and process parameters listed in Table 4.1 (Source Test Requirements) in accordance with the requirements of Rule 333, Section G. The Source Testing permit condition in this permit shall be adhered to.
- (iv) *Fuel Data* - DCOR shall maintain documentation of the diesel fuel sulfur content for each fuel shipment as certified in the fuel suppliers billing vouchers.
- (d) Recordkeeping: DCOR shall keep the required records/logs, as applicable to this permit, which demonstrate compliance with emission limits, operation limits and monitoring requirements above. All records/logs shall be available to the District upon request. Written information (logs) shall include:
 - (i) The hours of operation for the North and South Pedestal Crane engines (by ID number). The log shall detail the number of operating hours on each day each engine is operated and the cumulative total quarterly and annual hours for each engine.
 - (ii) The sulfur content of each fuel shipment as documented by fuel supplier records (e.g. billing vouchers or bills of lading). On an annual basis, the heating value of the diesel fuel (Btu/gal), shall be recorded based on measurement by DCOR or certified by the fuel supplier.
 - (iii) IC engine operations logs, including quarterly inspection results, consistent with the requirements of Rule 333.J.
 - (iv) If an operator's tag number is used in lieu of an IC engine identification plate, documentation which references the operator's unique IC engine ID number to a list containing the make, model, serial number, rated maximum BHP and the corresponding RPM.
 - (v) The hours of operation for the Emergency Standby Generator including:
 - (a) Emergency use hours of operation.
 - (b) Maintenance and testing hours of operation.
 - (c) Hours of operation for all uses other than for emergency use and maintenance and testing, along with a description of what those hours were for.
 - (vi) For each engine subject to the RICE MACT the following records shall be kept:
 - (a) The date of each engine oil change, the number of hours of operation since the last oil change. If an oil analysis was performed, submit the date and results of each oil analysis and the Total Base Number and oil viscosity of the oil when new.
 - (b) The date of each engine air filter inspection and the number of hours of operation since the last air filter inspection. Indicate if the air filter was replaced as a result of the inspection.

- (c) The date of each engine's hose and belts inspection and the number of hours of operation since the last hose and belt inspection. Indicate if any hose or belt was replaced as a result of the inspection.

Note: District Form ENF-92 (*Diesel-Fired Emergency Standby Engine Recordkeeping Form*) can be used if appropriate.

- (viii) A log shall be maintained for any engine subject to 40 CFR 63 Subpart ZZZZ that had a malfunction. The log shall include the date, number, duration, and a brief description for each type of malfunction which occurred and what caused or may have caused any applicable emission limitation to be exceeded. The log must also include a description of actions taken by an owner or operator during a malfunction of an affected source to minimize emissions in accordance with 40 CFR 63 Subpart ZZZZ §63.6605(b), including actions taken to correct a malfunction.
- (e) Reporting: On a semi-annual basis, a report detailing the previous six month's activities shall be provided to the District. The report must list all data required by the *Semi-Annual Compliance Verification Reports* condition of this permit.
(Re: District Rules 202, 333 and 1303, PTO 9114, 40 CFR 70.6)
- (f) Temporary Engine Replacements: Any reciprocating internal combustion engine subject to this permit may be replaced temporarily only if the requirements (i – vi) listed herein are satisfied.
 - (i) The permitted engine that is being temporarily replaced is in need of routine repair or maintenance.
 - (ii) The permitted engine does not have a cracked block, unless the block will be replaced under manufacturer's warranty.
 - (iii) Replacement parts are available for the permitted engine.
 - (iv) The permitted engine is returned to its original service within 180 days of installation of the temporary engine.
 - (v) The temporary replacement engine has the same or lower manufacturer rated horsepower and same or lower potential to emit of each pollutant as the permitted engine. At the written request of the permittee, the District may approve a replacement engine with a larger rated horsepower if the proposed temporary engine has manufacturer guaranteed emissions (for a brand new engine) or source test data (for a previously used engine) less than or equal to the permitted engine.
 - (vi) The temporary replacement engine shall comply with all rules and permit requirements that apply to the permitted engine.

- (vii) For each permitted engine to be temporarily replaced, the permittee shall submit a completed *Temporary IC Engine Replacement Notification* form (Form ENF-94) within 14 days of the temporary engine being installed. This form may be sent hardcopy, or can be e-mailed (e-mail: enr@sbcapcd.org) to the District (Attn: Engineering Supervisor).
- (viii) Within 14 days of returning the original permitted engine to service, the permittee shall submit a completed *Temporary IC Engine Replacement Report* form (Form ENF-95). This form may be sent hardcopy, or can be e-mailed (e-mail: enr@sbcapcd.org) to the District (Attn: Engineering Supervisor).

Any engine in temporary replacement service shall be immediately shut down if the District determines that the requirements of this condition have not been met. This condition does not apply to engines that have experienced a cracked block (unless under manufacturer's warranty), to engines for which replacement parts are no longer available, or new engine replacements. Such engines are subject to the provisions of New Source Review.

- (g) Permanent Engine Replacements: Any E/S engine, firewater pump engine or engine used for an essential public service that breaks down and cannot be repaired may install a new replacement engine without first obtaining an ATC permit only if the requirements (i – vi) listed herein are satisfied.
 - (i) The permitted stationary diesel IC engine is an E/S engine, a firewater pump engine or an engine used for an essential public service (as defined by the District).
 - (ii) The engine breaks down, cannot be repaired and needs to be replaced by a new engine.
 - (iii) The facility provides “good cause” (in writing) for the immediate need to install a permanent replacement engine prior to the time period before an ATC permit can be obtained for a new engine.
 - (iv) The new engine must comply with the requirements of the ATCM for new engines. If a new engine is not immediately available, a temporary engine may be used while the new replacement engine is being procured. During this time period, the temporary replacement engine must meet the same guidelines and procedures as defined in the permit condition above (*Temporary Engine Replacements - DICE ATCM*).
 - (v) An Authority to Construct application for the new permanent engine is submitted to the District within 15 days of the existing engine being replaced and the District permit for the new engine is obtained no later than 180 days from the date of engine replacement (these timelines include the use of a temporary engine).

- (vi) For each new permanent engine installed pursuant to this condition, the permittee shall submit a completed *Permanent IC Engine Replacement Notification* form (Form ENF-96) within 14 days of the new engine being installed. This form may be sent hardcopy, or can be e-mailed (e-mail: enr@sbcapcd.org) to the District (Attn: Engineering Supervisor).

Any engine installed (either temporarily or permanently) pursuant to this permit condition shall be immediately shut down if the District determines that the requirements of this condition have not been met.

C.2 Combustion Equipment - Flare. The following equipment items are included in this emissions unit category:

District Device No.	Name
112631	Flare Relief System; 2,500 MMBtu/hr

- (a) Emission Limits: Mass emissions from the flare relief system listed above shall not exceed the limits listed in Tables 5.1-3 and 5.1-4.
- (b) Operational Limits:
 - (i) *Flaring Volumes* - Flaring volumes from the purge and pilot, planned continuous, planned other, and unplanned other events shall not exceed the following volumes:

Flare Category	Hourly (10 ³ scf)	Daily (10 ³ scf)	Quarterly (10 ⁶ scf)	Annual (10 ⁶ scf)
Purge/Pilot	0.135	3.24	1.183	1.183
Planned Continuous	0.250	6.00	2.190	2.190
Planned Other			26.393	26.393
Unplanned Other			26.393	26.393

- (ii) *Flare Fuel Gas Sulfur Limit* - The sulfur content of produced gas combusted in the pilot and during flaring events shall not exceed 15 gr/100 scf (239 ppmv) total sulfur calculated as hydrogen sulfide at standard conditions. Planned flaring is defined in District Rule 359. Compliance shall be based on annual lab analyses. The operator shall perform additional testing/analyses of the sulfur content, using approved test methods, as requested by the District. The operator shall submit all such lab analyses reports to the District.
- (iii) *Rule 359 Technology Based Standards* - DCOR shall comply with the technology based standards of Rule 359.D.2. Compliance shall be based on the monitoring and recordkeeping requirements of this permit as well as District inspections.

- (iv) *Use of Propane as Fuel Gas* - Propane may be used as an auxiliary fuel to the flare purge and pilot fuel gas on a temporary basis only during times when the supply of produced gas becomes disabled. The propane shall meet Gas Processors Association specifications for propane or HD-5 and shall have total sulfur content no greater than 15 gr/100 scf (239 ppmv). DCOR shall record in a log each usage of propane in a District-approved format and shall maintain documentation of the sulfur content of each fuel shipment as certified in the fuel suppliers billing vouchers.
- (c) Monitoring: The equipment in this section are subject to all monitoring requirements listed in District Rule 359.G. The test methods In Rule 359.E. shall be used. In addition, DCOR shall:
- (i) *Flare Volumes* - The volumes of gas flared shall be monitored by use of the District-approved flare header flow meter. The meter shall be operated consistent with DCOR's *Process Monitor Calibration and Maintenance Plan*.
 - (ii) *Flaring Sulfur Content* - For each flare event lasting more than one hour, the H₂S concentration of the flared gas shall be measured by detection tube. In addition, the total sulfur content of produced gas combusted during planned flaring events shall be measured on an annual basis using District-approved ASTM methods. DCOR shall perform additional testing of the sulfur content, using approved test methods, as requested by the District. DCOR shall submit all such lab analyses reports to the District.
 - (iii) *Pilot Flame Detection* - DCOR shall continuously monitor the pilot to ensure that a flame is present at all times.
 - (iv) *Propane Fuel Data* - DCOR shall maintain documentation of the sulfur content and higher heating value (as determined by District-approved ASTM methods) of each propane fuel shipment as certified in the fuel suppliers billing vouchers.
- (d) Recordkeeping: The equipment listed in this section is subject to all recordkeeping requirements listed in Rule 359.H. In addition, DCOR shall:
- (i) *Flare Volumes* - All flaring events shall be recorded in a log. The log shall include: date; duration of flaring events (start and stop times); quantity of gas flared; reason for flaring events; and the type of event (e.g., planned or unplanned).
 - (ii) *Sulfur Content* - A log of the total sulfur content of produced gas combusted during flaring events shall be maintained.
 - (iii) *Propane Fuel Gas Use* - DCOR shall record in a log each usage of propane in a District-approved format and shall maintain documentation of the sulfur content of each fuel shipment as certified in the fuel suppliers billing vouchers.

- (e) Reporting: The equipment listed in this section are subject to all the reporting requirements listed in District Rule 359.H. On a semi-annual basis, a report detailing the previous six month's activities shall be provided to the District. The report must list all data required by the *Semi-Annual Compliance Verification Reports* condition of this permit. *(Re: District Rules 359 and 1303, PTO 9114, ATC 13486, 40 CFR 70.6)*

C.3 Fugitive Hydrocarbon Emissions Components. The following equipment items are included in this emissions unit category:

District Device No.	Name
	<i>Gas/Light Liquid Service Components</i>
102459	Valves/Connections/Other – Controlled
102460	Valves/Connections/Other – Uncontrolled
	<i>Oil Service Components</i>
102461	Valves/Connections/Other – Controlled
102462	Valves/Connections/Other – Uncontrolled

- (a) Emission Limits: Mass emissions from the gas/light liquid service and oil service components listed above shall not exceed the limits listed in Tables 5.1-3 and 5.1-4.
- (b) Operational Limits: Operation of the equipment, *including the ½-inch or less diameter stainless steel fittings*, listed in this section shall conform to the requirements listed in District Rule 331.D and E. Compliance with these limits shall be assessed through compliance with the monitoring, recordkeeping and reporting conditions in this permit. In addition, DCOR shall meet the following requirements:
- (i) *VRS Use* - The vapor recovery/gas collection (VRGC) system shall be in operation when the equipment connected to the VRGC system at the facility is in use. The VRGC system includes piping, valves, and flanges associated with the VRGC system. The VRGC system shall be maintained and operated to minimize the release of emissions from all systems, including pressure relief valves and gauge hatches.
 - (ii) *I&M Program* - The District-approved I&M Plan for Platform Hillhouse (*last updated in August 2002*) shall be implemented for the life of the project. The Plan, and any subsequent District approved revisions, is incorporated by reference as an enforceable part of this permit.
 - (iii) *Leak-Path Count* - The total leak-path component count listed in DCOR's most recent I&M component leak-path inventory shall not exceed the total leak-path component count listed in Table 5.1-1 by more than five percent. This five percent range is to allow for minor differences due to component counting methods and does not constitute allowable emissions growth due to the addition of new equipment.
 - (iv) *Venting* - All routine venting of hydrocarbons shall be routed to either the sales compressor, flare header, injection well or other District-approved control device.
 - (v) *Best Available Control Technology* - BACT, as defined in Table 4.1, shall be implemented for the life of the project.

- (c) **Monitoring:** The equipment items listed in this section are subject to all the monitoring requirements listed in District Rule 331.F. The test methods in Rule 331.H shall be used, when applicable.
- (d) **Recordkeeping:** All inspection and repair records shall be retained at the source for a minimum of five years. The equipment items listed in this section are subject to all the recordkeeping requirements listed in District Rule 331.G. In addition, DCOR shall:
 - (i) *I&M Log* - DCOR shall record in a log the following: a record of leaking components including all 1/2-inch or less diameter stainless steel fittings found (including name, location, type of component, date of leak detection, the ppmv reading, date of repair attempt, method of detection, date of re-inspection and ppmv reading after leak is repaired); a record of the total components inspected and the total number and percentage found leaking by component type; a record of leaks from critical components; a record of leaks from components that incur five repair actions within a continuous 12-month period; and, a record of component repair actions including dates of component re-inspections.
- (e) **Reporting:** The equipment listed in this section are subject to all the reporting requirements listed in District Rule 331.G. On a semi-annual basis, a report detailing the previous six month's activities shall be provided to the District. The report must list all data required by the *Semi-Annual Compliance Verification Reports* condition of this permit.
 [Re: District Rules 331 and 1303, PTO 9114, 40 CFR 70.6]

C.4 Crew and Supply Boats. The following equipment are included in this emissions category:

District Device No.	Name
005537	Crew Boat Main Engines – Controlled
005538	Crew Boat Auxiliary Engines
005533	Supply Boat Main Engines – Controlled
102465	Supply Boat Auxiliary Engines
005535	Supply Boat Bow Thrusters
005536	Emergency Response Boat

- (a) **Emission Limits.** Mass emissions from the crew, supply and emergency boats listed above shall not exceed the limits listed in Tables 5.1-3 and 5.1-4. In addition:
 - (i) *NO_x Emissions* - Controlled emissions of NO_x shall not exceed:
 - (a) From each diesel fired main engine in each supply boat: 270 lb/1000 gallons (5.99 g/bhp-hr);
 - (b) From each diesel fired main engine in each controlled crew boat shall not exceed 235 lb/1000 gallons (5.86 g/bhp-hr);

- (c) From each diesel fired main in each controlled emergency boat: 271 lb/1000 gallons (6.76 g/bhp-hr);
- (d) From each diesel fired auxiliary engine in each controlled emergency boat: 202 lb/1000 gallons (5.04 g/bhp-hr).

Compliance for the crew and supply boat main engines shall be based on annual source testing consistent with the requirements listed in Table 4.1 and Condition 9.C.13, *Source Testing*.

- (ii) *Crew, Supply and Emergency Response Boat Stationary Source Maximum Permitted Emissions* - To more accurately define the *Dos Cuadras - South County* Stationary Source's annual potential-to-emit (which is used to determine fees for Air Quality Plans (Rule 210.F)), crew boat, supply boat (including spot charters) and emergency response boat usage, in aggregate, associated with OCS Platforms A, B, C, Henry and Hillhouse shall not exceed five (5) times the annual emission limits shown in Table 5.2. These limits apply to the crew boats, supply boats and emergency response boats separately.
- (b) Operational Limits: Operation of the equipment listed in this section shall not exceed the limits listed below. Compliance with these limits shall be assessed through compliance with the monitoring, recordkeeping and reporting conditions in this permit.
- (i) *Fuel Use for Each Boat Engine*:
 - (a) The supply boat main engines shall not use more than: 1,401 gallons per day; 7,278 gallons per quarter; 14,556 gallons per year of diesel fuel.
 - (b) The supply boat auxiliary generator engines shall not use more than: 148 gallons per day; 771 gallons per quarter; 1,542 gallons per year of diesel fuel. The supply boat auxiliary bow thruster engines shall not use more than: 57 gallons per day; 295 gallons per quarter; 589 gallons per year of diesel fuel.
 - (b) The emergency response boat main and auxiliary engines shall not use more than: 8,353 gallons per quarter and 16,705 gallons per year of diesel fuel.
 - (d) The crew boat main engines shall not use more than: 1,392 gallons per day; 20,874 gallons per quarter; 83,497 gallons per year of diesel fuel.
 - (e) The crew boat auxiliary engines shall not use more than: 105 gallons per day; 1,574 gallons per quarter; 6,295 gallons per year of diesel fuel.
 - (ii) *Crew, Supply and Emergency Response Boat Stationary Source Operational Limits* - To more accurately define the DCOR *Dos Cuadras - South County* Stationary Source's annual potential-to-emit (which is used to determine fees for Air Quality Plans (Rule 210.F)), crew boat, supply boat (including spot charters) and emergency response boat usage, in aggregate, associated with OCS Platforms A, B, C, Henry and Hillhouse shall not exceed the annual fuel use limits shown in condition C.4.(b)(i) above. These limits apply to the crew boat main engines, crew boat

auxiliary engines, supply boat main engines, supply boat auxiliary engines and emergency response boat engines separately.

- (iii) *Spot Charter Boats* - The number of allowable annual spot charter crew boat trips shall not exceed ten percent of the actual annual number of trips made by the primary crew boat. The number of allowable annual spot charter supply boat trips shall not exceed ten percent of the actual annual number of trips made by the primary supply boat. A trip is defined as any time the boat makes a trip from port to the platform and back (i.e., a round trip).
- (iv) *New/Replacement Boats* - DCOR may utilize any new/replacement boat for the platform without the need for a permit revision if that boat meets the following conditions:
 - (a) The main engines are of the same or less bhp rating; and
 - (b) The combined pounds per day potential to emit (PTE) of all generator and bow thruster engines is the same or less than the sum of the pounds per day PTE for these engines as determined from the corresponding Table 5.1-3 emission line items of this permit; and
 - (c) The NO_x, ROC, CO, PM, PM₁₀ and PM_{2.5} emission factors for the main and auxiliary engines are the same or less than the factors in Table 5.1-2.

The above criteria also apply to spot charter boats. Any proposed new/replacement crew, supply or spot charter boat that does not meet the above requirements (a) - (c) shall first obtain a permit revision prior to operating the boat. The District may require manufacturer guarantees and emission source tests to verify this NO_x emission standard.

DCOR shall revise the Boat Monitoring and Reporting Plan, obtain District approval of such revisions and implement the revised Plan prior to bringing any new/replacement boat into service, except for the use of spot charters. If a new spot charter is brought into service then DCOR shall revise and resubmit the boat plan within thirty (30) calendar days after it is first brought into service. If the fuel metering and emissions computation procedures for a new spot charter are identical to a boat that is already addressed in the approved boat plan, a letter addendum stating this will suffice for the revision/re-submittal of the boat plan.

- (v) Prior to bringing the boat into service for the first time, DCOR shall submit the information listed below to the District for any new/replacement crew and supply boat that meets the requirements set forth in (a) - (c) above, and for new spot charters that have not been previously used for Platforms A, B, C, Henry and Hillhouse operations. For spot charters, this information shall be submitted within thirty (30) calendar days after the boat is first brought into service. DCOR shall notify the District Project Manager (via fax or e-mail) within three (3) calendar days after a new spot charter is first brought into operation. Any boat put into service that does not meet the requirements above, as determined by the District at any time, shall

immediately cease operations and all prior use of that boat shall be considered a violation of this permit.

- (a) Boat description, including the type, size, name, engine descriptions and emission control equipment.
 - (b) Engine manufacturers' data on the emission levels for the various engines and applicable engine specification curves.
 - (c) A quantitative analysis using the operating and emission factor assumptions given in tables 5.1-1 and 5.1-2 of this permit that demonstrates criteria (b) above is met.
 - (d) Estimated fuel usage within 25-miles of Platforms A, B, C, Henry and Hillhouse.
 - (e) Any other information the District deems necessary to ensure the new boat will operate consistent with the analyses that form the basis for this permit.
- (vi) *Fuel and Fuel Additive Requirements* - The permittee may only add CARB Diesel, or an alternative diesel fuel that meets the requirements of the ATCM Verification Procedure, or CARB Diesel fuel used with additives that meet the requirements of the ATCM Verification Procedure, or any combination of the above to each engine or any fuel tank directly attached to each engine.
- (v) *Crew and Supply Boat Use* - Crew, supply and spot charter boats shall be used for the activities specified in Sections 2.2.3 and 2.2.4 of this permit. Any boats used for or in support of activities not specified in Sections 2.2.3 and 2.2.4 will be considered as new projects, and the boat emissions associated with such projects will be considered in the project potential to emit.
- (c) Monitoring: DCOR shall comply with the latest *Boat Monitoring and Reporting Plan* including any District-approved updates thereof. This revised Plan reflects the engines associated with the *M/V Ryan T*. DCOR shall fully implement this Plan or its District-approved updates, for the life of the project. The Plan is incorporated by reference as part of this permit.

The data collected from the *Boat Monitoring and Reporting Plan* shall demonstrate that the boats are being operated consistent with the emission assumptions used in the issuance of this operating permit. Fuel use for all the main engines must be collected while the boats are in transit. Spot charter boats shall, at a minimum, track total fuel usage on a per trip basis using District-approved procedures. Emergency response boats shall, at a minimum, track fuel usage on a quarterly basis using District-approved procedures. These data shall be submitted in a District-approved format to the District.

- (d) Recordkeeping: The following records shall be maintained in legible logs and shall be made available to the District upon request:

- (i) *Maintenance Logs* - Maintenance log summaries that include details on injector timing, setting adjustments, major engine overhauls, and routine engine maintenance. These logs and summaries shall be made available to the District upon request.
 - (ii) *Boat Fuel Usage* - Daily, quarterly and annual fuel use for (a) the crew boat main engines and auxiliary engines, and (b) the supply boat main engines, generator engine and bow thruster engine. Fuel use is to be recorded according to the approved boat monitoring plan, the auxiliary engine fuel use being a percent of the total fuel consumed.
 - (iii) *Emergency Response Boat Fuel Usage* - Total quarterly and annual fuel use for the emergency response boat and Platforms A, B, C, Henry and Hillhouse allocation of that total.
 - (iv) *Boat Trips Data* - The number of boat trips made by (a) the primary crew and supply boats, and (b) the spot-charter crew and supply boats - both data sets itemized by the date of the trip and the boat name. This requirement supplements the record keeping requirements of DCOR's approved *Boat Monitoring and Reporting Plan*; and the data shall be provided to the District in the semi-annual Compliance Verification Reports.
 - (v) The sulfur content of each fuel shipment delivered to the boats as documented by fuel supplier records (e.g., billing vouchers, or bills of lading).
- (e) Reporting: On a semi-annual basis, a report detailing the previous six month's activities shall be provided to the District. The report must list all data required by the *Semi-Annual Compliance Verification Reports* condition of this permit.

C.5 Pigging Equipment. The following equipment are included in this emissions category:

District Device No.	Name
114004	6" Gas Pig Launcher
102430	6" Gas Pig Receiver
102428	6" Oil Pig Launcher
102431	6" Oil Pig Receiver

- (a) Emission Limits: Mass emissions from the gas and oil pig launchers and receivers listed above shall not exceed the limits listed in Tables 5.1-3 and 5.1-4.
- (b) Operational Limits: Operation of the equipment listed in this section shall conform to the requirements listed in District Rule 325.E. Compliance with these limits shall be assessed through compliance with the monitoring, recordkeeping and reporting conditions in this permit. In addition DCOR shall meet the following requirement:
 - (i) *Events* - The number of oil and gas pig operations (events) shall not exceed the maximum operating schedule listed in Table 5.1-1. This will be verified by data from the pigging operations log kept by DCOR.

- (ii) *Pressure* - Prior to opening each gas or oil pig, the pressure in the pig shall not exceed 1 psig. For gas pigging, this limit will be verified by a pressure gauge recorder at the VRU compressor inlet or by any other contrivance that provides the same accuracy and has been approved by the District prior to its installation.
 - (iii) *ROC/TOC Ratio* - DCOR shall first purge and blanket all pig receivers/launchers with 'sales gas' produced by DCOR before opening the hatches. The ROC/TOC ratio, by weight, for this gas shall not exceed 0.13, as measured semi-annually by DCOR.
 - (iv) *Openings* - Access openings to the pig launchers/receivers shall be kept closed at all times, except when a pipeline pig is being placed into or removed from the launcher/receiver.
- (c) Monitoring: See conditions (b) (i) through (b) (iii) above, particularly the *semi-annually* ROC/TOC ratio determination required under (b)(iii).
 - (d) Recordkeeping: DCOR shall record in a log each pigging operation. The log shall include the date pigging unit used (e.g., gas unit) and the de-pressurized chamber pressure data via the VRU compressor inlet pressure recorder, immediately prior to pig chamber opening.
 - (e) Reporting: On a semi-annual basis, a report detailing the previous six month's activities shall be provided to the District. The report must list all data required by the *Semi-Annual Compliance Verification Reports* condition of this permit [Re: District Rules 325 and 1303, PTO 9114, 40 CFR 70.6]

C.6 **Sumps/Tanks/Separators.** The following equipment items are included in this emissions category:

District Device No.	Name
005556	Flotation Cell Unit
008225	Flotation Cell Unit
005541	Wemco Surge Tank
005558	Settling Tank
102467	Sm. Drill water Tank
102468	Mud Tank
005539	Horizontal Surge Tank
005540	Horizontal Surge Tank

- (a) **Emission Limits:** Mass emissions from the equipment listed above shall not exceed the limits listed in Tables 5.1-3 and 5.1-4.
- (b) **Operational Limits:** All process operations from the equipment listed in this section shall meet the requirements of District Rule 325, Sections D, E, F and G. Compliance with these limits shall be assessed through compliance with the monitoring, recordkeeping and reporting conditions in this permit.
 - (i) *VRS Use* - The vapor recovery system shall be in operation when the equipment connected to the VRS system at the facility is in use. The VRS system includes piping, valves, and flanges associated with the VRS system. The VRS system shall be maintained and operated to minimize the release of emissions from all systems, including pressure relief valves and gauge hatches.
 - (ii) *Vapor Recovery System Efficiency* - The VRS shall maintain a minimum efficiency of 90 percent (mass basis).
- (c) **Monitoring:** The equipment listed in this section shall be subject to all the monitoring requirements of District Rule 325.H. The test methods outlined in District Rule 325.G shall be used, when applicable. In addition, DCOR shall:
 - (i) Analyze the process streams listed in the *Process Stream Sampling and Analysis* permit condition (9.C.14).
- (d) **Recordkeeping:** The equipment listed in this section is subject to all the recordkeeping requirements listed in District Rule 325.F. In addition, DCOR shall maintain logs for the information listed below. These logs shall be made available to the District upon request:
 - (i) On a monthly basis, the total oil emulsion and produced gas production along with the number of days per month of production
 - (ii) Process stream analyses data as required from the *Process Stream Sampling and Analysis* permit condition.

- (iii) On a daily basis, the amount of oily water processed in each floatation cell unit in units of gallons.
- (e) **Reporting:** On a semi-annual basis, a report detailing the previous six month's activities shall be provided to the District. The report must list all data required by the *Semi-Annual Compliance Verification Reports* condition of this permit.
[Re: District Rules 325 and 1303, PTO 9114, 40 CFR 70.6]

C.7 **Solvent Usage.** The following equipment items are included in this emissions unit category:

District Device No.	Name
111861	Cleaning/Degreasing

- (a) **Emission Limits:** Mass emissions from the solvent usage shall not exceed the limits listed in Tables 5.1-3 and 5.1-4.
- (b) **Operational Limits:** Use of solvents for cleaning/degreasing shall conform to the requirements of District Rules 317, 322, 323.1 and 324. Compliance with these rules shall be assessed through compliance with the monitoring, recordkeeping and reporting conditions in this permit and facility inspections.
 - (i) *Containers* - Vessels or containers used for storing materials containing organic solvents shall be kept closed unless adding to or removing material from the vessel or container.
 - (ii) *Materials* - All materials that have been soaked with cleanup solvents shall be stored, when not in use, in closed containers that are equipped with tight seals.
 - (iii) *Solvent Leaks* - Solvent leaks shall be minimized to the maximum extent feasible or the solvent shall be removed to a sealed container and the equipment taken out of service until repaired. A solvent leak is defined as either the flow of three liquid drops per minute or a discernable continuous flow of solvent.
 - (iv) *Reclamation Plan* - DCOR may submit a Plan to the District for the disposal of any reclaimed solvent. If the Plan is approved by the District, all solvent disposed of pursuant to the Plan will not be assumed to have evaporated as emissions into the air and, therefore, will not be counted as emissions from the source. DCOR shall obtain District approval of the procedures used for such a disposal Plan. The Plan shall detail all procedures used for collecting, storing and transporting the reclaimed solvent. Further, the ultimate fate of these reclaimed solvents must be stated in the Plan.
- (c) **Monitoring:** None

- (d) **Recordkeeping:** DCOR shall record in a log the following on a monthly basis for each solvent used: amount used; the percentage of ROC by weight (as applied); the solvent density; the amount of solvent reclaimed for District-approved disposal; whether the solvent is photochemically reactive; and, the resulting emissions to the atmosphere in units of pounds per month and pounds per day. Product sheets (MSDS or equivalent) detailing the constituents of all solvents shall be maintained in a readily accessible location on the platform.
- (e) **Reporting:** On a semi-annual basis, a report detailing the previous six month's activities shall be provided to the District. The report must list all data required by the *Semi-Annual Compliance Verification Reports* condition of this permit.
[Re: District Rules 317, 322, 323.1, 324 and 1303, PTO 9114, 40 CFR 70.6]
- C.8 **Facility Throughput Limitations.** Platform Hillhouse production shall be limited to a monthly average of 30,000 barrels of oil emulsion⁸ per day and 15 million standard cubic feet of produced gas per day. DCOR shall record in a log the volumes of oil emulsion and gas produced and the actual number of days in production per month. The above limits are based on actual days of operation during the month. [Re: PTO 9114]
- C.9 **Produced Gas.** DCOR shall direct all produced gases to the sales compressors, the flare header or other permitted control device when de-gassing, purging or blowing down any oil and gas well or tank, vessel or container that contains reactive organic compounds or reduced sulfur compounds due to activities that include, but are not limited to, process or equipment turnarounds, process upsets (e.g., well spikes), well blowdown and Bureau of Safety and Environmental Enforcement ordered safety tests. [Re: District Rules 325, 331, PTO 9114]
- C.10 **Diesel IC Engines - Particulate Matter Emissions.** To ensure compliance with District Rules 205.A, 302, 304, 309, and the California Health and Safety Code Section 41701, DCOR shall implement manufacturer recommended operational and maintenance procedures to ensure that all project diesel-fired engines minimize particulate emissions. DCOR shall implement the *IC Engine Particulate Matter Operation and Maintenance Plan* (updated June 4, 2009 and approved on July 22, 2014) and any subsequent District approved updates, for the life of the project. This Plan details the manufacturer recommended maintenance and calibration schedules that DCOR will implement. Where manufacturer guidance is not available, the recommendations of comparable equipment manufacturers and good engineering judgment shall be utilized. All project diesel-fired engines, regardless of exemption status, shall be included in this Plan. [Re: District Rules 205.A, 302, 305, 309, PTO 9114, ATC/PTO 10092]
- C.11 **Abrasive Blasting Equipment.** All abrasive blasting activities performed on Platform Hillhouse shall comply with the requirements of the California Administrative Code Title 17, Sub-Chapter 6, Sections 92000 through 92530. [Re: District Rules 303, PTO 9114]

⁸ Oil emulsion is defined as the total amount of crude oil and water produced from the wells.

C.12 **Process Monitoring Systems - Operation and Maintenance.** All platform process monitoring devices listed in Section 4.10 of this permit shall be properly operated and maintained according to manufacturer recommended specifications. DCOR shall implement their *Process Monitor Calibration and Maintenance Plan (submitted 1/6/95)* for the life of the project. This Plan details the manufacturer recommended maintenance and calibration schedules. Where manufacturer guidance is not available, the recommendations of comparable equipment manufacturers and good engineering judgment shall be utilized. Within 90 days of the issuance of final Part 70 permit 9114-R4, DCOR shall submit a revised *Process Monitor Calibration and Maintenance Plan* for District review and approval. This revised Plan shall be updated to include the emergency engines and the air compressor engines. [Re: PTO 9114, ATC/PTO 10092]

C.13 **Source Testing.** The following source testing provisions shall apply:

- (a) DCOR shall conduct source testing of air emissions and process parameters listed in Section 4.11 and Table 4.3 of this Permit to Operate. More frequent source testing may be required if the equipment does not comply with permitted limitations or if other compliance problems, as determined by the APCO, occur. Source testing of the North Pedestal Crane engine shall be performed on a biennial schedule using June 1994 as the initial test date. The crane engine shall be loaded to the maximum safe load obtainable. Source testing of one crew boat and one supply boat shall occur on an annual basis; September is the anniversary month for such source testing every year. The crew and supply boat main engines shall be tested at normal cruise speeds (approximately 70 percent of maximum engine load).
- (b) DCOR shall submit a written source test plan to the District for approval at least thirty (30) calendar days prior to initiation of each source test. The source test plan shall be prepared consistent with the District's *Source Test Procedures Manual* (revised May 1990 and any subsequent revisions). DCOR shall obtain written District approval of the source test plan prior to commencement of source testing. The District shall be notified at least ten (10) calendar days prior to the start of source testing activity to arrange for a mutually agreeable source test date when District personnel may observe the test.
- (c) Source test results shall be submitted to the District within forty-five (45) calendar days following the date of source test completion and shall be consistent with the requirements approved within the source test plan. Source test results shall demonstrate compliance with emission rates in Section 5 and applicable permit conditions. All District costs associated with the review and approval of all plans and reports and the witnessing of tests shall be paid by DCOR as provided for by District Rule 210.
- (d) Source test for an item of equipment shall be performed on the scheduled day of testing (the test day mutually agreed to) unless circumstances beyond the control of the operator prevent completion of the test on the scheduled day. Such circumstances include mechanical malfunction of the equipment to be tested, malfunction of the source test equipment, delays in source test contractor arrival and/or set-up, or unsafe conditions on site. Except in cases of an emergency, the operator shall seek and obtain District approval before deferring or discontinuing a scheduled test, or performing maintenance on the equipment item on the scheduled test day. If the test cannot be completed on the scheduled day, then the test shall be rescheduled for another time with prior authorization by the District. Failing to perform the source test of an equipment item on the scheduled

test day without a valid reason and without District's prior authorization, except in the case of an emergency, shall constitute a violation of this permit. If a test is postponed due to an emergency, written documentation of the emergency event shall be submitted to the District by the close of the business day following the scheduled test day.

[Re: PTO 9114]

The time period in (i), (ii), and (iii) above may be extended for good cause, provided a written request is submitted to the District at least three days in advance of the deadline, and approval for the extension is granted by the District.

- C.14 **Process Stream Sampling and Analysis.** DCOR shall sample and analyze the process streams listed in Section 4.11 and Table 4.3 of this permit. All process stream samples shall be taken according to District approved ASTM methods by a third party, and shall be analyzed within 72 hours from the time of collection. All sampling and analysis data/results shall be submitted to the District in accordance with the *Semi-Annual Monitoring/Compliance Verification Reports* condition (9.C.16) below. All sampling and analysis shall be traceable by chain of custody procedures. [Re: District Rules 325, 331, 333 PTO 9114]
- C.15 **Recordkeeping.** All records and logs required by this permit and any applicable District, state or federal rule or regulation shall be maintained for a minimum of five calendar years from the date of information collection and log entry at the platform. These records or logs shall be readily accessible and be made available to the District upon request. [Re: District Rule 1303, PTO 9114, 40 CFR 70.6]
- C.16 **Semi-Annual Monitoring/Compliance Verification Reports.** Twice a year, the permittee shall submit a monitoring and compliance verification report to the District. Each report shall be used to verify compliance with the prior two calendar quarters. The first report shall cover calendar quarters 1 and 2 (January through June) and shall be submitted no later than September 1st. The second report shall cover calendar quarters 3 and 4 (July through December) and shall be submitted no later than March 1st. Each report shall contain information necessary to verify compliance with the emission limits and other requirements of this permit. These reports shall be in a format approved by the District. All logs and other basic source data not included in the report shall be available to the District upon request. The second report shall also include an annual report for the prior four quarters. Pursuant to Rule 212, the annual report shall include a completed *District Annual Emissions Inventory* questionnaire, or submitted electronically via the District web site. The report shall include the following information:
- (a) Internal Combustion Engines.
- (i) The daily, quarterly and annual operating hours (or fuel use) data for each pedestal crane engine in units of hours (or gallons).
 - (ii) Emergency use hours of operation for the Emergency Power Generator, Emergency Fire Pump, and Emergency Drilling Generator.**
 - (iii) Maintenance and testing hours of operation for the Emergency Power Generator, Emergency Fire Pump, and Emergency Drilling Generator.**
 - (iv) Hours of operation for all uses other than for emergency use and maintenance and testing, along with a description of what those hours were for the Emergency Power Generator, Emergency Fire Pump, and Emergency Drilling Generator.**

- (v) Results of the quarterly readings of the portable analyzer for the North Pedestal Crane IC engine.
- (vi) A statement that all fuel delivered to the boats or the platform was ultra-low sulfur diesel. The District may request the records per Condition 9.C.1.(c)(iv).
- (vii) On an annual basis, the heating value of all diesel fuel, in units of Btu/gal.
- (viii) Documentation of any equivalent routine IC engine replacement.
- (ix) Summary results of all compliance emission source testing performed.
- (x) For Engines subject to the RICE MACT the following shall be reported:
 - (a) The date of each engine oil change, the number of hours of operation since the last oil change. If an oil analysis was performed, submit the date and results of each oil analysis and the Total Base Number and oil viscosity of the oil when new.
 - (b) The date of each engine air filter inspection and the number of hours of operation since the last air filter inspection. Indicate if the air filter was replaced as a result of the inspection.
 - (c) The date of each engine's hose and belts inspection and the number of hours of operation since the last hose and belt inspection. Indicate if any hose or belt was replaced as a result of the inspection.
- (xi) If any engine subject to 40 CFR 63 Subpart ZZZZ had a malfunction during the reporting period, the report must include the number, duration, and a brief description for each type of malfunction which occurred during the reporting period and which caused or may have caused any applicable emission limitation to be exceeded. The report must also include a description of actions taken by an owner or operator during a malfunction of an affected source to minimize emissions in accordance with 40 CFR 63 Subpart ZZZZ §63.6605(b), including actions taken to correct a malfunction. If there are no deviations from any emission or operating limitation, a statement that there were no deviations from the emission or operating limitations during the reporting period shall be submitted.

**District Form ENF-92 (*Diesel-Fired Emergency Standby Engine Recordkeeping Form*) can be used for requirements as appropriate.

(b) Flare.

- (i) The hydrogen sulfide concentration for each flare event lasting more than one hour; also, (a) the highest annual hydrogen sulfide content and (b) the total sulfur content observed *annually*, in the flare header.
- (ii) The total sulfur content of flare purge and pilot fuel gas as measured annually.
- (iii) The volumes of gas (including natural gas and propane, if any) combusted and resultant mass emissions for each flare category (i.e., Purge/Pilot; Planned Continuous; Planned Other; Unplanned Other), shall be presented as a cumulative summary for each day, quarter and year.

- (c) Fugitive Hydrocarbons. Rule 331/fugitive hydrocarbon I&M program data (on a quarterly basis):
 - (i) Inspection summary.
 - (ii) Record of leaking components.
 - (iii) Record of leaks from critical components.
 - (iv) Record of leaks from components that incur five repair actions within a continuous 12-month period.
 - (v) Record of component repair actions including dates of component re-inspections.
 - (vi) An updated FHC I&M inventory due to change in component list or diagrams.
 - (vii) Listing of components installed as BACT under District Rule 331 as approved by the District.

- (d) Crew and Supply Boats.
 - (i) Daily, quarterly and annual fuel use for the crew boat main engines and auxiliary engines while operating within 25 miles of Platform Hillhouse, itemized by regular crew boat (controlled ICE) usage and spot charter/emergency response boat usage.
 - (ii) Daily, quarterly and annual fuel use for the supply boat main engines and auxiliary engines (including the bow thruster engine) while operating within 25 miles of Platform Hillhouse, itemized by regular crew boat usage and spot charter/emergency response boat (uncontrolled ICE) usage.
 - (iii) A statement that all fuel delivered to the boats or the platform was ultra-low sulfur diesel. Records may be requested per condition 9.C.4.(d)(v).
 - (iv) Information regarding any new project boats servicing DCOR's Platform Hillhouse, as detailed in Permit Condition 9.C.4.(b) above.
 - (v) If requested by the District staff, maintenance log summaries or other records that include details on injector timing, setting adjustments, major engine overhauls, and routine engine tune-ups. For spot charters this shall be provided as available.
 - (vi) The number of boat trips made (a) by the crew and supply boats and (b) by the spot charter (crew and supply) boats, both itemized by the trip dates and the boat names.
 - (viii) Summary results of all compliance emission source testing performed.

- (e) Pigging.
 - (i) For each pig receiver and launcher, the number of pigging events per day, quarter and year.
 - (ii) The ROC/TOC ratio of the 'sales gas' used to purge and blanket each receiver and launcher prior to hatch opening, as measured semi-annually.

- (f) Tanks/Sumps/Separators.
 - (i) On a daily basis, the amount of oily water processed in each floatation cell unit, in units of gallons.

- (g) Solvent Usage. On a monthly basis: the amount of solvent used; the percentage of ROC by weight (as applied); the solvent density; the amount of solvent reclaimed; whether the solvent is photochemically reactive; and, the resulting emissions of ROC and photochemically reactive solvents to the atmosphere in units of pounds per month.
- (h) General Reporting Requirements.
 - (i) On a monthly basis, the total oil emulsion and produced gas production along with the number of days of production;
 - (ii) On quarterly basis, the emissions from each permitted emission unit for each criteria pollutant (shall include tons per quarter **totals of all pollutants** by each emission unit). The third/fourth quarter report shall include tons per year totals for all pollutants (by each emission unit).
 - (iii) On quarterly basis, the emissions from each exempt emission unit for each criteria pollutant (the annual report shall include the annual ROC and NO_x emissions from all permit exempt activities).
 - (iv) Breakdowns and variances reported/obtained per Regulation V along with the excess emissions that accompanied each occurrence.
 - (v) A summary of each and every occurrence of non-compliance with the provisions of this permit, applicable District rules, and any other applicable air quality requirement.
 - (vi) The produced gas and produced oil process stream analyses as required by Condition 9.C.14 of this permit (process stream analyses to be performed per Section 4.11).
[Re: PTO 9114, ATC 9504, ATC 9519, ATC 9746, ATC/PTO 10092, 40 CFR 70.6]

- C.17 **Permitted Equipment**. Only those equipment items listed in Attachment 10.4 are covered by the requirements of this permit and District Rule 201.B. [Re: District Rule 1303, PTO 9114]
- C.18 **Mass Emission Limitations**. Emissions for the entire facility shall not exceed the total limits listed in Table 5.2. [Re: District Rule 1303, PTO 9114, ATC/PTO 10092, 40 CFR 70.6]
- C.19 **Notification of Non-Compliance**. Owners or operators who have determined that they are operating their stationary diesel-fueled engine(s) in violation of the requirements specified in the ATCM shall notify the District immediately upon detection of the violation and shall be subject to District enforcement action.
- C.20 **Notification of Loss of Exemption**. Owners or operators of in-use stationary diesel-fueled CI engines, who are subject to an exemption specified in the ATCM from all or part of the requirements of the ATCM, shall notify the District immediately after they become aware that the exemption no longer applies and shall demonstrate compliance within 180 days after notifying the District.


C.21 **Documents Incorporated by Reference.** The documents listed below, including any District-approved updates thereof, are incorporated herein and shall have the full force and effect of a permit condition for this operating permit. These documents shall be implemented for the life of the project.

- (i) *Fugitive Emissions Inspection and Maintenance (I&M) Plan - Rule 331* (approved 09/03/2002).
- (ii) *IC Engine Particulate Matter Operation and Maintenance Plan* (approved December 20, 1994, updated June 4, 2009).
- (iii) *Flare Minimization and Monitoring Plan - Rule 359* (approved September 22, 1994, amended December 13, 1994).
- (iv) *Emergency Episode Plan - Rule 603* (submitted on July 23, 1994 and approved November 1994, updated on November 30, 1998).
- (v) *Boat Monitoring Plan* (Approved on August 20, 2013).
- (vi) *IC Engine Rule 333 Inspection and Maintenance Plan* (Submitted May 20, 2009 and updated June 3, 2009).
- (vii) *Process Monitor Calibration and Maintenance Plan* (dated May 30, 2002).
[Re: District Rules 303, 317, 331, 333, 343, 359]

9.D District-Only Conditions

The following section lists permit conditions that are not enforceable by the USEPA or the public. However, these conditions are enforceable by the District and the State of California. These conditions are issued pursuant to District Rule 206 (*Conditional Approval of Authority to Construct or Permit to Operate*), which states that the Control Officer may issue an operating permit subject to specified conditions. Permit conditions have been determined as being necessary for this permit to ensure that operation of the facility complies with all applicable local and state air quality rules, regulations and laws. Failure to comply with any condition specified pursuant to the provisions of Rule 206 shall be a violation of that rule, this permit, as well as any applicable section of the California Health & Safety Code.

- D.1 **Nuisance (Rule 303).** No pollutant emissions from any source at DCOR shall create nuisance conditions. No operations shall endanger health, safety or comfort, nor shall they damage any property or business [*District Rule 303*].

AIR POLLUTION CONTROL OFFICER


JUN 14 2018

Date

NOTES:

- (a) This permit supersedes, Part70/Reeval 9114-R4 issued December 12, 2014.
- (b) District Permit Reevaluation Due Date: December 2020

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10.0 Attachments

10.1 *Emission Calculation Documentation*

10.2 *Fee Calculations*

10.3 *Equipment List*

10.4 *Comments on Draft Permit*

10.1 EMISSION CALCULATION DOCUMENTATION

This attachment contains all relevant emission calculation documentation used for the emission tables in Section 5. Refer to Section 4 for the general equations. The letters A-H in the references below correspond to the same in Tables 5.1-1 and 5.1-2.

Reference A – Diesel-fired IC Engines

- The maximum operating schedule is in units of hours.
- The default diesel fuel #2 characteristics are: (*Reference: AP-42 Appendix A 9/85, reformatted 1/95*)
 - Density = 7.05 lb/gal
 - LHV = 129,245 Btu/gal
 - HHV = 137,000 Btu/gal
- North Pedestal Crane BSFC = 7,241 Btu/bhp-hr (energy based value using LHV)
Detroit Diesel 6V-71 engine specification basis = 0.395 lb/bhp-hr.
- South Pedestal Crane BSFC = 7,700 Btu/bhp-hr (energy based value using LHV)
Detroit Diesel 3-71 engine specification basis = 0.420 lb/bhp-hr.
- Emergency Power Generator BSFC = 7,000 Btu/bhp-hr (estimated - energy based value using LHV).
- Emergency Fire Pump BSFC = 8,000 Btu/bhp-hr (estimated - energy based value using LHV).
- Emergency Drill Rig Power Generator BSFC = 7,000 Btu/bhp-hr (estimated - energy based value using LHV).
- Air Compressor Engine BSFC = 8,000 Btu/bhp-hr (estimated - energy based value using LHV).
- Emission factors units (lb/MMBtu) are based on HHV.
- LCF (conversion of LHV to HHV) value of 6 percent used.
- NO_x emission factor for the North Pedestal Crane IC engine per Rule 333, *i.e.*, 700 ppmvd @ 15% O₂:

$$EF_{lb/MMBtu} = 700 \text{ ppmvd} \times 2.59 \times 10^{-9} \times 46.01 \frac{\text{lb } No_x}{\text{lbmol}} \times 8985 \times \left(\frac{20.9}{20.9 - 15.0} \right) = 2.65 \frac{\text{lbs}}{\text{MMBtu}}$$

- NO_x emission factor for the South Pedestal Crane IC engine (Rule 333 standards-exempt):

$$EF_{lb/MMBtu} = \frac{14 \frac{g}{bhp-hr} \times 10^6 \frac{Btu}{MMBtu}}{453.6 \frac{g}{lb} \times 7700 \frac{Btu}{bhp-hr}} = 4.01 \frac{lbs}{MMBtu}$$

- NO_x emission factor for the Emergency Power Generator IC engine is:

$$EF_{lb/MMBtu} = \frac{14 \frac{g}{bhp-hr} \times 10^6 \frac{Btu}{MMBtu}}{453.6 \frac{g}{lb} \times 7000 \frac{Btu}{bhp-hr}} = 4.41 \frac{lbs}{MMBtu}$$

- NO_x emission factor for the Emergency Fire Pump IC engine is:

$$EF_{lb/MMBtu} = \frac{16 \frac{g}{bhp-hr} \times 10^6 \frac{Btu}{MMBtu}}{453.6 \frac{g}{lb} \times 8000 \frac{Btu}{bhp-hr}} = 4.41 \frac{lbs}{MMBtu}$$

- NO_x emission factor for the Emergency Drill Rig Generator IC engine is:

$$EF_{lb/MMBtu} = \frac{14 \frac{g}{bhp-hr} \times 10^6 \frac{Btu}{MMBtu}}{453.6 \frac{g}{lb} \times 7000 \frac{Btu}{bhp-hr}} = 4.41 \frac{lbs}{MMBtu}$$

- NO_x emission factor for Rule 333-exempt air compressor IC engines is:

$$EF_{lb/MMBtu} = \frac{16 \frac{g}{bhp-hr} \times 10^6 \frac{Btu}{MMBtu}}{453.6 \frac{g}{lb} \times 8000 \frac{Btu}{bhp-hr}} = 4.41 \frac{lbs}{MMBtu}$$

- ROC, CO and PM emission factors based on USEPA AP-42, Table 3.3-1 (10/96).

- SO_x emission factor based on mass balance equation (as SO₂):

$$SO_x EF_{lb/MMBtu} = \frac{(\%S) \times \left(\rho_{oil} \frac{lb}{gal} \right) \times \left(\frac{1 \text{ gmol } S}{32 \text{ g}} \right) \times \left(\frac{1 \text{ gmol } SO_2}{1 \text{ gmol } S} \right) \times \left(\frac{64 \text{ g}}{1 \text{ gmol } SO_2} \right)}{\left(HHV \frac{Btu}{gal} \right) \times \left(10^{-6} \frac{MMBtu}{Btu} \right)}$$

- PM/PM₁₀/PM_{2.5} ratio = 1.0 (per AP-42)

- ROC:TOC ratio = 0.8378. ROC emission factor based on District "VOC/ROC Emission Factors and Reactivities for Common Source Types" dated 03/12/01 (ver 1.2) for Piston IC Engine: Diesel.

- Crane engine operational limits: General Equation

$$Q = \frac{\left(\frac{BSFC \frac{Btu}{bhp-hr}}{bhp-hr} \right) \times bhp \times (LCF) \times \left(\frac{hours}{time\ period} \right)}{\left(\frac{HHV \frac{Btu}{gal}}{gal} \right)}$$

North Pedestal Crane Engine Equation:

$$Q_{daily} = \frac{\left(7,241 \frac{Btu}{bhp-hr} \right) \times (238\ bhp) \times (1.06) \times \left(\frac{24\ hours}{day} \right)}{\left(137,000 \frac{Btu}{gal} \right)} = 320 \frac{gal}{day}$$

$$Q_{quarterly} = \frac{\left(7,241 \frac{Btu}{bhp-hr} \right) \times (238\ bhp) \times (1.06) \times \left(\frac{500\ hours}{quarter} \right)}{\left(137,000 \frac{Btu}{gal} \right)} = 6,667 \frac{gal}{qtr}$$

$$Q_{annual} = \frac{\left(7,241 \frac{Btu}{bhp-hr} \right) \times (238\ bhp) \times (1.06) \times \left(\frac{1000\ hours}{year} \right)}{\left(137,000 \frac{Btu}{gal} \right)} = 13,334 \frac{gal}{yr}$$

South Pedestal Crane Engine Equation:

$$Q_{daily} = \frac{\left(7,700 \frac{Btu}{bhp-hr} \right) \times (109\ bhp) \times (1.06) \times \left(\frac{24\ hours}{day} \right)}{\left(137,000 \frac{Btu}{gal} \right)} = 156 \frac{gal}{day}$$

$$Q_{quarterly} = \frac{\left(7,700 \frac{Btu}{bhp-hr} \right) \times (109\ bhp) \times (1.06) \times \left(\frac{100\ hours}{quarter} \right)}{\left(137,000 \frac{Btu}{gal} \right)} = 649 \frac{gal}{qtr}$$

$$Q_{\text{annual}} = \frac{\left(7,700 \frac{\text{Btu}}{\text{bhp-hr}}\right) \times (109 \text{ bhp}) \times (1.06) \times \left(\frac{200 \text{ hours}}{\text{year}}\right)}{\left(137,000 \frac{\text{Btu}}{\text{gal}}\right)} = 1,299 \frac{\text{gal}}{\text{yr}}$$

Reference B - Combustion Flare

- The maximum operating schedule for the purge/pilot gas and planned continuous flaring is in units of hours.
- The maximum operating schedule for the planned other and unplanned flaring is in units of percentage of annual usage.
- Purge and pilot flow rate based on original application.
- HHV = 1,100 Btu/scf for all flare gas (per original application).
- Planned continuous flaring value based on one half the minimum detection limit of the flare meter.
 Flare meter: Daniels 10-inch orifice meter
 Minimum detection limit: 0.012 MMscfd (District assumption based on 0.25 scf/sec flow rate). Value agreed upon by DCOR and the District.
 Maximum detection limit: 10.0 MMscfd
- Planned intermittent (other) and unplanned flaring volumes agreed upon by DCOR and the District.
- Planned intermittent (other) and unplanned flaring events not calculated for short-term events per District policy.
- The same emission factors are used for all flaring scenarios.
- NO_x, ROC and CO emission factors based on USEPA AP-42 Chapter 13.5 Industrial Flares, Table 13.5-1 (9/91, reformatted 1/95).
- ROC:TOC ratio = 0.41. ROC emission factor based on District "VOC/ROC Emission Factors and Reactivities for Common Source Types" dated 3/21/01 (ver 1.2) for Flares, Thermal Oxidizers, and Incinerators.
- PM/PM₁₀/PM_{2.5} ratio = 1.0. PM emission factor based on District Flare Study - Phase I Report, Table 3.1.1 (7/91).
- SO_x emissions based on mass balance:

$$SO_x (\text{as } SO_2) = \frac{(0.169) \times (\text{ppmv } S)}{HHV}$$

Reference C - Fugitive Components

- The maximum operating schedule is in units of hours.
- All safe to monitor components are credited an 80 percent control efficiency. Unsafe to monitor components (as defined in Rule 331) are considered uncontrolled.
- The component leak path definition differs from the Rule 331 definition of a component. A typical leak path count for a valve would be equal to 4 (one valve stem, a bonnet connection and two flanges).
- Leak path counts and 'de minimis changes' updates are provided by applicant. The total count has been verified to be accurate within 5 percent of the District's P&ID and platform review/site checks.
- Emission factors based on the District/Tecolote Report, *Modeling of Fugitive Hydrocarbon Emissions* (January 1986), Model B. These are, as follows:

$$EF_{Oil\ Side, Unsafe / Uncontrolled} = 0.0133 \times 0.33 = 0.0044 \frac{lbROC}{day - clp}$$

$$EF_{Gas\ Side, Unsafe / Uncontrolled} = 0.223 \times 0.33 = 0.0736 \frac{lbROC}{day - clp}$$

½-Inch or Smaller Diameter Stainless Steel 'fitting': This renewal permit includes ½-inch or smaller diameter stainless steel fittings in the equipment list. Emissions from these components have not been quantified since their emission factors have not been established.

Reference D - Supply Boat

- The maximum operating schedule is in units of hours.
- Supply boat engine data based on SoCal Ship Service's *M/V Ryan T.*
- Two 2,000 bhp main engines (i.e., 4,000 bhp), two 245 bhp auxiliary engines (i.e., 490 bhp) and one 515 bhp bow thruster engine are utilized.
- Main engine load factor based on District *Crew and Supply Boat* study (6/87).
- Supply boat bow thruster engine only operates during maneuver mode.
- Supply boat generator engines provide half of total rated load, either with one engine at full load or both engines at half load.
- Total time supply boat operates per trip within 25 miles of platform is 11 hours. A trip includes time traveling to and from the platform, as well as time operating at the platform. Typical trip is: 8 hours cruise, 2 hours maneuver and 1 hour idle. Annual time based on $52/5 = 10.4$ trips. Quarterly based on $26/5 = 5.2$ trips. Spot charter boats add $11 * 10.4/10 = 11.4$ hours per year.

- Main engine emission factors are based only on cruise mode values.
- The break specific fuel consumption (BSFC) for the controlled main engines is 0.345 lb/bhp-hr. This value is from data supplied by Caterpillar for operation of each engine at 1,340 bhp. This bhp was used to select the BSFC because the engines are assumed to operate at 65% of full capacity during normal operations.
- The default diesel fuel #2 characteristics are: (*Reference: AP-42 Appendix A 9/85, reformatted 1/95*)

Density = 7.05 lb/gal
 LHV = 129,245 Btu/gal
 HHV = 137,000 Btu/gal)

- The BSFC was converted from lb/hp-hr to gal/hp-hr by dividing the manufacturer's BSFC by 7.05 lb/gal, the density of diesel:

$$BSFC = 0.049 \frac{gal}{bhp-hr} = \frac{\left(0.345 \frac{lb}{bhp-hr}\right)}{\left(7.05 \frac{lb}{gal}\right)}$$

- Supply boat main engines achieve a controlled NO_x emission rate of 5.99 g/bhp-hr through the use of Caterpillar 3516B diesel fired engines. The engines are electronically controlled, turbo-charged, and after-cooled. This emission factor equates to 270 lb/1000 gallons.

$$EF_{NO_x} = \frac{\left(5.99 \frac{g}{bhp-hr}\right) \times 1,000}{\left(0.049 \frac{gal}{bhp-hr}\right) \times \left(453.6 \frac{g}{lb}\right)} = 270 \frac{lb}{1,000 gal}$$

- Spot charter supply boat usage limited to 10 percent of actual annual controlled supply boat usage.
- Spot charter and Emergency Response vessels are normally uncontrolled for NO_x.
- Uncontrolled ROC emission factors for the main engines are based on USEPA AP-42, Volume II, Table II-3.3 (1/75) {cruise factor, 2,000 bhp/engine}. Tier 2 emission factors define the worst case scenario for CO per ATC 13616.
- Uncontrolled NO_x emissions from spot charter supply and emergency response boat main engines based on an emission rate of 14 g/bhp-hr. This emission factor equates to 561 lb/1000 gallons:

$$EF_{NO_x} = \frac{\left(14 \frac{g}{bhp-hr}\right) \times 1,000}{\left(0.055 \frac{gal}{bhp-hr}\right) \times \left(453.6 \frac{g}{lb}\right)} = 561 \frac{lb}{1,000 gal}$$

- PM emission factor for the main engines are based on *Kelly, et. al.* (1981).
- Main and Auxiliary Engine PM₁₀:PM ratio = 1.00 (per AP-42).
- Main Engine ROC:TOC ratio = 1.0. ROC emission factor based on District "VOC/ROC Emission Factors and Reactivities for Common Source Types" dated 03/12/01 (ver 1.2) for Crew and Supply Boat Main Engines.
- Auxiliary Engine ROC:TOC ratio = 0.8378. ROC emission factor based on District "VOC/ROC Emission Factors and Reactivities for Common Source Types" dated 03/12/01 (ver 1.2) for Crew and Supply Boat: Auxiliary Engines.
- SO_x emission factor mass balance equation (as SO₂):

$$SO_x EF_{lb/1000 gal} = (\%S) \times \left(9_{oil} \frac{lb}{gal}\right) \times \left(\frac{1 gmol S}{32 g}\right) \times \left(\frac{1 gmol SO_2}{1 gmol S}\right) \times \left(\frac{64 g}{1 gmol SO_2}\right) \times \left(\frac{1000 gal}{1000 gal}\right)$$

- Auxiliary and bow thruster engine emission factors (diesel uncontrolled) are based on USEPA AP-42, Table 3.3-1 (10/96). Table emission factors converted to fuel basis using:

$$EF_{lb/1000 gal} = (TOC EF_{lb/MMBtu}) \times \left[\frac{\left(\frac{ROC}{TOC} ratio\right) \times \left(19,432 \frac{Btu}{lb}\right) \times \left(7.05 \frac{lb}{gal}\right)}{1000} \right]$$

- Spot charter engine set-up assumed to be equal to main supply boat.
- Emergency response vessel is permanently assigned to Platforms Henry, Hillhouse, A, B, C, Houchin, Hogan, Habitat, Hondo, Heritage, and Harmony. Vessel total bhp is 1,770 bhp. Short-term emissions from this vessel are not assessed. Long-term emissions are assessed equally amongst the eleven affected platforms.
- Emergency response vessel emissions calculated as an aggregate (main and auxiliary engines) using the uncontrolled supply boat emission factors. The long term hours of operating are back-calculated based on the fuel usage allocation for this platform of 4,546 gallons per year (50,000 gal/yr basis).

$$T_{yr} = \frac{4,546 \frac{gal}{year}}{\left(0.055 \frac{gal}{bhp-hr}\right) \times (1,770 bhp) \times 0.65} = 72 \frac{hr}{yr}$$

- Main and auxiliary engine operational limits: General Equation

$$Q = \left(BSFC \frac{\text{gal}}{\text{bhp-hr}} \right) \times \text{bhp} \times \left(\frac{\text{hours}}{\text{time period}} \right) \times (\text{load factor})$$

Main Engines:

$$Q_{\text{daily}} = (0.049 \text{ gal/bhp-hr}) \times 4,000 \text{ bhp} \times (11 \text{ hrs/day}) \times 0.65 = 1,401 \text{ gal/day}$$

$$Q_{\text{quarterly}} = (0.049 \text{ gal/bhp-hr}) \times 4,000 \text{ bhp} \times (57.2 \text{ hrs/qtr}) \times 0.65 = 7,287 \text{ gal/qtr}$$

$$Q_{\text{annual}} = (0.049 \text{ gal/bhp-hr}) \times 4,000 \text{ bhp} \times (144.4 \text{ hrs/yr}) \times 0.65 = 14,574 \text{ gal/yr}$$

Auxiliary Engines – Generators:

$$Q_{\text{daily}} = \left(0.055 \frac{\text{gal}}{\text{bhp-hr}} \right) \times 490 \text{ bhp} \times \left(\frac{11 \text{ hours}}{\text{day}} \right) \times (0.50) = 148 \frac{\text{gal}}{\text{day}}$$

$$Q_{\text{quarterly}} = \left(0.055 \frac{\text{gal}}{\text{bhp-hr}} \right) \times 490 \text{ bhp} \times \left(\frac{57.2 \text{ hours}}{\text{quarter}} \right) \times (0.50) = 771 \frac{\text{gal}}{\text{qtr}}$$

$$Q_{\text{annual}} = \left(0.055 \frac{\text{gal}}{\text{bhp-hr}} \right) \times 490 \text{ bhp} \times \left(\frac{114.4 \text{ hours}}{\text{year}} \right) \times (0.50) = 1,542 \frac{\text{gal}}{\text{yr}}$$

Auxiliary engines - Bow Thruster

$$Q_{\text{daily}} = \left(0.055 \frac{\text{gal}}{\text{bhp-hr}} \right) \times 515 \text{ bhp} \times \left(\frac{2 \text{ hours}}{\text{day}} \right) = 57 \frac{\text{gal}}{\text{day}}$$

$$Q_{\text{quarterly}} = \left(0.055 \frac{\text{gal}}{\text{bhp-hr}} \right) \times 515 \text{ bhp} \times \left(\frac{10.4 \text{ hours}}{\text{quarter}} \right) = 295 \frac{\text{gal}}{\text{qtr}}$$

$$Q_{\text{annual}} = \left(0.055 \frac{\text{gal}}{\text{bhp-hr}} \right) \times 515 \text{ bhp} \times \left(\frac{20.8 \text{ hours}}{\text{year}} \right) = 589 \frac{\text{gal}}{\text{yr}}$$

Reference E - Crew Boat

- The maximum operating schedule is in units of hours.
- Crew boat engine data based on So Cal Ship Services' M/V *Alan T.*
- Three 567 bhp main engines (i.e. 1,701 bhp) and two 40 bhp auxiliary engines are utilized.
- Main engine load factor based on District *Crew and Supply Boat* study (6/87).
- Crew boat auxiliary engines operate at one-half of total rated load.
- Total time crew boat operates per trip within 25 miles of platform is 3.5 hours per platform. A trip includes time to, from and at the platform. Typical trip is: 2 hours cruise, 1 hour maneuver and 0.5 hour idle. Annual time based on $1,500/5 = 300$ trips. Quarterly based on $375/5 = 75$ trips. Spot charter boats add $3.5 \times 300/10 = 105$ hours.
- Main engine emission factors are based only on cruise mode values.
- Crew boat main engines achieve a controlled NO_x emission rate of 5.9 g/bhp-hr through the use of turbo-charged and enhanced inter-cooled 4-stroke diesel engine with EUI (electronic controlled unit injector) technology. This emission factor equated to 236.5 lb/1000 gallons.
- Spot charter crew boat usage limited to 10 percent of actual annual controlled crew boat usage.

$$EF_{NOx} = (5.9 \text{ g/bhp-hr}) (1,000) / (0.055 \text{ gal/bhp-hr}) (453.6 \text{ g/lb}) = 236.5 \text{ lb/1000 gal}$$

- PM emission factor for the main engines are based on *Kelly, et. al.* (1981).
- PM/PM₁₀ ratio = 0.96; PM₁₀/PM_{2.5} ratio = 1.0
- ROC:TOC ratio = 1.0.

- All SO_x emissions based on mass balance:

$$SO_x \text{ } EF_{lb/1000 \text{ gal}} = (\%S) \times \left(g_{oil} \frac{lb}{gal} \right) \times \left(\frac{1 \text{ gmol } S}{32 \text{ g}} \right) \times \left(\frac{1 \text{ gmol } SO_2}{1 \text{ gmol } S} \right) \times \left(\frac{64 \text{ g}}{1 \text{ gmol } SO_2} \right) \times \left(\frac{1000 \text{ gal}}{1000 \text{ gal}} \right)$$

- Auxiliary engine emission factors (uncontrolled) are based on USEPA AP-42, Table 3.3-1 (10/96). Table emission factors converted to fuel basis using:

$$EF_{lb/1000 \text{ gal}} = (TOC \text{ } EF_{lb/MMBtu}) \times \left[\frac{\left(\frac{ROC}{TOC} \text{ ratio} \right) \times \left(19,432 \frac{Btu}{lb} \right) \times \left(7.05 \frac{lb}{gal} \right)}{1000} \right]$$

- Spot charter engine set-up (*i.e.*, engine type, size) assumed to be equal to main crew boat.

- Main and auxiliary engine operational limits: General Equation

$$Q = \left(BSFC \frac{\text{gal}}{\text{bhp} - \text{hr}} \right) \times \text{bhp} \times \left(\frac{\text{hours}}{\text{time period}} \right) \times (\text{load factor})$$

Main Engines:

$$Q_{\text{daily}} = (0.055 \text{ gal/bhp-hr}) \times (1,701 \text{ bhp}) \times (17.5 \text{ hr/day}) \times (0.85) = 1,392 \text{ gal/day}$$

$$Q_{\text{quarterly}} = (0.055 \text{ gal/bhp-hr}) \times (1,701 \text{ bhp}) \times (262.5 \text{ hr/qtr}) \times (0.85) = 20,874 \text{ gal/hr}$$

$$Q_{\text{annual}} = (0.055 \text{ gal/bhp-hr}) \times (1,701 \text{ bhp}) \times (1,050 \text{ hr/yr}) \times (0.85) = 83,498 \text{ gal/year}$$

Auxiliary Engines - Generators

$$Q_{\text{daily}} = \left(0.055 \frac{\text{gal}}{\text{bhp} - \text{hr}} \right) \times 218 \text{ bhp} \times \left(\frac{17.5 \text{ hours}}{\text{day}} \right) \times (0.50) = 105 \frac{\text{gal}}{\text{day}}$$

$$Q_{\text{quarterly}} = \left(0.055 \frac{\text{gal}}{\text{bhp} - \text{hr}} \right) \times 218 \text{ bhp} \times \left(\frac{262.5 \text{ hours}}{\text{quarter}} \right) \times (0.50) = 1,574 \frac{\text{gal}}{\text{qtr}}$$

$$Q_{\text{annual}} = \left(0.055 \frac{\text{gal}}{\text{bhp} - \text{hr}} \right) \times 218 \text{ bhp} \times \left(\frac{1050 \text{ hours}}{\text{year}} \right) \times (0.50) = 6,295 \frac{\text{gal}}{\text{yr}}$$

Reference F - Pigging Equipment

- Maximum operating schedule is in units of events (e.g., twice per week/104 times per year for oil receiver/launcher; three times per week/156 times per year for gas launcher and twice per week/104 times per year for gas receiver);
- The gas & oil launcher volumes, pressures, and temperatures based on file data;
- All vapors in the launcher is bled down to *either the well clean tank or the waste oil tank*; all launchers and receivers are then purged and blanketed with 'sales gas' prior to opening the vessels to the atmosphere; The remaining vessel pressure is no greater than 1 psig, based on Nuevo's 5/7/97 and 8/19/97 stipulations to the District. The temperatures of the remaining vapor in the vessels are as follows: (a) pig launchers temp. = 75°F, and (b) pig receivers temp. = 65°F (based on Torch application 9846 data)
- The $MW_{\text{gas}} = MW_{\text{oil}} = 23 \text{ lb/lb.-mole}$, since the launchers/receivers are purged and blanketed with sales gas in either cases (*Reference: 5/7/97 and 8/19/97 letters from Nuevo*)
- Average ROC weight percent is = 12.92% for gas launchers [*Reference: see Attached Field Test Data from OCS Platforms, submitted by Torch Nuevo on 5/7/97 and revised on 8/19/97*]

- Average ROC weight percent is = 12.92% for oil launchers [*Reference: see Attached Field Test Data from OCS Platforms, submitted by Nuevo on 5/7/97 and revised on 8/19/97*]
 - Pig vessel volume (V_{ves}) as detailed in Table 5.1-1 of this PTO.
 - Density $\rho = (\text{pressure} \times \text{MW}) \div (\text{R} \times \text{T})$, density of vapor remaining in the vessel (lbs. VOC/acf)
 - Site-specific pigging emission factor $\text{EF} = (\rho \times \text{ROC weight \%})$, in (lb. ROC/acf-event) units
 - $\rho_{gas} = \rho_{oil} = (15.7 \times 23) \div (10.73 \times 535) = 0.0629$ lb/cu.ft, density of THC vapor remaining in vessel, i.e., 0.0629 lb/cubic feet TOC for oil/gas launchers;
 - $\rho_{gas} = \rho_{oil} = (15.7 \times 23) \div (10.73 \times 525) = 0.0641$ lb/cu.ft, density of THC vapor remaining in vessel, i.e., 0.0641 lb/cubic feet TOC for oil/gas receivers.
- $\text{EF} = 0.0629 \times 0.1292 = 0.0081$ lb. of ROC/acf-event for oil/gas launchers.
 $0.0641 \times 0.1292 = 0.0083$ lb. of ROC/acf-event for oil/gas receivers.

Reference G - Sumps/Tanks/Separators

- Maximum operating schedule is in units of hours.
- Emission calculation methodology for tanks, sumps, and oil/water separators (Wemco flotation units) based on the CARB/KVB report *Emissions Characteristics of Crude Oil Production Operations in California* (1/83).
- Calculations of tank and sump emissions are based on surface area of emissions unit as supplied by the applicant.
- All tanks and sumps are classified as secondary production and heavy oil service.
- Emission factor for flotation cell is controlled by 95 percent (560 lb ROC/MMgal uncontrolled). Calculations of oil/water separator emissions are based on the daily throughput in MMgal/day as supplied by the applicant.
- All tanks, sumps, and separators are connected to vapor recovery or flare. A control efficiency of 95% is assumed for all vessels.

Reference H - Solvents

- All solvents not used to thin surface coatings are included in this equipment category.
- Daily, quarterly and annual emission rates per application.
- Hourly emissions based on daily value divided by an average 8-hour day.
Compliance with hourly data to be based on daily actual usage divided by 8.
- Emissions based on usage of 3,009 gallons per year with no District-approved reclamation program

Reference I GHG Emission Factor Basis

Combustion Sources:

GHG emissions from combustion sources are calculated using emission factors found in Tables C-1 and C-2 of 40 CFR Part 98 and global warming potentials found in Table A-1 of 40 CFR Part 98. CO₂ equivalent emission factors are calculated for CO₂, CH₄, and N₂O individually, then summed to calculate a total CO_{2e} emission factor. Annual CO_{2e} emission totals are presented in short tons.

For IC engines, the emission factor in lb/MMBtu heat input is converted to g/bhp-hr output based on a standard brake-specific fuel consumption.

For natural gas combustion the emission factor is:

$$(53.02 \text{ kg CO}_2/\text{MMBtu}) (2.2046 \text{ lb/kg}) = 116.89 \text{ lb CO}_2/\text{MMBtu}$$

$$(0.001 \text{ kg CH}_4/\text{MMBtu}) (2.2046 \text{ lb/kg})(21 \text{ lb CO}_2\text{e}/\text{lb CH}_4) = 0.046 \text{ lb CO}_2\text{e}/\text{MMBtu}$$

$$(0.0001 \text{ kg N}_2\text{O}/\text{MMBtu}) (2.2046 \text{ lb/kg})(310 \text{ lb CO}_2\text{e}/\text{lb N}_2\text{O}) = 0.068 \text{ lb CO}_2\text{e}/\text{MMBtu}$$

$$\text{Total CO}_2\text{e}/\text{MMBtu} = 116.89 + 0.046 + 0.068 = \underline{\underline{117.10 \text{ lb CO}_2\text{e}/\text{MMBtu}}}$$

For diesel fuel combustion the emission factor is:

$$(73.96 \text{ kg CO}_2/\text{MMBtu}) (2.2046 \text{ lb/kg}) = 163.05 \text{ lb CO}_2/\text{MMBtu}$$

$$(0.003 \text{ kg CH}_4/\text{MMBtu}) (2.2046 \text{ lb/kg})(21 \text{ lb CO}_2\text{e}/\text{lb CH}_4) = 0.139 \text{ lb CO}_2\text{e}/\text{MMBtu}$$

$$(0.0006 \text{ kg N}_2\text{O}/\text{MMBtu}) (2.2046 \text{ lb/kg})(310 \text{ lb CO}_2\text{e}/\text{lb N}_2\text{O}) = 0.410 \text{ lb CO}_2\text{e}/\text{MMBtu}$$

$$\text{Total CO}_2\text{e}/\text{MMBtu} = 163.05 + 0.139 + 0.410 = \underline{\underline{163.60 \text{ lb CO}_2\text{e}/\text{MMBtu}}}$$

Converted to g/hp-hr:

$$(163.60 \text{ lb/MMBtu})(453.6 \text{ g/lb})(7500 \text{ Btu/hp-hr})/1,000,000 = \underline{\underline{556.58 \text{ g/hp-hr as CO}_2\text{e}}}$$

10.2 Fee Calculations

Emission fees for Platform Hillhouse are based on a cost reimbursement basis pursuant to District Rule 210.

All work performed with respect to implementing the requirements of the Part 70 Operating Permit program are assessed on a cost reimbursement basis (*Reference: District Rule 210.I.C*), pursuant to District Rule 1304.D.11.

10.3 Equipment List

Santa Barbara County Air Pollution Control District – Equipment List

PT-70/Reeval 09114 R5 / FID: 08005 Platform Hillhouse / SSID: 08003

A PERMITTED EQUIPMENT

1 Wellheads

<i>Device ID #</i>	102463	<i>Device Name</i>	Wellheads
<i>Rated Heat Input</i>		<i>Physical Size</i>	47.00 Active Wells
<i>Manufacturer</i>		<i>Operator ID</i>	474-GG-02-01
<i>Model</i>		<i>Serial Number</i>	
<i>Location Note</i>	Cellar deck		
<i>Device Description</i>	47 oil and gas wells, one well (A-55, DeMinimis, project date 05-01-00) plugged and abandoned oil and gas wells, no gas injection wells.		
	The Device Grouping Number is represented by a Nuevo drawing number.		
	Production well numbers: A-1, A-2, A-3, A-4, A-5, A-6, A-7, A-8, A-9, A-10, A-11, A-12, A-13, A-14, A-15, A-17, A-18, A-20, A-21, A-22, A-23, A-24, A-25, A-26, A-27, A-28, A-29, A-30, A-31, A-32, A-34, A-35, A-36, A-39, A-40, A-41, A-42, A-43, A-44, A-45, A-46, A-48, A-50, A-51, A-52 , A-53 and A-54.		

2 Stationary IC Engines

2.1 IC Engine: 15-Ton Pedestal (South Crane)

<i>Device ID #</i>	004904	<i>Device Name</i>	IC Engine: 15-Ton Pedestal (South Crane)
<i>Rated Heat Input</i>		<i>Physical Size</i>	109.00 Btu/bhp-hr
<i>Manufacturer</i>	Detroit Diesel	<i>Operator ID</i>	454-EG-06-2
<i>Model</i>	3-71	<i>Serial Number</i>	3A0-74958
<i>Location Note</i>			
<i>Device Description</i>	Rated BHP at 2100 rpm. B injectors used as emission controls.		

2.2 IC Engine: 25-Ton Pedestal (North Crane)

<i>Device ID #</i>	004905	<i>Device Name</i>	IC Engine: 25-Ton Pedestal (North Crane)
<i>Rated Heat Input</i>		<i>Physical Size</i>	238.00 Brake Horsepower
<i>Manufacturer</i>	Detroit Diesel	<i>Operator ID</i>	474-GG-02-2
<i>Model</i>	6V-71	<i>Serial Number</i>	A-19364
<i>Location Note</i>			
<i>Device Description</i>	Rated BHP at 2100 rpm. B injectors used as emissions controls.		

2.3 IC Engine: Standby Emergency Fire Pump

<i>Device ID #</i>	004908	<i>Maximum Rated BHP</i>	200.00
<i>Device Name</i>	IC Engine: Standby Emergency Fire Pump	<i>Serial Number</i>	3A72371
<i>Engine Use</i>	Fire Water Pump	<i>EPA Engine Family Name</i>	
<i>Manufacturer</i>	Detroit Diesel	<i>Operator ID</i>	
<i>Model Year</i>	1989	<i>Fuel Type</i>	CARB Diesel - ULSD
<i>Model</i>	6-71		
<i>DRP/ISC?</i>	No	<i>Healthcare Facility?</i>	No
<i>Daily Hours</i>	2.00	<i>Annual Hours</i>	200
<i>Location Note</i>			
<i>Device Description</i>	Rated BHP at 1800 rpm, no emission controls used.		

2.4 IC Engine: Emergency Drilling Generator

<i>Device ID #</i>	004907	<i>Maximum Rated BHP</i>	730.00
<i>Device Name</i>	IC Engine: Emergency Drilling Generator	<i>Serial Number</i>	36J94
<i>Engine Use</i>	Electrical Power	<i>EPA Engine Family Name</i>	
<i>Manufacturer</i>	Caterpillar	<i>Operator ID</i>	474-GG-02-2
<i>Model Year</i>	1989	<i>Fuel Type</i>	CARB Diesel - ULSD
<i>Model</i>	D-348		
<i>DRP/ISC?</i>	No	<i>Healthcare Facility?</i>	No
<i>Daily Hours</i>	2.00	<i>Annual Hours</i>	200
<i>Location</i>			
<i>Note</i>			
<i>Device Description</i>	Rated bhp at 1800 rpm, no emissions controls.		

2.5 IC Engine: Emergency Power Generator

<i>Device ID #</i>	004906	<i>Maximum Rated BHP</i>	715.00
<i>Device Name</i>	IC Engine: Emergency Power Generator	<i>Serial Number</i>	36J419
<i>Engine Use</i>	Electrical Power	<i>EPA Engine Family Name</i>	
<i>Manufacturer</i>	Caterpillar	<i>Operator ID</i>	474-GG-02-2
<i>Model Year</i>	1989	<i>Fuel Type</i>	CARB Diesel - ULSD
<i>Model</i>	D-348		
<i>DRP/ISC?</i>	No	<i>Healthcare Facility?</i>	No
<i>Daily Hours</i>	2.00	<i>Annual Hours</i>	200
<i>Location</i>			
<i>Note</i>			
<i>Device Description</i>	Rated BHP at 1800 rpm. No emission controls used.		

3 Sumps and Tanks

3.1 Hydraulic Surge Tank

<i>Device ID #</i>	102449	<i>Device Name</i>	Hydraulic Surge Tank
<i>Rated Heat Input</i>		<i>Physical Size</i>	
<i>Manufacturer</i>	Trico	<i>Operator ID</i>	
<i>Model</i>		<i>Serial Number</i>	ABJ-1278
<i>Location Note</i>	Production deck		
<i>Device Description</i>	Vertical type vessel in hydraulic oil service. Diameter 8 feet, length 10 feet. Operating pressure 100 psig, operating temperature 100 deg F. Not connected to gas gathering or vapor recovery. MBJ-200.		

3.2 Horizontal Surge Tank

<i>Device ID #</i>	005539	<i>Device Name</i>	Horizontal Surge Tank
<i>Rated Heat Input</i>		<i>Physical Size</i>	32.00 Square Feet Surface Area
<i>Manufacturer</i>		<i>Operator ID</i>	474-CG-02-2
<i>Model</i>		<i>Serial Number</i>	ABH-1212
<i>Location Note</i>	Production deck		
<i>Device Description</i>	Covered tertiary class vessel in oil and water service, connected to vapor recovery.		

3.3 Horizontal Surge Tank

<i>Device ID #</i>	005540	<i>Device Name</i>	Horizontal Surge Tank
<i>Rated Heat Input</i>		<i>Physical Size</i>	32.00 Square Feet Surface Area
<i>Manufacturer</i>		<i>Operator ID</i>	474-CG-02-2
<i>Model</i>		<i>Serial Number</i>	ABH-1213
<i>Location Note</i>	Production deck		
<i>Device Description</i>	Covered tertiary class vessel in oil and water service, connected to vapor recovery.		

3.4 Settling Tank

<i>Device ID #</i>	005558	<i>Device Name</i>	Settling Tank
<i>Rated Heat Input</i>		<i>Physical Size</i>	50.30 Square Feet Surface Area
<i>Manufacturer</i>	Rheem Superior, Inc.	<i>Operator ID</i>	MBF-1261
<i>Model</i>		<i>Serial Number</i>	X-3033
<i>Location Note</i>	Production deck		
<i>Device Description</i>	Covered secondary class vessel, in oil and water slop service, connected to vapor recovery.		

3.5 Vertical Oil Tank

<i>Device ID #</i>	102446	<i>Device Name</i>	Vertical Oil Tank
<i>Rated Heat Input</i>		<i>Physical Size</i>	
<i>Manufacturer</i>		<i>Operator ID</i>	474-GG-02-2
<i>Model</i>		<i>Serial Number</i>	M22 1231
<i>Location Note</i>	Production deck		
<i>Device Description</i>	Vertical type vessel in crude service, diameter 10 feet, length 18 feet, operating pressure 125 psi, operating temperature 20 - 650 deg F. Connected to gas gathering or vapor recovery.		

3.6 Vertical Oil Tank (Metered Surge Vessel)

<i>Device ID #</i>	102447	<i>Device Name</i>	Vertical Oil Tank (Metered Surge Vessel)
<i>Rated Heat Input</i>		<i>Physical Size</i>	
<i>Manufacturer</i>		<i>Operator ID</i>	474-GG-02-2
<i>Model</i>	X-3027	<i>Serial Number</i>	MAV 1241
<i>Location Note</i>	Production deck		
<i>Device Description</i>	Vertical type vessel in oil service, diameter 10 feet, length 18 feet, operating pressure 125 psig, operating temperature 20 - 650 deg F. Connected to gas gathering or vapor recovery.		

3.7 Oil Shipping Pump # 1

<i>Device ID #</i>	102419	<i>Device Name</i>	Oil Shipping Pump # 1
<i>Rated Heat Input</i>		<i>Physical Size</i>	100.00 Horsepower (Electric Motor)
<i>Manufacturer</i>	“Oilwell”	<i>Operator ID</i>	474-GG-02-2
<i>Model</i>	346P	<i>Serial Number</i>	
<i>Location Note</i>	Production deck		
<i>Device Description</i>	In crude shipping service, pumps crude oil, powered by 100 hp electric motor, does not utilize dual seals.		

3.8 Hydraulic Surge Tank

<i>Device ID #</i>	102450	<i>Device Name</i>	Hydraulic Surge Tank
<i>Rated Heat Input</i>		<i>Physical Size</i>	
<i>Manufacturer</i>		<i>Operator ID</i>	
<i>Model</i>		<i>Serial Number</i>	
<i>Location Note</i>	Drilling deck		
<i>Device Description</i>	Horizontal type vessel in hydraulic oil service, diameter 3.66 feet, length 8 feet. Not connected to gas gathering or vapor recovery.		

3.9 Small Drill Water Tank

<i>Device ID #</i>	102467	<i>Device Name</i>	Small Drill Water Tank
<i>Rated Heat Input</i>		<i>Physical Size</i>	180.00 Square Feet Surface Area
<i>Manufacturer</i>	Baker Tank.	<i>Operator ID</i>	474-CG-02-2
<i>Model</i>		<i>Serial Number</i>	
<i>Location Note</i>	Production deck		
<i>Device Description</i>	Covered secondary class vessel in gas / light oil service, connected to vapor recovery.		

4 Compressors

4.1 Reciprocating Gas Compressor

<i>Device ID #</i>	102404	<i>Device Name</i>	Reciprocating Gas Compressor
<i>Rated Heat Input</i>		<i>Physical Size</i>	1000.00 Horsepower (Electric Motor)
<i>Manufacturer Model</i>	Ariel JGR-4	<i>Operator ID Serial Number</i>	474-GE-02-2 F4765
<i>Location Note</i>	Drill Deck		
<i>Device Description</i>	In gas gathering & sales service, rated capacity 14,000 scfm, powered by 500 hp electric motor. Housing/seals not connected to vapor recovery.		

4.2 Reciprocating Gas Compressor

<i>Device ID #</i>	102405	<i>Device Name</i>	Reciprocating Gas Compressor
<i>Rated Heat Input</i>		<i>Physical Size</i>	700.00 Horsepower (Electric Motor)
<i>Manufacturer Model</i>	Worthington	<i>Operator ID Serial Number</i>	474-GE-02-2
<i>Location Note</i>	Production deck		
<i>Device Description</i>	In gas gathering, rated capacity 2876 scfm, powered by 700 hp electric motor. Housing/seals not connected to vapor recovery.		

4.3 Reciprocating Gas Compressor

<i>Device ID #</i>	102406	<i>Device Name</i>	Reciprocating Gas Compressor
<i>Rated Heat Input</i>		<i>Physical Size</i>	15.00 Horsepower (Electric Motor)
<i>Manufacturer Model</i>	Ingersoll Rand 44-WG	<i>Operator ID Serial Number</i>	474-GE-02-3 CAE-2201
<i>Location Note</i>	Mezzanine deck		
<i>Device Description</i>	In vapor recovery service HP 1, rated capacity 22 scfm, powered by 15 hp electric motor. Housing/ seals not connected to vapor recovery.		

4.4 Reciprocating Gas Compressor

<i>Device ID #</i>	102407	<i>Device Name</i>	Reciprocating Gas Compressor
<i>Rated Heat Input</i>		<i>Physical Size</i>	15.00 Horsepower (Electric Motor)
<i>Manufacturer Model</i>	Ingersoll Rand 44-WG	<i>Operator ID</i>	
<i>Location Note</i>	Mezzanine deck	<i>Serial Number</i>	CAE-2202
<i>Device Description</i>	In vapor recovery service HP 2, rated capacity 22 scfm, powered by 15 hp electric motor. Housing/ seals not connected to vapor recovery.		

4.5 Reciprocating Gas Compressor

<i>Device ID #</i>	102408	<i>Device Name</i>	Reciprocating Gas Compressor
<i>Rated Heat Input</i>		<i>Physical Size</i>	5.00 Horsepower (Electric Motor)
<i>Manufacturer Model</i>	Ingersoll Rand 144	<i>Operator ID</i>	474-GE-02-3
<i>Location Note</i>	Production deck	<i>Serial Number</i>	CAE-2208
<i>Device Description</i>	Type 30. In vapor recovery service Comp #3, rated capacity 60 scfm, powered by 5 hp electric motor. Housing/ seals not connected to vapor recovery.		

4.6 Reciprocating Gas Compressor

<i>Device ID #</i>	102409	<i>Device Name</i>	Reciprocating Gas Compressor
<i>Rated Heat Input</i>		<i>Physical Size</i>	7.50 Horsepower (Electric Motor)
<i>Manufacturer Model</i>	Ingersoll Rand 144	<i>Operator ID</i>	474-GE-02-3
<i>Location Note</i>	Production deck	<i>Serial Number</i>	CAE-2209
<i>Device Description</i>	Type 30. In vapor recovery service Comp #4, rated capacity 60 scfm, powered by 7.5 hp electric motor. Housing/ seals connected to vapor recovery.		

4.7 Chiller Compressor

<i>Device ID #</i>	102458	<i>Device Name</i>	Chiller Compressor
<i>Rated Heat Input</i>		<i>Physical Size</i>	30.00 Horsepower (Electric Motor)
<i>Manufacturer</i>	Blissfield	<i>Operator ID</i>	
<i>Model</i>	62VSG-68	<i>Serial Number</i>	02427
<i>Location Note</i>	Chiller Skid		
<i>Device Description</i>	In coolant service, powered by 30 hp electric motor.		

5 Pumps

5.1 Centrifugal Pump

<i>Device ID #</i>	102410	<i>Device Name</i>	Centrifugal Pump
<i>Rated Heat Input</i>		<i>Physical Size</i>	10.00 Horsepower (Electric Motor)
<i>Manufacturer</i>	Worthington	<i>Operator ID</i>	474-GG-02-2
<i>Model</i>	D-814	<i>Serial Number</i>	PBE-3236
<i>Location Note</i>	Production deck		
<i>Device Description</i>	In produced water pumping service, pumps produced water, powered by 10 hp electric motor, does not utilize dual seals.		

5.2 Centrifugal Pump

<i>Device ID #</i>	102411	<i>Device Name</i>	Centrifugal Pump
<i>Rated Heat Input</i>		<i>Physical Size</i>	10.00 Horsepower (Electric Motor)
<i>Manufacturer</i>	Worthington	<i>Operator ID</i>	474-GG-02-2
<i>Model</i>	D-814	<i>Serial Number</i>	PBE-3237
<i>Location Note</i>	Production deck		
<i>Device Description</i>	In crude transfer service, pumps crude oil, powered by 10 hp electric motor. Does not utilize dual seals.		

5.3 Centrifugal Pump

<i>Device ID #</i>	102414	<i>Device Name</i>	Centrifugal Pump
<i>Rated Heat Input</i>		<i>Physical Size</i>	5.00 Horsepower (Electric Motor)
<i>Manufacturer</i>	Worthington	<i>Operator ID</i>	474-GG-02-2
<i>Model</i>	D-1012	<i>Serial Number</i>	PBA 3221
<i>Location Note</i>	Production deck		
<i>Device Description</i>	In waste water service, pumps water and oil, rated capacity 250 gpm, powered by 5 hp electric motor, does not utilize dual seals.		

5.4 Centrifugal Pump

<i>Device ID #</i>	102412	<i>Device Name</i>	Centrifugal Pump
<i>Rated Heat Input</i>		<i>Physical Size</i>	7.50 Horsepower (Electric Motor)
<i>Manufacturer</i>	Worthington	<i>Operator ID</i>	474-GG-02-2
<i>Model</i>	D-1011	<i>Serial Number</i>	PBE-3263
<i>Location Note</i>	Sump deck		
<i>Device Description</i>	In drain sump service, pumps oil and water, powered by 7.5 hp electric motor. Does not utilize dual seals.		

5.5 Centrifugal Pump - Submersible

<i>Device ID #</i>	102413	<i>Device Name</i>	Centrifugal Pump - Submersible
<i>Rated Heat Input</i>		<i>Physical Size</i>	5.00 Horsepower (Electric Motor)
<i>Manufacturer</i>	Goulds	<i>Operator ID</i>	474-GG-02-2
<i>Model</i>	HSUL 2x2-8	<i>Serial Number</i>	PBE-3292
<i>Location Note</i>	Sump deck		
<i>Device Description</i>	In drain sump service, pumps oil and water, rated capacity 110 gpm, powered by 5 hp electric motor. Utilizes dual seals.		

5.6 Centrifugal Pump

<i>Device ID #</i>	102415	<i>Device Name</i>	Centrifugal Pump
<i>Rated Heat Input</i>		<i>Physical Size</i>	25.00 Horsepower (Electric Motor)
<i>Manufacturer</i>	Dean	<i>Operator ID</i>	474-GG-02-2
<i>Model</i>	D-1012	<i>Serial Number</i>	PBA 3222
<i>Location Note</i>	Production deck		
<i>Device Description</i>	In waste water service, pumps oil, slop and water, rated capacity 250 gpm, powered by 20 hp electric motor, does not utilize dual seals.		

5.7 Centrifugal Pump

<i>Device ID #</i>	102417	<i>Device Name</i>	Centrifugal Pump
<i>Rated Heat Input</i>		<i>Physical Size</i>	10.00 Horsepower (Electric Motor)
<i>Manufacturer</i>	Worthington	<i>Operator ID</i>	474-GG-02-2
<i>Model</i>	D-814	<i>Serial Number</i>	PBA 3235
<i>Location Note</i>	Production deck		
<i>Device Description</i>	In crude transfer service, pumps crude oil, powered by 10 hp electric motor, does not utilize dual seals.		

5.8 Centrifugal Pump

<i>Device ID #</i>	102416	<i>Device Name</i>	Centrifugal Pump
<i>Rated Heat Input</i>		<i>Physical Size</i>	20.00 Horsepower (Electric Motor)
<i>Manufacturer</i>	Worthington	<i>Operator ID</i>	474-GG-02-2
<i>Model</i>	D-1012	<i>Serial Number</i>	PBA 3234
<i>Location Note</i>	Production deck		
<i>Device Description</i>	In waste water service, pumps oil, slop and water, rated capacity 250 gpm, powered by 20 hp electric motor, does not utilize dual seals.		

5.9 Centrifugal Pump

<i>Device ID #</i>	102418	<i>Device Name</i>	Centrifugal Pump
<i>Rated Heat Input</i>		<i>Physical Size</i>	5.00 Horsepower (Electric Motor)
<i>Manufacturer</i>	Worthington	<i>Operator ID</i>	474-GG-02-2
<i>Model</i>	D-1012	<i>Serial Number</i>	PBE 3228
<i>Location Note</i>	Production deck		
<i>Device Description</i>	In crude transfer service, pumps oil and water, rated capacity 75 gpm, powered by 5 hp electric motor, does not utilize dual seals.		

5.10 LACT Sampler Pump

<i>Device ID #</i>	102425	<i>Device Name</i>	LACT Sampler Pump
<i>Rated Heat Input</i>		<i>Physical Size</i>	2.00 Horsepower (Electric Motor)
<i>Manufacturer</i>	Viking	<i>Operator ID</i>	474-GG-02-2
<i>Model</i>	G-32	<i>Serial Number</i>	PBA 3233
<i>Location Note</i>	Production deck		
<i>Device Description</i>	In crude sampler mixer service, pumps oil, powered by 2 hp electric motor, does not utilize dual seals.		

5.11 Oil Shipping Pump # 2

<i>Device ID #</i>	102420	<i>Device Name</i>	Oil Shipping Pump # 2
<i>Rated Heat Input</i>		<i>Physical Size</i>	100.00 Horsepower (Electric Motor)
<i>Manufacturer</i>	"Oilwell"	<i>Operator ID</i>	474-GG-02-2
<i>Model</i>	346P	<i>Serial Number</i>	
<i>Location Note</i>	Production deck		
<i>Device Description</i>	In crude shipping service, pumps crude oil, powered by 100 hp electric motor, does not utilize dual seals.		

5.12 Oil Shipping Pump # 3

<i>Device ID #</i>	102421	<i>Device Name</i>	Oil Shipping Pump # 3
<i>Rated Heat Input</i>		<i>Physical Size</i>	100.00 Horsepower (Electric Motor)
<i>Manufacturer</i>	“Oilwell”	<i>Operator ID</i>	454-IG-04-10
<i>Model</i>	346P	<i>Serial Number</i>	P115A-1170
<i>Location Note</i>	Production deck		
<i>Device Description</i>	In crude shipping service, pumps crude oil, powered by 100 hp electric motor, does not utilize dual seals.		

5.13 Hydraulic Rod Well Pump

<i>Device ID #</i>	102423	<i>Device Name</i>	Hydraulic Rod Well Pump
<i>Rated Heat Input</i>		<i>Physical Size</i>	125.00 Horsepower (Electric Motor)
<i>Manufacturer</i>	Shanley Pump	<i>Operator ID</i>	474-GG-02-3
<i>Model</i>	USNH 660 ER 40	<i>Serial Number</i>	20548 AVU
<i>Location Note</i>			
<i>Device Description</i>	In oil pumping service, pumps oil, powered by 125 hp electric motor, does not utilize dual seals.		

5.14 Hydraulic Pump

<i>Device ID #</i>	102422	<i>Device Name</i>	Hydraulic Pump
<i>Rated Heat Input</i>		<i>Physical Size</i>	40.00 Horsepower (Electric Motor)
<i>Manufacturer</i>		<i>Operator ID</i>	474-GG-02-4
<i>Model</i>		<i>Serial Number</i>	
<i>Location Note</i>	Drilling deck		
<i>Device Description</i>	In oil pumping service, pumps oil, powered by 40 hp electric motor, does not utilize dual seals.		

5.15 LACT Unit

<i>Device ID #</i>	102456	<i>Device Name</i>	LACT Unit
<i>Rated Heat Input</i>		<i>Physical Size</i>	15000.00 BBL/Day
<i>Manufacturer</i>	Veeder Root Register	<i>Operator ID</i>	
<i>Model</i>	MAU-1236	<i>Serial Number</i>	R8124CM
<i>Location Note</i>	Production deck		
<i>Device Description</i>	In sweet crude service, powered by 15 hp electric motor.		

5.16 LACT Unit

<i>Device ID #</i>	102457	<i>Device Name</i>	LACT Unit
<i>Rated Heat Input</i>		<i>Physical Size</i>	15000.00 BBL/Day
<i>Manufacturer</i>	Veeder Root Register	<i>Operator ID</i>	
<i>Model</i>	MAU-1237	<i>Serial Number</i>	R90852CM
<i>Location Note</i>	Production deck		
<i>Device Description</i>	In sweet crude service, powered by 15 hp electric motor.		

6 Pigging Equipment

6.1 Oil Pig Launcher

<i>Device ID #</i>	102428	<i>Device Name</i>	Oil Pig Launcher
<i>Rated Heat Input</i>		<i>Physical Size</i>	4.99 Cubic Feet
<i>Manufacturer</i>		<i>Operator ID</i>	474-GG-02-3
<i>Model</i>		<i>Serial Number</i>	
<i>Location Note</i>	Mezzanine deck		
<i>Device Description</i>	In oil/water emulsion service, diameter 0.75 feet, length 6.75 feet, diameter of attached pipe 0.8 feet, length of attached pipe 4 feet. Operating pressure 10 - 35 psig, operating temperature 75 deg F. Connected to gas gathering or vapor recovery.		

6.2 Gas Pig Launcher

<i>Device ID #</i>	102429	<i>Device Name</i>	Gas Pig Launcher
<i>Rated Heat Input</i>		<i>Physical Size</i>	
<i>Manufacturer</i>		<i>Operator ID</i>	474-GG-02-3
<i>Model</i>		<i>Serial Number</i>	
<i>Location Note</i>	Mezzanine deck		
<i>Device Description</i>	Diameter 0.75 feet, length 8.75 feet, diameter of attached pipe 0.8 feet, length of attached pipe 2 feet. Operating pressure 69.4 psig, operating temperature 75 deg F. Connected to gas gathering or vapor recovery.		

6.3 Gas Pig Receiver

<i>Device ID #</i>	102430	<i>Device Name</i>	Gas Pig Receiver
<i>Rated Heat Input</i>		<i>Physical Size</i>	1.65 Cubic Feet
<i>Manufacturer</i>	Tube Turn Tech	<i>Operator ID</i>	474-GG-02-3
<i>Model</i>		<i>Serial Number</i>	8" CL600H
<i>Location Note</i>	Sump deck		
<i>Device Description</i>	Diameter 0.7 feet, length 4.17 feet, diameter of attached pipe 0.5 feet, length of attached pipe 2 feet. Operating pressure 92-230 psig, operating temperature 65 deg F. Connected to gas gathering or vapor recovery.		

6.4 Oil Pig Receiver

<i>Device ID #</i>	102431	<i>Device Name</i>	Oil Pig Receiver
<i>Rated Heat Input</i>		<i>Physical Size</i>	8.29 Cubic Feet
<i>Manufacturer</i>	Tube turn tech	<i>Operator ID</i>	474-GG-02-3
<i>Model</i>		<i>Serial Number</i>	10"CL600H
<i>Location Note</i>	Sump deck		
<i>Device Description</i>	Diameter 0.7 feet, length 9 feet, diameter of attached pipe 0.8 feet, length of attached pipe 9.6 feet. Operating pressure 72-104 psig, operating temperature 65 deg F. Connected to gas gathering or vapor recovery.		

6.5 Gas Pig Launcher

<i>Device ID #</i>	114004	<i>Device Name</i>	Gas Pig Launcher
<i>Rated Heat Input</i>		<i>Physical Size</i>	1.65 Cubic Feet
<i>Manufacturer</i>		<i>Operator ID</i>	
<i>Model</i>		<i>Serial Number</i>	
<i>Location Note</i>			
<i>Device Description</i>	6" gas pig launcher connected to gas gathering or vapor recovery.		

7 Pressure Vessels

7.1 Two Phase Separator - Test Sep #2

<i>Device ID #</i>	102432	<i>Device Name</i>	Two Phase Separator - Test Sep #2
<i>Rated Heat Input</i>		<i>Physical Size</i>	
<i>Manufacturer</i>	Rheem Superior	<i>Operator ID</i>	474-GG-02-2
<i>Model</i>		<i>Serial Number</i>	MDB 1204
<i>Location Note</i>	Production deck		
<i>Device Description</i>	Horizontal type vessel in gas and emulsion service. Diameter 3.0 feet, length 17.1 feet, operating pressure 230 psig, operating temperature 20 - 200 deg F. Connected to gas gathering or vapor recovery.		

7.2 Two Phase Separator - Test Sep #1

<i>Device ID #</i>	102433	<i>Device Name</i>	Two Phase Separator - Test Sep #1
<i>Rated Heat Input</i>		<i>Physical Size</i>	
<i>Manufacturer</i>	Rheem Superior	<i>Operator ID</i>	474-GG-02-2
<i>Model</i>		<i>Serial Number</i>	MDB 1203
<i>Location Note</i>	Production deck		
<i>Device Description</i>	Horizontal type vessel in gas and emulsion service, diameter 3.0 feet, length 17.1 feet. Operating pressure 230 psig, operating temperature 20 - 200 deg F. Connected to gas gathering or vapor recovery.		

7.3 Two Phase Separator - Prod Sep #2

<i>Device ID #</i>	102434	<i>Device Name</i>	Two Phase Separator - Prod Sep #2
<i>Rated Heat Input</i>		<i>Physical Size</i>	
<i>Manufacturer</i>	Rheem Superior	<i>Operator ID</i>	474-GG-02-2
<i>Model</i>		<i>Serial Number</i>	MDB 1202
<i>Location Note</i>	Production deck		
<i>Device Description</i>	Horizontal type vessel in gas and fluid service, diameter 6.0 feet, length 18.25 feet, operating pressure 230 psig, operating temperature 20 - 200 deg. F. Connected to gas gathering or vapor recovery.		

7.4 Two Phase Separator - Cleanup Sep

<i>Device ID #</i>	102435	<i>Device Name</i>	Two Phase Separator - Cleanup Sep
<i>Rated Heat Input</i>		<i>Physical Size</i>	
<i>Manufacturer</i>	Rheem Superior	<i>Operator ID</i>	474-GG-02-2
<i>Model</i>		<i>Serial Number</i>	X3031
<i>Location Note</i>	Production deck		
<i>Device Description</i>	Vertical type vessel in crude service, diameter 3.5 feet, length 18.67 feet, operating pressure 230 psig, operating temperature 20 - 200 deg F. Connected to gas gathering or vapor recovery.		

7.5 Two Phase Separator - Prod Sep #1

<i>Device ID #</i>	102436	<i>Device Name</i>	Two Phase Separator - Prod Sep #1
<i>Rated Heat Input</i>		<i>Physical Size</i>	
<i>Manufacturer</i>	Rheem Superior	<i>Operator ID</i>	474-GG-02-2
<i>Model</i>		<i>Serial Number</i>	X3036
<i>Location Note</i>	Production deck		
<i>Device Description</i>	Horizontal type vessel in fluid and gas service, diameter 6.0 feet, length 18.2 feet, operating pressure 230 psig, operating temperature 20 - 200 deg F. Connected to gas gathering or vapor recovery.		

7.6 South Three Phase Separator/Treater

<i>Device ID #</i>	102437	<i>Device Name</i>	South Three Phase Separator/Treater
<i>Rated Heat Input</i>		<i>Physical Size</i>	
<i>Manufacturer</i>	CE Natco	<i>Operator ID</i>	474-GG-02-2
<i>Model</i>		<i>Serial Number</i>	MBK 1221
<i>Location Note</i>	Production deck		
<i>Device Description</i>	Horizontal type vessel in emulsion service, diameter 10 feet, length 20 feet, operating pressure 75 psig, operating temperature 250 deg F. Connected to gas gathering or vapor recovery.		

7.7 North Three Phase Electric Treater

<i>Device ID #</i>	102438	<i>Device Name</i>	North Three Phase Electric Treater
<i>Rated Heat Input</i>		<i>Physical Size</i>	
<i>Manufacturer</i>	CE Natco	<i>Operator ID</i>	474-GG-02-2
<i>Model</i>		<i>Serial Number</i>	MBK 1222
<i>Location Note</i>	Production deck		
<i>Device Description</i>	Horizontal type vessel in emulsion service, diameter 10 feet, length 20 feet, operating pressure 75 psig, operating temperature 250 deg F. Connected to gas gathering or vapor recovery.		

7.8 Gas Scrubber

<i>Device ID #</i>	102444	<i>Device Name</i>	Gas Scrubber
<i>Rated Heat Input</i>		<i>Physical Size</i>	
<i>Manufacturer</i>	Trico	<i>Operator ID</i>	474-GG-02-2
<i>Model</i>	X-4457	<i>Serial Number</i>	MBF-1245
<i>Location Note</i>	Production deck		
<i>Device Description</i>	Vertical type vessel in gas service, diameter 3 feet, length 10 feet, operating pressure 300 psig, operating temperature 160 deg F. Connected to gas gathering or vapor recovery.		

7.9 Oil/Water Separators

7.10 Oil Treater

<i>Device ID #</i>	102440	<i>Device Name</i>	Oil Treater
<i>Rated Heat Input</i>		<i>Physical Size</i>	
<i>Manufacturer</i>	National Tank Co	<i>Operator ID</i>	474-GG-02-2
<i>Model</i>		<i>Serial Number</i>	MBK-1223
<i>Location Note</i>	Production deck		
<i>Device Description</i>	Horizontal type vessel in emulsion service, diameter 10.0 feet, length 24 feet. Operating pressure 75 psig, operating temperature 250 deg F, connected to gas gathering or vapor recovery.		

7.11 Filter Separator

<i>Device ID #</i>	102439	<i>Device Name</i>	Filter Separator
<i>Rated Heat Input</i>		<i>Physical Size</i>	
<i>Manufacturer</i>	Smith Industries	<i>Operator ID</i>	474-GG-02-2
<i>Model</i>	86-520	<i>Serial Number</i>	Mak-1263
<i>Location Note</i>	Production deck		
<i>Device Description</i>	Horizontal type vessel in gas service, diameter 2.5 feet, length 10 feet, operating pressure 150 psig, operating temperature 100 deg F. Not connected to gas gathering or vapor recovery.		

7.12 Oil Treater

<i>Device ID #</i>	102441	<i>Device Name</i>	Oil Treater
<i>Rated Heat Input</i>		<i>Physical Size</i>	
<i>Manufacturer</i>	Trico	<i>Operator ID</i>	474-GG-02-2
<i>Model</i>	X-4456	<i>Serial Number</i>	MBJ-1205
<i>Location Note</i>	Production deck		
<i>Device Description</i>	Vertical type vessel in oil service, diameter 10.0 feet, length 10 feet. Operating pressure 100 psig, operating temperature 100 deg F. Connected to gas gathering or vapor recovery.		

7.13 Vertical Gas Scrubber

<i>Device ID #</i>	102443	<i>Device Name</i>	Vertical Gas Scrubber
<i>Rated Heat Input</i>		<i>Physical Size</i>	
<i>Manufacturer</i>		<i>Operator ID</i>	474-GG-02-2
<i>Model</i>	X 3125	<i>Serial Number</i>	MBF-1284
<i>Location Note</i>	Production deck		
<i>Device Description</i>	Vertical type tank in gas service, diameter 4.0 feet, length 10.2 feet, operating pressure 230 psig, operating temperature 20 - 200 deg F. Connected to gas gathering or vapor recovery.		

7.14 Vertical Inlet Scrubber

<i>Device ID #</i>	102445	<i>Device Name</i>	Vertical Inlet Scrubber
<i>Rated Heat Input</i>		<i>Physical Size</i>	
<i>Manufacturer</i>	Knight Manufacturing	<i>Operator ID</i>	474-CG-02-2
<i>Model</i>	H-2100-1	<i>Serial Number</i>	MZZ-1283
<i>Location Note</i>	Drill deck		
<i>Device Description</i>	Vertical type vessel in gas service. Diameter 3 feet, length 6.0 feet, operating pressure 150 psig, operating temperature 150 deg F. Connected to gas gathering or vapor recovery.		

7.15 Vertical Scrubber

<i>Device ID #</i>	102442	<i>Device Name</i>	Vertical Scrubber
<i>Rated Heat Input</i>		<i>Physical Size</i>	
<i>Manufacturer</i>	Gas Processors Inc	<i>Operator ID</i>	474-GG-02-2
<i>Model</i>	4009 V1 V2	<i>Serial Number</i>	MBF-1286
<i>Location Note</i>	Production deck		
<i>Device Description</i>	Vertical type vessel in gas service, diameter 2.5 feet, length 6 feet, operating pressure 150 psig, operating temperature 550 deg F. Not connected to gas gathering or vapor recovery.		

7.16 Flare Scrubber

<i>Device ID #</i>	102451	<i>Device Name</i>	Flare Scrubber
<i>Rated Heat Input</i>		<i>Physical Size</i>	
<i>Manufacturer</i>		<i>Operator ID</i>	474-CG-02-2
<i>Model</i>		<i>Serial Number</i>	PV-029
<i>Location Note</i>	Production deck		
<i>Device Description</i>	In gas / light oil service, not connected to gas gathering or vapor recovery.		

8 Fugitive HC Components - CLP

8.1 Gas/Condensate Service Components - Accessible

<i>Device ID #</i>	102459	<i>Device Name</i>	Gas/Condensate Service Components - Accessible
<i>Rated Heat Input</i>		<i>Physical Size</i>	10403.00 Component Leakpath
<i>Manufacturer</i>		<i>Operator ID</i>	
<i>Model</i>		<i>Serial Number</i>	
<i>Location Note</i>			
<i>Device Description</i>			

8.2 Gas/Condensate Service Components - Unsafe to Monitor

<i>Device ID #</i>	102460	<i>Device Name</i>	Gas/Condensate Service Components - Unsafe to Monitor
<i>Rated Heat Input</i>		<i>Physical Size</i>	200.00 Component Leakpath
<i>Manufacturer</i>		<i>Operator ID</i>	
<i>Model</i>		<i>Serial Number</i>	
<i>Location Note</i>			
<i>Device Description</i>			

8.3 Oil Service Components - Accessible

<i>Device ID #</i>	102461	<i>Device Name</i>	Oil Service Components - Accessible
<i>Rated Heat Input</i>		<i>Physical Size</i>	7759.00 Component Leakpath
<i>Manufacturer Model</i>		<i>Operator ID Serial Number</i>	
<i>Location Note</i>			
<i>Device Description</i>			

8.4 Oil Service Components - Unsafe to Monitor

<i>Device ID #</i>	102462	<i>Device Name</i>	Oil Service Components - Unsafe to Monitor
<i>Rated Heat Input</i>		<i>Physical Size</i>	23.00 Component Leakpath
<i>Manufacturer Model</i>		<i>Operator ID Serial Number</i>	
<i>Location Note</i>			
<i>Device Description</i>			

9 Boats

9.1 Spot Charter Boat

<i>Device ID #</i>	105247	<i>Device Name</i>	Spot Charter Boat
<i>Rated Heat Input</i>		<i>Physical Size</i>	4000.00 Brake Horsepower
<i>Manufacturer Model</i>		<i>Operator ID Serial Number</i>	
<i>Location Note</i>	OCS		
<i>Device Description</i>	The spot-charter supply boat emission calculations are based on the specifications of the M/V Santa Cruz. All the engines are uncontrolled.		

9.2 Supply Boat (Basis: M/V Santa Cruz)

<i>Device ID #</i>	102464	<i>Device Name</i>	Supply Boat (Basis: M/V Santa Cruz)
<i>Rated Heat Input</i>		<i>Physical Size</i>	5000.00 Brake Horsepower
<i>Manufacturer Model</i>		<i>Operator ID Serial Number</i>	M.V. Santa Cruz
<i>Location Note</i>	OCS		
<i>Device Description</i>	<p>Two main engines rated at 2,000 hp each.</p> <p>Two 170 kW CAT 3306B DIT generator sets each powered by identical 245 bhp diesel-fired IC engines.</p> <p>One bow thruster powered by a CAT 3408C DITA 510 bhp diesel-fired engine. The auxiliary engines are not controlled.</p>		

9.3 Crew Boat (Basis: M/V Alan T)

<i>Device ID #</i>	102466	<i>Device Name</i>	Crew Boat (Basis: M/V Alan T)
<i>Rated Heat Input</i>		<i>Physical Size</i>	1781.00 Brake Horsepower
<i>Manufacturer Model</i>		<i>Operator ID Serial Number</i>	
<i>Location Note</i>	OCS		
<i>Device Description</i>	<p>Equipped with three diesel-fired Scania Model DI16 M engines main propulsion engines each rated at 567 bhp at 1900 rpm for continuous duty. The total horsepower of the three main engines is 1,701 bhp.</p> <p>Two auxiliary engines, both are Tier 3, 40 bhp, 30 kW Northern Light M30CW3.2 diesel fired engines. The auxiliary engines serve the generators.</p>		

9.4 Emergency Response Boat

<i>Device ID #</i>	005536	<i>Device Name</i>	Emergency Response Boat
<i>Rated Heat Input</i>		<i>Physical Size</i>	2978.00 Brake Horsepower
<i>Manufacturer Model</i>	Caterpillar CAT C32 (Main), CAT 2.2 (Aux)	<i>Operator ID Serial Number</i>	
<i>Location Note</i>	OCS		
<i>Device Description</i>	One of four identical emergency response vessels (M/Vs Ocean Scout, Ocean Guardian, Ocean Sentinel and Ocean Defender) is permanently assigned to Platforms A, B, C, Henry, & Hillhouse.		
	Main engines = 2 x 1,450 bhp Auxiliary engines = 2 x 39 bhp		
	The total engine horsepower, including auxiliary engines, is 2,978 bhp.		

10 Specialty Units and Packages

10.1 Wemco Unit #1/Floatation Cell #1

<i>Device ID #</i>	005556	<i>Device Name</i>	Wemco Unit #1/Floatation Cell #1
<i>Rated Heat Input</i>		<i>Physical Size</i>	0.42 MMgal/Day
<i>Manufacturer Model</i>	Wemco 66	<i>Operator ID Serial Number</i>	474-CG-02-2 ABM-1273
<i>Location Note</i>	production deck upper		
<i>Device Description</i>	Covered, and connected to vapor recovery.		
	Throughput: 0.42 MMgal/day; 38.3 MMgal/qtr; 153.3 MMgal/yr.		

10.2 Wemco Unit #2/Floatation Cell #2

<i>Device ID #</i>	008225	<i>Device Name</i>	Wemco Unit #2/Floatation Cell #2
<i>Rated Heat Input</i>		<i>Physical Size</i>	0.42 MMgal/Day
<i>Manufacturer</i>	Wemco	<i>Operator ID</i>	474-CG-02-2
<i>Model</i>	66	<i>Serial Number</i>	ABM 1273
<i>Location Note</i>	production deck lower		
<i>Device Description</i>	Covered, and connected to vapor recovery.		
	Throughput: 0.42 MMgal/day; 38.3 MMgal/qtr; 153.3 MMgal/yr.		

10.3 Wemco Surge Tank

<i>Device ID #</i>	005541	<i>Device Name</i>	Wemco Surge Tank
<i>Rated Heat Input</i>		<i>Physical Size</i>	113.10 Square Feet Surface Area
<i>Manufacturer</i>	Rheem Superior, Inc	<i>Operator ID</i>	474-CG-02-2
<i>Model</i>		<i>Serial Number</i>	ABM-1275
<i>Location Note</i>	Production deck		
<i>Device Description</i>	Covered tertiary class vessel in produced water service, connected to vapor recovery.		

10.4 Mud Tank

<i>Device ID #</i>	102468	<i>Device Name</i>	Mud Tank
<i>Rated Heat Input</i>		<i>Physical Size</i>	201.25 Square Feet Surface Area
<i>Manufacturer</i>	Baker Tank	<i>Operator ID</i>	474-CG-02-2
<i>Model</i>		<i>Serial Number</i>	
<i>Location Note</i>	Drilling deck		
<i>Device Description</i>	Uncovered primary class vessel in drilling mud service, not connected to vapor recovery.		

10.5 Trip Tank

<i>Device ID #</i>	102469	<i>Device Name</i>	Trip Tank
<i>Rated Heat Input</i>		<i>Physical Size</i>	36.00 Square Feet Surface Area
<i>Manufacturer</i>		<i>Operator ID</i>	
<i>Model</i>		<i>Serial Number</i>	
<i>Location Note</i>	Drilling deck		
<i>Device</i>	Uncovered primary class vessel in drilling fluid		
<i>Description</i>	service, not connected to vapor recovery.		

10.6 Vapor Eliminator

<i>Device ID #</i>	102452	<i>Device Name</i>	Vapor Eliminator
<i>Rated Heat Input</i>		<i>Physical Size</i>	
<i>Manufacturer</i>	Pefco	<i>Operator ID</i>	474-IG-03-13
<i>Model</i>		<i>Serial Number</i>	MZZ-1232
<i>Location Note</i>	Production deck		
<i>Device</i>	Vertical type vessel in gas/oil service, diameter 3.0 feet, length 7.0		
<i>Description</i>	feet, operating pressure 125 psig, operating temperature 60 - 70 deg F. Not connected to gas gathering or vapor recovery.		

10.7 High Pressure Coalescer

<i>Device ID #</i>	102448	<i>Device Name</i>	High Pressure Coalescer
<i>Rated Heat Input</i>		<i>Physical Size</i>	
<i>Manufacturer</i>	King Tool	<i>Operator ID</i>	474-GG-02-2
<i>Model</i>	KNSW 16-5	<i>Serial Number</i>	MAD-1262
<i>Location Note</i>	Production deck		
<i>Device</i>	Horizontal type vessel in gas service, diameter 1.33 feet, length		
<i>Description</i>	10.58 feet, operating pressure 720 psig, operating temperature 120 deg F. Not connected to gas gathering or vapor recovery.		

11 Flare Relief System

<i>Device ID #</i>	112631	<i>Device Name</i>	Flare Relief System
<i>Rated Heat Input</i>	2500.000 MMBtu/Hour	<i>Physical Size</i>	
<i>Manufacturer</i>	John Zink	<i>Operator ID</i>	
<i>Model</i>	I-12	<i>Serial Number</i>	
<i>Location Note</i>	flare boom		
<i>Device Description</i>	Indair flare tip with design heat release of 2500 MMBtu/hr. Flare gas HHV 1100 Btu/scf, total sulfur content of flared gas 239 ppmv S as H2S, no emission controls used, pilot/purge gas sulfur content 50 ppmv S as H2S.		

12 Solvent Usage: Cleaning/Degreasing

<i>Device ID #</i>	004920	<i>Device Name</i>	Solvent Usage: Cleaning/Degreasing
<i>Rated Heat Input</i>		<i>Physical Size</i>	
<i>Manufacturer</i>	N/A	<i>Operator ID</i>	
<i>Model</i>	N/A	<i>Serial Number</i>	N/A
<i>Location Note</i>			
<i>Device Description</i>			

B EXEMPT EQUIPMENT

1 Diesel Transfer Pump

<i>Device ID #</i>	102424	<i>Device Name</i>	Diesel Transfer Pump
<i>Rated Heat Input</i>		<i>Physical Size</i>	Tons of Product
<i>Manufacturer Model</i>		<i>Operator ID</i>	474-GG-02-2
<i>Part 70 Insig?</i>	No	<i>Serial Number</i>	PBE-3229
<i>Location Note</i>	Production deck	<i>District Rule Exemption:</i> 202.V.2 Storage Of Refined Fuel Oil W/Grav <=40 Api	
<i>Device Description</i>	In oil pumping service, pumps diesel, rated capacity 20 gpm, powerd by electric motor, does not utilize dual seals.		

2 Diesel Fuel Storage Tank

<i>Device ID #</i>	102402	<i>Device Name</i>	Diesel Fuel Storage Tank
<i>Rated Heat Input</i>		<i>Physical Size</i>	6000.00 Gallons
<i>Manufacturer Model</i>	J. Ray McDermott & Co TK-4	<i>Operator ID</i>	
<i>Part 70 Insig?</i>	No	<i>Serial Number</i>	
<i>Location Note</i>		<i>District Rule Exemption:</i> 202.V.2 Storage Of Refined Fuel Oil W/Grav <=40 Api	
<i>Device Description</i>	Vertical type diesel storage tank, not connected to vapor recovery.		

3 Diesel Fuel Storage Tank

<i>Device ID #</i>	102403	<i>Device Name</i>	Diesel Fuel Storage Tank
<i>Rated Heat Input</i>		<i>Physical Size</i>	300.00 Gallons
<i>Manufacturer</i>	Hoover Group Inc.: Dot 57	<i>Operator ID</i>	
<i>Model</i>		<i>Serial Number</i>	
<i>Part 70 Insig?</i>	No	<i>District Rule Exemption:</i> 202.V.2 Storage Of Refined Fuel Oil W/Grav <=40 Api	
<i>Location Note</i>			
<i>Device Description</i>	Vertical type diesel storage tank, not connected to vapor recovery.		

4 Heat Exchanger

<i>Device ID #</i>	102454	<i>Device Name</i>	Heat Exchanger
<i>Rated Heat Input</i>		<i>Physical Size</i>	
<i>Manufacturer</i>	Air Exchanger	<i>Operator ID</i>	474-GG-02-2
<i>Model</i>	93-2HS	<i>Serial Number</i>	7094
<i>Part 70 Insig?</i>	No	<i>District Rule Exemption:</i> 202.L.1 Heat Exchangers	
<i>Location Note</i>	Production deck		
<i>Device Description</i>	Air type exchanger in gas service, heating/cooling medium gas.		

5 Heat Exchanger

<i>Device ID #</i>	102455	<i>Device Name</i>	Heat Exchanger
<i>Rated Heat Input</i>		<i>Physical Size</i>	
<i>Manufacturer</i>	AMETEK	<i>Operator ID</i>	
<i>Model</i>	2-R-4	<i>Serial Number</i>	W-9008
<i>Part 70 Insig?</i>	No	<i>District Rule Exemption:</i> 202.L.1 Heat Exchangers	
<i>Location Note</i>	Production deck		
<i>Device Description</i>	Shell tube type exchanger in gas cooling service, heating/cooling medium salt water.		

6 Maintenance Supply: Carbothane D134 HS

<i>Device ID #</i>	102470	<i>Device Name</i>	Maintenance Supply: Carbothane D134 HS
<i>Rated Heat Input</i>		<i>Physical Size</i>	
<i>Manufacturer Model</i>		<i>Operator ID</i>	
<i>Part 70 Insig?</i>	No	<i>Serial Number</i>	
		<i>District Rule Exemption:</i> 201.A No Potential To Emit Air Contaminants	
<i>Location Note</i>	Platform Hillhouse		
<i>Device Description</i>	Coating/solvent brand name	Carbothane D134 HS	
	Application	Coating	
	Emission controls used?	yes	
	Emission controls description overspray tarps for PM.		

7 Maintenance Supply: Carbomastic 15

<i>Device ID #</i>	102471	<i>Device Name</i>	Maintenance Supply: Carbomastic 15
<i>Rated Heat Input</i>		<i>Physical Size</i>	
<i>Manufacturer Model</i>		<i>Operator ID</i>	
<i>Part 70 Insig?</i>	No	<i>Serial Number</i>	
		<i>District Rule Exemption:</i> 201.A No Potential To Emit Air Contaminants	
<i>Location Note</i>	Platform Hillhouse		
<i>Device Description</i>	Coating/solvent brand name	Carbomastic 15	
	Application	Coating	
	Emission controls used?	yes	
	Emission controls description overspray tarps for PM.		

10.4 DCOR Comments on the Draft Permit & District Responses

Platform Hillhouse PTO 9114-R5

DCOR Section 3.5.2 Violations “No Notices of Violation (NOVs) were issued to Platform C since the last permit renewal was issued on December 12, 2017” Change to 2014

District Correction made.

DCOR Section 4.4: Leave in “The supply boat spot charter trips are limited to 10 percent of actual annual supply boat trips.”

District Correction made.

DCOR Change “DCOR has identified two types of crew boats” to “DCOR has identified one type of crew boat.”

District Correction made.

DCOR Remove “Crew boat emissions are calculated for both the previously permitted scenario (1,530 bhp main engines and controlled emission factors) and for the new *M/V Alan T* scenario (1,701 bhp main engines and Tier 2 emission factors). The worst case scenario for each pollutant is used to establish the PTE of this permit.”

DCOR Add “The *M/V Alan T* (and/or any approved replacement boat may be designated as either a crew boat or a supply boat depending on the primary use of the vessel during each trip. The designation of each trip is documented on the Daily Boat Log as either “Passenger” (Crew) or “Cargo” (Supply).”

District Change made as requested.

DCOR Table 5.1-1 Crew boat line missing Reference E

District Correction made.

DCOR Table 5.1-2 Correct Supply Boat Generator Engines CO emission factor to 130.15

District Correction made.

DCOR Crew boat line is missing Reference E

District Correction made.

DCOR Table 5.1-3 Delete extra zeros in PM_{2.5} between Emergency Response and Crew Boat

District Correction made.

DCOR Table 5.2 and 5.3 Please see attached tables for reference.

DCOR Supply boat hourly emission only sum Main Engines – controlled and Generator Engines (does not include Bow Thruster)

District Correction made.

DCOR Combustion – Engines hourly ROC emissions do not match between Tables 5.2 and 5.3, Table 5.3 is correct

District Correction made.

DCOR Combustion Engines hourly, daily, quarterly, and annual GHG emissions do not match between Tables 5.2 and 5.3, Table 5.2 is correct

District Correction made.

DCOR Combustion – Flare hourly, quarterly, and annual GHG emission do not match between Tables 5.2 and 5.3, Table 5.2 is correct.

District The table has been corrected.

DCOR Combustion – Flare daily GHG emissions incorrect, daily GHG = 1,190.2 lb/day.

District Correction made.

DCOR Pigging daily and annual ROC emissions do not match between Tables 5.2 and 5.3, are all launchers and receivers federally enforceable? Please clarify.

District The pigging calculations have been updated.

DCOR Daily GHG incorrect for Supply Boat and Crew Boat – correct to Supply Boat GHG = 35,794.5 lb/day and Crew Boat GHG = 33,387.3 lb/day

District Corrections made.

DCOR Supply Boat quarterly and annual GHG emissions do not match between Tables 5.2 and 5.3, Table 5.2 is correct.

District Correction made.

DCOR Emergency Response quarterly and annual GHG emissions do not match between Tables 5.2 and 5.3, Table 5.2 is correct.

District Correction made.

DCOR Crew boat quarterly and annual NO_x, ROC, PM, PM₁₀, PM_{2.5}, and GHG emissions do not match between Tables 5.2 and 5.3, Table 5.2 is correct.

District Correction made.

DCOR **Table 5.2** Table Headings on D. Annual (tpy) all shifted one to the right and missing PM₁₀.

District Correction made.

DCOR **Table 5.6-1** "HAP-Emission Factors" and **Table 5.6-2** "Hazardous Air Pollutant Emissions (tpy) remove "(Tier 2)" from "Crew Boat Main Engines – con".

District Correction made.

DCOR **Section 9.B.8** Update to Rule 323.1.

District Correction made.

DCOR **Section 9.C.4(a)(i)** Change "Emissions of NO_x from each diesel fired main engine in each controlled crew boat shall not exceed 337 lb/1000 gallons (8.4 g/bhp-hr)." to not exceed 235 lb/1000 gallons (5.9 g/bhp-hr)

District Correction made.

DCOR **Notes below 9.D** "R4 issued December 12, 2017" change to 2014.

District Correction made.

DCOR Section 10.1 Reference E Change “Three 510 bhp main engines (i.e. 1,530 bhp) and two 109 bhp auxiliary engines are utilized.” to “Three 567 bhp main engines (i.e. 1701 bhp) and two 40 bhp auxiliary engines are utilized.”

District Correction made.

DCOR Remove “Crew boat main engines achieve a controlled NOx emission rate of 8.4 g/bhp-hr through the use of turbo-charging, enhanced inter-cooling and 4 degree timing retard. This emission factor equates to 337 lb/1000 gallons.”

DCOR Add “Crew boat main engines achieve a controlled NOx emission rate of 5.9 g/bhp-hr through the use of twin-turbocharged and enhanced inter-cooled 4-stroke diesel engine with EUI (Electronically controlled unit injector) technology. This emission factor equates to 235 lb/1000 gallons.”

District Correction made.

DCOR Leave in sentence “Spot charter crew boat usage limited to 10 percent of actual annual controlled crew boat usage.”

District Correction made.