



FEB 16 1984

In Reply Refer To: RP-2-2

ODECO Oil and Gas Company
Attention: Mr. E. S. Braud
Post Office Box 61780
New Orleans, Louisiana 70161

Gentlemen:

Reference is made to your Initial Plan of Exploration received February 14, 1984, for Lease OCS-G 6313, Block 512, East Breaks Area. This plan includes the drilling of two wells.

In accordance with 30 CFR 250.34, revised December 13, 1979, and our letter dated January 29, 1979, this plan has been determined to be complete as of February 16, 1984, and is now being considered for approval.

Your plan control number is N-1555 and should be referenced in your communication and correspondence concerning this plan.

Sincerely yours,

(Orig. Sgd.) D.W. Solanas
D. W. Solanas
Regional Supervisor
Rules and Production

CB

bcc: Lease OCS-G 6313 (OPS-4) (FILE ROOM)
OPS-4 w/Public Info. Copy of the plan (PUBLIC RECORDS ROOM)
DO-3

HHekmatdoost:gtj:2/15/84 Disk 3a

Office of
Program Services
FEB 23 1984
Records Management
Section

ODECO OIL & GAS COMPANY
PLAN OF EXPLORATION
EAST BREAKS BLOCK 512
OCS G 6313

MINERALS MANAGEMENT SERVICE

FEB 14 1984

RULES AND PRODUCTION

SUBMITTED BY: *E. S. Breda*
E. S. Breda
Oil & Gas Supervisor

DATE: FEB 13 1984

Noted - Hekmatdoost

Office of
Program Services

FEB 23 1984

Records Management
Section

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ODECO OIL & GAS COMPANY
PLAN OF EXPLORATION
EAST BREAKS BLOCK 512

I. GENERAL PLAN

In accordance with 30 CFR 250.34, revised December 13, 1979, this Plan of Exploration is being submitted. Our plans are to drill four exploratory wells on this lease. The locations of these wells are designated as OCS G 6313, A & B. Numerical identifications will be assigned when applications for permits to drill are submitted. Should the proposed wells have no commercial production, they will be plugged and abandoned with casings removed 15' below mud line.

II. TENTATIVE STARTING AND COMPLETION DATES, SURFACE AND BOTTOM HOLE LOCATIONS, TOTAL DEPTHS AND OBJECTIVES OF PROPOSED WELLS:

OCS G 6313, Location A

Estimated Commencement date: 2/27/84, Complete 4/27/84

Surface Location: 200' FSL and 3600' FWL of East Breaks Block 512

Bottom Hole Location: Straight Hole

Total Depth: 12,000' SS

Objective: Pleistocene and Lentic sands - see geological program

OCS G 6313, Location B

Estimated Commencement date: 4/27/84, Complete 6/27/84

Surface Location: 1000' FSL and 2000' FEL of East Breaks Block 512

Bottom Hole Location: Straight Hole

Total Depth: 12,000' SS

Objective: Pleistocene and Lentic sands - see geological program

III. FACILITY

A. Drill Ship - Ben Ocean Lancer

See attachment for specifications, pollution control and diverter system.

B. No additional facilities will be added offshore or onshore as a result of these exploration activities.

IV. OIL SPILL CONTINGENCY PLAN

Odeco Oil & Gas Company fulfills its oil spill contingency plan by being a member of Clean Gulf Associates, P. O. Box 51239. New Orleans, Louisiana 70151, an agency which handles clean up operations in the event of an oil spill. Fast Response Service can be obtained by calling Halliburton Services in Harvey, Louisiana (504) 355-1735.

A. Estimated deployment time of the equipment to this area is 12 hours.

IV. OIL SPILL CONTINGENCY PLAN (Cont'd.)

B. Description of clean up equipment:

1. Fast Response System Model I consists of:
 - a. Primary and auxilliary skid with 180 bbl. tank on each skid
 - b. One "Don Wilson" skimmer
 - c. One basket and one lot of Bernet oil boom section
 - d. Fire extinguisher skid
2. Fast Response Model II consists of:
 - a. Section of floating oil boom
 - b. Skimmer
 - c. Outrigger
 - d. Pump
3. High volume open sea skimmer and system (HOSS Barge).
4. Shallow water skimmer system.
5. Auxilliary shallow water skimmer and booms.
6. Helicopter spray system (HUSS Units).
7. Waterfowl rehabilitation units and bird scarers.
8. Miscellaneous Material
9. Radio Systems.

V. FUEL CONSUMPTION - DRILLING OPERATIONS

Drill ship uses an average of 105 bbls. of diesel fuel per day during drilling operations. Each supply boat uses approximately 25 bbls. (42 gal/bbl) of diesel per day. Two boats service drilling rig daily.

	<u>BOATS</u>	<u>SHIP</u>
Approx. Rig Days	120	120
Bbls./Day Consumption	x <u>50</u>	x <u>50</u>
Total Fuel Consumption	6,000 bbls.	6,000 bbls.

VI. SAFETY STANDARDS AND PROGRAMS - DRILLING OPERATIONS

ODECO believes the safety of its employees is directly proportional to each employee's skill and knowledge of the work to be performed. To improve these skills and increase this knowledge, a "Rig Crew Training Program" has been instituted. This program provides the necessary on-the-job training to enable each employee to make a planned progression from roustabout to driller. It consists of on-site video cassette programs, International Association Drilling Contractors approved "Home Study Courses". Minerals Management Service required Crane Operating Blow Out Prevention Training and United States Coast Guard's Seamen's Training. All employees must pass required testing in each of these courses. A pay incentive is

VI. SAFETY STANDARDS AND PROGRAMS - DRILLING OPERATIONS (Cont'd.)

included to encourage employee participation. In addition, this program is supported by generally accepted methods of rig inspections, drills and safety meetings which are in compliance with U.S.C.G. and M.M.S. standards which, we believe, will ultimately enhance the safe work performance of our employees.

VII. BASE OF OPERATIONS

- A. Marine service to service drilling operations is provided from Galveston, Texas.
- B. Air Service (helicopter) is provided from Galveston, Texas.

VIII. TYPE DRILL MUD USED AND CHEMICAL COMPONENTS

A. Bariod

B. Chemical Components

Aktaflo-S	Mixed oxyethylated phenols
Aluminum Stearate	$(\text{CH}_3(\text{CH}_2)_{16}\text{COO})_3\text{AL}$
Aquagel	Sodium montmorillonite
Bariod	Barium Sulfate
Bicarbonate of Soda	Na NCO_3
Carbonox	Lignitic Humic Acid Powder
Caustic Soda	Sodium Hydroxide
CC-16	Caustized Carbonox
Cellex	Sodium Carboxymethylcellulose
Destrud	Dextrinized Polysaccharide Powder
HME	Selective, nonionic surfactant- Chemco product
Impermex	Starch
Lime	Calcium Hydroxide
Micatex	Mica Flakes
Q-Broxin	Ferrochrome Lignosulfonate
Sapp	Sodium Acid Pyrophosphate
Sodium Ash	Sodium Chromate
Soltex	Hydrocarbon Powder
Superdrill	Gilsonite
Torq-Trim	Biodegradable, Non-Toxic lubricant
Wall-Nut	Nut Hulls

IX. SHALLOW HAZARDS SURVEY

A potential Geologic Hazards survey was conducted by Intersea Research Corporation from October 2, thru Nov. 2, 1983. None of the locations are within any geologically sensitive areas.

X. GASEOUS EMISSION DATA

A. Emissions:

1. Rtg: Drill ship "Ben Ocean Lancer" will be used. Estimated rig days for drilling these wells will be 120 days. Emissions calculated for 120 days, stated in (lbs/day) tons/120 days. See attachments for emission summary by rig and basis for calculation of summary.
 - a. CO (265.21) 15.91
 - b. Hydrocarbon (56.93) 3.42
 - c. NO_x (1790.25) 107.42
 - d. SO₂^x (103.34) 6.19
 - e. Particulates (17.26) 1.04

2. Helicopters: Estimate 19 round trips in 120 days, four hours per round trip = 76 hours operating time. Stated in (lbs/day) Tons per 120 days, averaged to 120 days. See attached for emissions per hour of use.
 - a. CO (.20) .01
 - b. Hydrocarbon (.04) .00
 - c. NO_x (.88) .05
 - d. SO₂^x (5.68) .34
 - e. Particulates (.09) .01

3. Boats(Crew): Eighty Six (86) trips in 120 days, at 6 hours per round trip = 516 hours. (Supply) Fifty Eight (58) trips in 120 days at 14 hours round trip = 812 hours. 516 + 812 = 1328 operating hours. Stated in (lbs/days) Tons per 120 days, averaged to 120 days. See attached for emission per hour of use.
 - a. CO (46.54) 2.79
 - b. Hydrocarbon (17.71) 1.03
 - c. NO_x (214.92) 12.90
 - d. SO₂^x (14.37) .86
 - e. Particulates (15.74) .95

4. Supply Base - 30 ton crane. Estimated in 120 days = 387 hours. Stated in (lbs./day) Tons/120 days. Averaged to 120 days. See attached for emission per hour.
 - a. CO (12.98) .79
 - b. Hydrocarbon (1.21) .07
 - c. NO_x (31.62) 1.90
 - d. SO₂^x (1.62) .10
 - e. Particulates (1.72) .10

X. GASEOUS EMISSION DATA (Cont'd.)

B. Exemptions: Distance from shore 110 statute miles.

1. Hydrocarbons, NO_x , SO_2 , Particulates
 $33.3 \times 110 = 3663.00$ tons/365 days for
each, or $3663.00 \times 4 = 14,652.00$ tons/365
days
2. CO (3400 x 110) 2/3 or 4765 tons/365 days

XI. ATTACHMENTS

- A. Vicinity Map
- B. Geological Programs with structure map, Top of Pressure Map, and Shallow Drilling Hazards statement with seismic map for each well.
- C. Drill Ship Data - Ben Ocean Lancer including schematic of diverter and statement of pollution control.
- D. Emission Summary with basis of calculations for drill ship.
- E. Emission hourly rate for boats, helicopter, and crane.

Lot. $27^{\circ} 29' 27.854''$
Long. $94^{\circ} 35' 28.857''$

468

Y=9,979,200.00'

15,840.00'

Odeco Oil & Gas Co.
OCS-G-6313

511

BLK. 512

513

X=1,124,640.00'
15,840.00'

X=1,140,480.00'

Lot. $27^{\circ} 26' 52.971''$
Long. $94^{\circ} 32' 30.787''$

Y=9,963,360.00'

Lot. $27^{\circ} 26' 50.994''$
Long. $94^{\circ} 35' 26.604''$

556

MASTER SHEET



PROPOSED MINERAL DEVELOPMENT
EAST BREAKS AREA NG 15-1
GULF OF MEXICO

DATE:

ODECO OIL & GAS COMPANY

ODECO OIL & GAS COMPANY
JANUARY 17, 1984

GEOLOGICAL PROGRAM AND WELL RECOMMENDATION
OCS-G 6313 WELL NO. A EAST BREAKS BLOCK

LOCATION: Surface: 200' FSL and 3600' FWL
Straight Hole'

WATER DEPTH: 2895'

TOTAL DEPTH: 12,000' Sub Sea

WELL CLASSIFICATION: Exploration Wildcat

LOGGING SERVICES:

- 1) ISF-Sonic-GR-SP: Base of conductor to 12,000' (TD)
- 2) FDC-CNL: Run over all sections indicated as possibly hydrocarbon bearing by ISF - Sonic log.
- 3) Sidewall Cores: Cores will be taken in all porous and resistive zones as indicated by wireline logs.
- 4) HRD: Base of conductor to 12,000' (TD).
- 5) Mud Logging: Base of conductor to 12,000' (TD).
- 5) Paleo Samples: Collect two large sack/30' base of conductor to 12,000' (TD).
- 7) Velocity Survey: Base of conductor to 12,000' (TD).

WELL OBJECTIVES: This well is designed to evaluate Middle and Lower Pleistocene Trim B, ANC B, and LENTIC Sands at 4800' to 10,000' on East Breaks Area Block 512. This section is oil and gas productive in Union Oil of California's CERVEZA field 28 miles to the north in East Breaks Area Block 160 and 161.

<u>PALEONTOLOGICAL MARKERS:</u>	TRIM A	(PL-2)	4350'SS
	TRIM B	(PL-4)	4800'SS
	ANG B	(PL-6)	6600'SS
	LENTIC	(PL-9)	8850'SS

NEARBY WELL CONTROL:

Exxon	OCS-G 4815 #1	E. Breaks 247	TD 11,698'
Mobil	OCS-G 2647 #2	E. Breaks 160	TD 11,172'
Mobil	OCS-G 2648 #1	E. Breaks 161	TD 9,700'
Mobil	OCS-G 2646 #1	E. Breaks 159	TD 8,018'
Mobil	OCS-G 2644 #1	E. Breaks 157	TD 7,805'
Exxon	OCS-G 2652 #1	E. Breaks 114	TD 7,503'
Texaco	OCS-G 2655 #2	E. Breaks 117	TD 7,725'

Abnormal pressure is possible at approximately 7600' but salt is not expected to be encountered in this well.

Geological Program and Well Recommendation
OCS-G 6313 Well No. A East Breaks Block 512
January 17, 1984
Page Two

Submitted by: W. W. Allen
W. W. Allen
Assistant Exploration Manager

WWA/mcc

Approved by: S. C. Hurley
S. C. Hurley
Exploration Manager

Approved by: H. A. Vallas
H. A. Vallas
Senior Vice President

APPROVALS

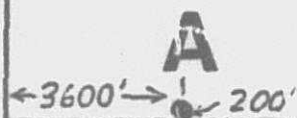
CHIEFTAIN INTERNATIONAL, INC.

By: _____ Date: _____

MURPHY OIL CORPORATION

By: _____ Date: _____

BLK. 512



ODECO OIL & GAS COMPANY

EAST BREAKS AREA

BLK. 512

LOCATION PLAT

OCS-G-6313 WELL NO. A

INTERPRETATION BY

CONTOUR INTERVAL

DATE

9-73

0

4000'

SHALLOW DRILLING HAZARD REPORT

Date: JANUARY 17 1984

To: Mr. Jack Sandridge, District Supervisor
Minerals Management Service
115 Circle Way
Lake Jackson, Texas 77566

Proposed Well: OCS-G 6313 WELL NO. A
East Breaks Area Block 512

Geophysical Lines Reviewed:

<u>Line No.</u>	<u>S. P. No.</u>	<u>Type</u>	<u>Date Shot</u>
TS-202	721-793	RAP	1973

Drilling Hazards Noted: Shallowest bright spot at time of 1.750 sec. (approximately 4450' sub sea or 1559' below sea bottom.)

R. R. Gregory
From: R. R. Gregory

Title: Staff Geophysicist

ODECO OIL & GAS COMPANY
JANUARY 17, 1984

GEOLOGICAL PROGRAM AND WELL RECOMMENDATION
OCS-G 6313 WELL NO. B EAST BREAKS BLOCK 512

LOCATION: Surface: 1000' FSL. and 2000' FEL
Straight Hole

WATER DEPTH: 2825'

TOTAL DEPTH: 12,000' Sub Sea

WELL CLASSIFICATION: Exploration Wildcat

LOGGING SERVICES:

- 1) ISF-Sonic-GR-SP: Base of conductor to 12,000' (TD)
- 2) FDC-CNL: Run over all sections indicated as possibly hydrocarbon bearing by ISF - Sonic log.
- 3) Sidewall Cores: Cores will be taken in all porous and resistive zones as indicated by wireline logs.
- 4) HRD: Base of conductor to 12,000' (TD).
- 5) Mud Logging: Base of conductor to 12,000' (TD).
- 6) Paleo Samples: Collect two large sack/30' base of conductor to 12,000' (TD).
- 7) Velocity Survey: Base of conductor to 12,000' (TD).

WELL OBJECTIVES: This well is designed to evaluate Middle and Lower Pleistocene Trim B, ANG B, and LENTIC Sands at 4300' to 10,000' on East Breaks Area Block 512. This section is oil and gas productive in Union Oil of California's CERVEZA field 28 miles to the north in East Breaks Area Block 160 and 161.

PALEONTOLOGICAL MARKERS:

TRIM A	(PL-2)	4450'SS
TRIM B	(PL-4)	4900'SS
ANG B	(PL-6)	6700'SS
LENTIC	(PL-9)	8950'SS

NEARBY WELL CONTROL:

Exxon	OCS-G 4815 #1	E. Breaks 247	TD 11,698'
Mobil	OCS-G 2647 #2	E. Breaks 160	TD 11,172'
Mobil	OCS-G 2648 #1	E. Breaks 161	TD 9,700'
Mobil	OCS-G 2646 #1	E. Breaks 159	TD 8,018'
Mobil	OCS-G 2644 #1	E. Breaks 157	TD 7,805'
Exxon	OCS-G 2652 #1	E. Breaks 114	TD 7,503'
Texaco	OCS-G 2655 #2	E. Breaks 117	TD 7,725'

Geological Program and Well Recommendation
OCS-G 6313 Well No: B East Breaks Block 512
January 17, 1984
Page Two

Abnormal pressure is possible at approximately 7700' but salt is not expected to be encountered in this well.

Submitted by: W. W. Allen
W. W. Allen
Assistant Exploration Manager

WWA/mcc

Approved by: S. C. Hurley
S. C. Hurley
Exploration Manager

Approved by: H. A. Vallas
H. A. Vallas
Senior Vice President

APPROVALS

CHIEFTAIN INTERNATIONAL, INC.

By: _____ Date: _____

MURPHY OIL CORPORATION

By: _____ Date: _____

BLK. 512

B 1200'
1000' ↓

ODECO OIL & GAS COMPANY

EAST BREAKS AREA

BLK. 512

LOCATION PLAT

OCS-G-5313- WELL NO. B

INTERPRETATION BY

CONTOUR INTERVAL

DATE

9-83

0

4000'

SHALLOW DRILLING HAZARD REPORT

Date: January 17, 1984

To: Mr. Jack Sandridge, District Supervisor
Minerals Management Service
115 Circle Way
Lake Jackson, Texas 77566

Proposed Well: OCS-G 6313 WELL NO. B
East Breaks Block 512 Area

Geophysical Lines Reviewed:

<u>Line No.</u>	<u>S. P. No.</u>	<u>Type</u>	<u>Date Shot</u>
TS-204	721-805	RAP	1973

Drilling Hazards Noted: Shallowest bright spot at time of
1.475 sec. (approximately 3688'
sub sea or 834' below sea bottom.

R. R. Gregory
From: R. R. Gregory

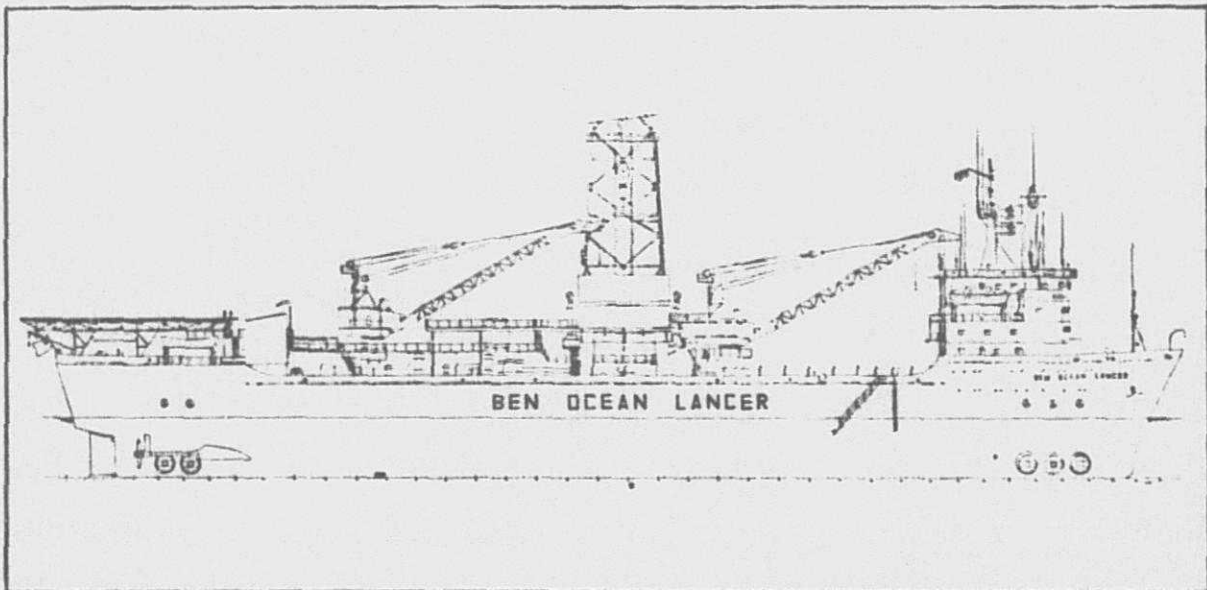
Title: Staff Geophysicist

BEN OCEAN LANCER



Length O.A. 490 ft.
Length b.p. 450 ft.
Beam 77 ft.
Depth 41 ft.

Design Draft 26 ft.
Displacement 17,230 Tons
Min Operating Depth 300 ft.
Max Operating Depth 3,000 ft.

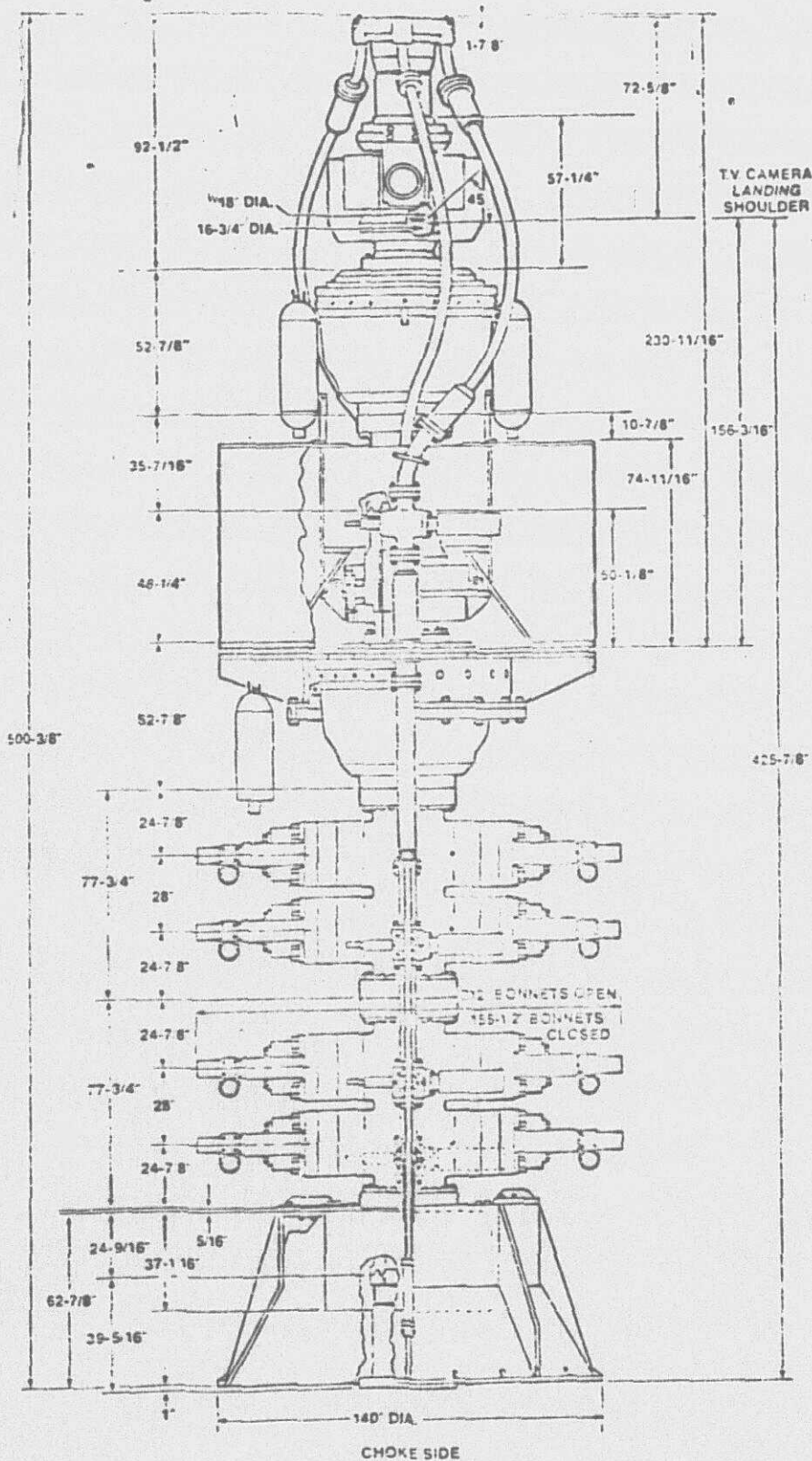


EQUIPMENT LIST

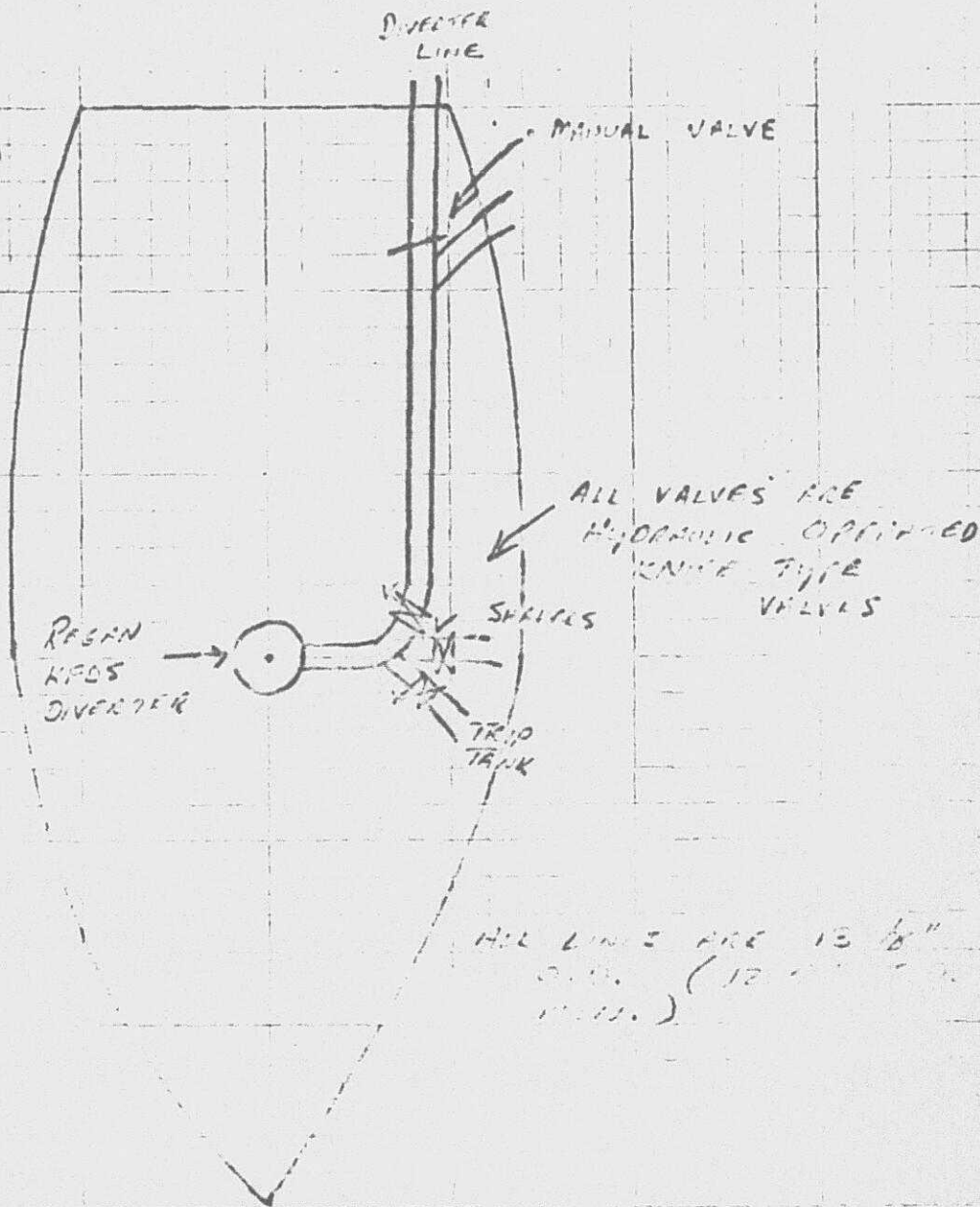
- 1 Gardner Denver Model 3000 E drawworks double drums grooved for 1 3/8" drill line and 9 1/2" sand line driven by 2 - 1,000 hp DC motors
- 1 Model TCB Knomey crownomatic
- 2 Gardner Denver 1,600 hp Model PZ-11 Triplex mud pumps with standard accessories
- 1 Gardner-Denver Model SST 660 traveling block, 550 ton capacity with Byron Jackson traveling block bumper installed
- 1 Byron Jackson 550 ton dynaplex hook
- 1 National P650 Swivel 650 Ton Dead Load Capacity
- 1 Pyramid 160 ft. derrick with double V-doors, rated static hook load capacity of 1,000,000 lbs. with matching crown block
- 1 Brown Bros. duplex passive motion compensator
- 1 Oilwell A-49 1/2" rotary table
- 1 Pioneer desilter
- 1 Pioneer desander
- 1 Swaco degasser
- 1 Byron Jackson three-arm pipe racking arm system
- 1 Triple high speed shale shaker
- 1 18,000 Cu. ft. bulk dry storage capacity
- 5 Diesel engines are SACM (Mulhouse, France) Type A GO-16 and each delivers 3,400 hp at 1,200 rpm
- 5 Diesel driven alternators supplying a 6,600 volt, 3-phase, 60 cycle electrical system
- 10,000' 5" Drill pipe Range 2, Grade E, with Hughes 6 3/8" OD x 3 1/2" I.D. hardbranded tool joints with 5" X-hole threads
- 5,000' 5" Drill pipe Range 2, Grade G, with Hughes 6 3/8" OD x 3 1/2" I.D. hardbranded tool joints with 5" X-hole threads
- 30 8" OD drill collars
- 24 6 1/2" OD drill collars
- 3 13 3/8" Byron Jackson 500 ton slip elevator spiders with 13 3/8", 9 5/8" and 7" slip inserts
- 1 10,000 psi W.P. choke manifold
- 3 500 CFM 125 psi system air compressors
- Life rafts, rescue boats, etc., to meet Lloyd's Register of Shipping Specifications
- 1 40 Ton crane with 100 ft. boom
- 1 25 Ton crane with 100 ft. boom
- 1 16 3/4", 10,000 psig BOP stack consisting of two double rams, a lower riser package with 5,000 psig annular preventer
- 3,000' 18 5/8" Riser with a multiplex electro-hydraulic control system
- 6 100,000 lb. Brown Bros. riser tensioners
- 1 Acoustic re-entry system
- 1 Sonar re-entry system
- 1 TV re-entry system

A variable load of 7,320 tons can be carried. A typical load break down would be:

Fuel Oil	3,405 t	Drill pipe	455 t
Potable water	270 t	Casing	920 t
Drill water	1950 t	Riser Pipe	540 t
Bulk mud & cement	840 t	Liquid mud	330 t
Mud in containers	240 t	Sundry Equipment	310 t



External Stack Dimensions



ALL LINES ARE 1 3/8" O.D. (12" I.D. MIN.)

BEN OCEAN LANCER DIVERTER SYSTEM

★ ONLY ONE DIVERTER LINE VESSEL ALWAYS HEADS INTO THE WIND

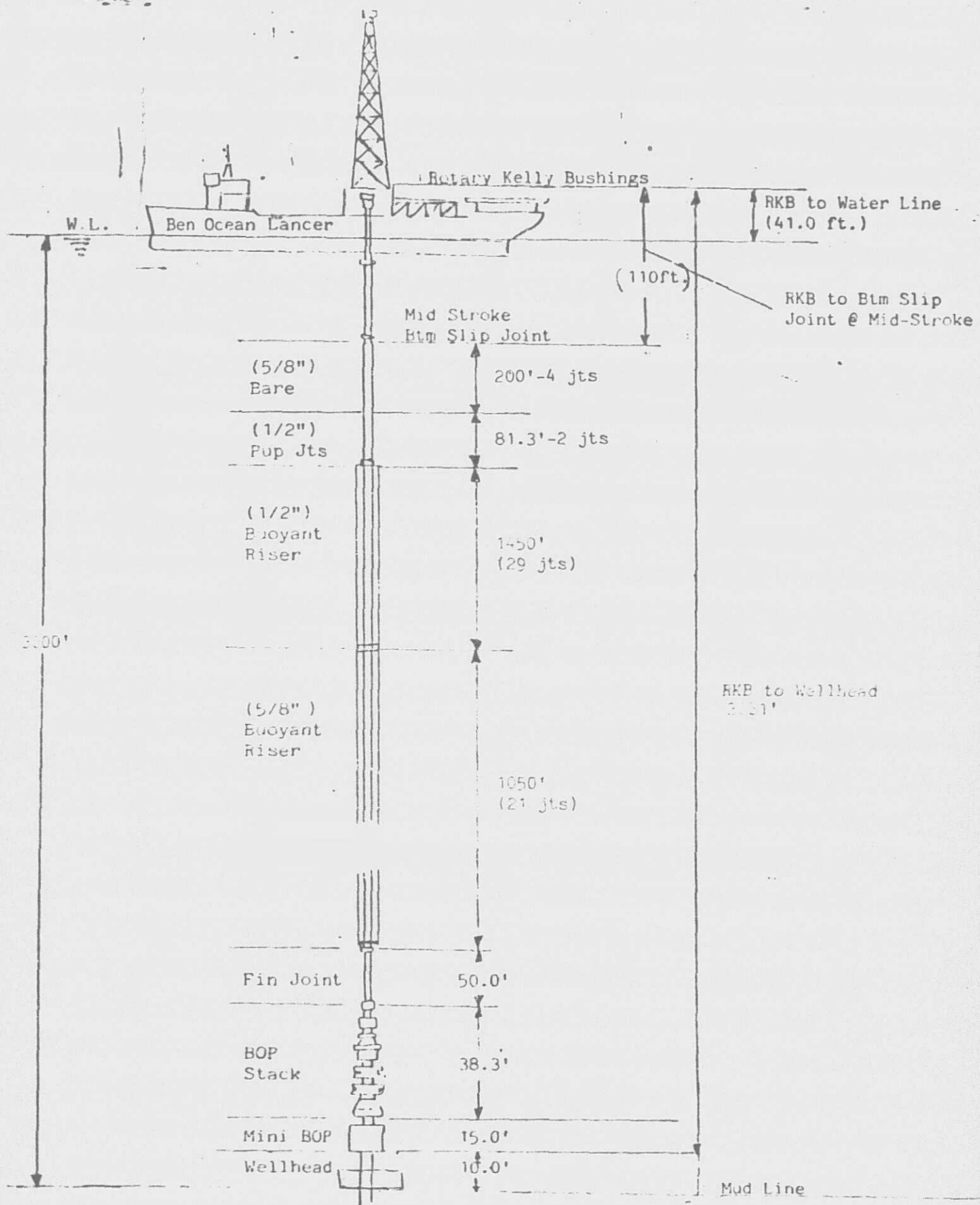
"BEN OCEAN LANCER"
POLLUTION CONTROL EQUIPMENT

Bilge and ballast water are processed through a gravity type oil/water separator manufactured by HEW of Germany. This unit is capable of processing over 200 gallons per minute. The separated oil is transferred into a sludge incinerator for disposal. The incinerator, a Golar Marine Incinerator Model SK 25 manufactured in Norway, is capable of disposing of a maximum of 65 KG per hour of sludge oil. See attached O & M Manual.

The drill floor area is drained into a collection tank and this fluid is processed through a GE OPL 25 horizontal plate coalescing oil/water separator. The unit is capable of processing up to 25 GPM. The oil separated from this system is also disposed of in the incinerator described above.

Sanitary wastes are treated in two aerobic treatment systems. A Tenman unit is installed aft, and a 100-man unit is installed forward beneath the quarters section. Sanitary waste is treated by Aerobic digestion and the effluent chlorinated before discharge. Both these units were manufactured by Brown Brothers of Edinburgh, Scotland. Galley and shower waste water (gray water) is discharged directly overboard as is deck washdown.

The "Ben Ocean Lancer" fully complied with U.S. EPA discharge requirements during drilling off the East Coast of the United States in 1978 and 1979. Requirements included a maximum oil content of ¹⁵30 ppm in overboard discharge and a minimum residual chlorine of 1 mg/l in all sewage effluent.



* Add Buoyancy to Existing 1/2 Wall Bare Riser

Hook Load Prior to Latch-Up		Wat	Air Wt.
Telescoping Joint	1 ea	22	5,000
5/8 Bare	4 ea	35	.992
1/2 Buoy.	29 ea		.000
5/8 Buoy.	21 ea		.382
Fin Joint	1 ea	23,411	21,000
LRP	1 ea	107,644	123,800
BOP	1 ea	186,247	214,200
Mini-BOP	1 ea	86,950	100,000
Pup Jts - 37.50	1 ea	7,156	8,230
43.75	1 ea	8,112	9,330

EMISSIONS SUMMARY-BEN OCEAN LANCER
(TONS/YEAR)

SOURCE NO.	SOURCE	STACK/ HT (FT)	STACK DIA (FT)	CO	HYDRO CARBON	NOx	PARTICULATE	S02
1	SACM V16	46	1.33	9.54	2.05	64.45	.62	3.7
2	SACM V16	46	1.33	9.54	2.05	64.45	.62	3.7
3	SACM V16	46	1.33	9.54	2.05	64.45	.62	3.7
4	SACM V16	46	1.33	9.54	2.05	64.45	.62	3.7
5	SACM V16	46	1.33	9.54	2.05	64.45	.62	3.7
6	EMERG(DORMAN-8)	46	.66	.01	.01	.09	NEG.	.01
7	HARBOR (SACM-V12)	46	1.15	.05	.01	.36	.01	.02
8	HALLIBERTON (GMSV-71)	26	.5	.29	.06	1.84	.02	.15
9	HALLIBURTON (GMSV-71)	26	.5	.29	.06	1.84	.02	.15
10	SCHLUMBERGER (GM4-71)	46	.13	.05	.01	.32	Neg	.03
TOTAL				48.4	10.39	326.72	3.15	18.86

$\times 2000 = \text{lbs./yr.}$

$\div 365 = \text{lbs./Day}$

96,800	20,780	653,400	6,300	37,720
265.21	56.93	1790.25	17.26	103.24

Pollutant from diesel engines on drilling rigs were calculated using the following:

$$\frac{\text{TONS}}{\text{YR}} = .0096563 \times C \times P \times (\text{BHP})$$

where

- .0096563 = conversion from Grams/hr. to Tons/yr.
- C = Grams/BHP-Hr of pollutant - see (1)
- P = Average % useage in a yr. - see (2)
- BHP = Rated HP of engine

- (1) Available data from manufacturers of diesel engines and theoretical combustion data was surveyed, and the following values chosen:

<u>Pullutant</u>	<u>Grams/BHP-HR</u>
NO _x	18.3
SO ₂	1.49
Hydrocarbon	0.62
CO	2.88
Particulate	0.20

- (2) Operation of equipment data from several rigs was reviewed to obtain % useage. Based on this review, the following data was utilized in preparing emissions estimates. This data is probably conservative, because it was assumed that engines were operating at all times at rated horsepower:

<u>Engine Application</u>	<u>Average Yearly % Use</u>
Main Engine	74
Emerg. Engine	0.5
Primary Crane	7
Back Up Crane	3
Fork Lift	3
Cement Unit	3
Logging Unit	1
Welding Unit	2
Desander/Desilter	10
Cold Start Air Comp.	2
Rig Air Comp.	10
Main Mud Pump	50
Mud Mix Unit	10
Draw works	60
Bulk Air Comp.	3

Basis For Calculations of Gaseous emissions of
Boats - Helicopters and Crane at Supply Base
for Rig Related Operations

I.	Boats: Equiped with two V 12 marine engines and two generators			
	Lbs/Hour			
CO	Hydrocarbon	No _x	SO ₂	Particules
6.8	2.5	31.4	2.1	2.3
II.	Helicopter: For transportation of men. Size 206			
	Lbs/Hour			
CO	Hydrocarbon	No _x	SO ₂	Particules
.5	.1	2.2	14.2	.2
III.	Supply Base - Crane - with GM 6-71 diesel engine with 228 BHP driving a 30 ton crane			
	Lbs/Hour			
CO	Hydrocarbon	No _x	SO ₂	Particules
3.77	.35	9.18	.47	.5