In Reply Refer To: FC-3-1

November 14, 1989

ARCO Oil and Gas Company
Attention: Mr. Nelson Robertson
Post Office Box 51405
Lafayette, Louisiana 70505

Gentlemen:

Reference is made to your Supplemental Development Operations Coordination Document (DOCD) and accompanying information received October 31, 1989, for Lease OCS-G 1608, Blocks 59 (portion) and 60, South Pass Area, and Lease OCS-G 2943, Block 59 (portion), South Pass Area. This DOCD includes the activities proposed for Wells G-45 through G-48.

In accordance with 30 CFR 250.34, this DOCD is hereby deemed submitted and is now being considered for approval.

Your control number is S-2357 and should be referenced in your communication and correspondence concerning this DOCD.

Sincerely,

(Orig. Sgd.) A. Donald Giroir

D. J. Bourgeois
Regional Supervisor
Field Operations

bcc: Lease OCS-G 1608 (OPS-3-2) (FILE ROOM)
Lease OCS-G 2943 (OPS-3-2) (FILE ROOM)
OPS-3-4 w/Public info. Copy of the DOCD and accomp. info. (PUBLIC RECORDS)

NOTED — KRAMER

TTrosclair:cek:11/02/89:doedcom-bkp.

Office of
Program Services

NOV 15 1989

Information Services
Section

ARCO Oil and Gas Company
Southeastern District
Post Office Box 51408
Lafayette, Louisiana 70505
Telephone 318 264 4295

M. Nelson Robertson
Offshore District Engineer

October 27, 1989

Minerals Management Service
Gulf of Mexico OCS Region
1201 Elmwood Park Blvd.
New Orleans, LA 70123-2394

Attention: Regional Supervisor
Deputy Minerals Manager
Office of Field Operations FO-2-1

Re: Supplemental Development Operations
Coordination Document
OCS-G 1608 South Pass Block 60
OCS-G 1608 South Pass Block 59
OCS-G 2943 South Pass Block 59

The Development Operations Coordination Document (DOCD) for leases OCS-G 1608 and 2943, South Pass Block 61 Field, requires both a revision and a supplement. The revision is required to change the target locations of three previously approved wells to be drilled from platform "C", South Pass Block 60. The supplement is needed to increase the total number of MMS approved wells to be drilled from this platform. Eight copies, five proprietary, of this supplement are submitted in compliance with the applicable provisions of 30 CFR 250.34. A DOCD checklist is included in front of the exhibits for reference.

The last supplement, dated June 26, 1985 and referenced as RP-2-1, approved drilling activity for wells C-42 through C-44. These wells are scheduled to be drilled between November, 1989 and March, 1990. Revised target locations for these wells are shown in Exhibit No. 4.

Description

The South Pass Block 61 Field is located ±8 miles from the nearest shore off the Louisiana coast. A location map of the field relative to the shoreline is given in Exhibit 1. The Block 60 "C" platform location is shown in Exhibit 2.

ARCO Oil and Gas Company's existing facility at Venice, Louisiana is the shore base for South Pass Block 61 Field. The base consists of a docking facility, heliport, warehouse, yard, parking lot, offices and living quarters. Communications include private radios, microwave channels and regular telephones. A base coordinator and a dispatcher are on duty at all times to coordinate movement of materials and personnel by boat and

helicopter. The location for the Venice support base facility is shown in Exhibit 3.

ARCO Oil and Gas Company, as operator of the South Pass Block 61 Field, proposes to drill a total of four additional wells from "C" platform beyond approved well C-44. These wells will be on leases OCS-G 1608 and 2943. Each well will be put on production as it is drilled and completed. No new facilities, pipelines, or platforms will be required. Bottom hole locations, target reservoirs, and true vertical depths for these wells are shown in Exhibit 4. The bottom hole locations in Exhibit 4 are only estimates and may be revised in the future based on further evaluation of downhole data and/or subsequent drilling. The approximate bottom hole locations for these wells are plotted on the attached spider map (Exhibit 5).

Schedule

At this time, Helmerich and Payne (H&P) Rig 101 is drilling the platform "C" wells approved under the current supplemental DOCD (RP-2-1). This activity is scheduled to last through March, 1990. Drilling may then begin on wells C-45 through C-48. The entire "C" platform drilling program is scheduled for completion in August, 1990. Exhibit 4 includes an estimated drilling schedule. The expected life of the reserves to be developed by these wells is ±10 years.

Geological and Geophysical Data

The requirements of NTL No. 83-3 concerning shallow hazards and NTL No. 75-3, Revision No. 1 concerning cultural resources are met. All pertinent geological and cultural resource data were previously submitted and approved for platform "C". There are no mudslide deposits at the platform site. South Pass Block 61 Field is not a known archaeological or historical area. Water depth at the location of "C" platform is ±193'.

Five of the eight copies of this Supplemental DOCD include geological structure maps of the K and Lower L sands. Also included is a representative cross-section of this area. We request that this geologic data be held confidential as we believe it to be exempt from disclosure under the Freedom of Information Act (5 U.S.C. 552) and implementing regulations (43 CFR Part 2). Also we request that the revised bottomhole locations be held confidential; however, the information may be released to the appropriate state agencies.

Description of Drilling Rig and Pollution Prevention

Current plans are to continue using H&P 101 to drill the four additional wells submitted for approval. H&P 101 is a self

contained, modular platform rig (see Exhibit 6). Drip pans, curbs, drains, and sumps are designed into the rig and platform for pollution control. During drilling operations, a diverter system, blowout preventers, and well control equipment will be provided and maintained (see Exhibits 7 and 8). All wells will have surface controlled surface and subsurface safety valves installed.

An air emissions report for H&P 101 is attached as Exhibit 9 (five pages).

In the unlikely event of a pollution incident, control and cleanup procedures will be implemented in accordance with ARCO's revised "Oil Spill Contingency Plan" submitted to the Minerals Management Service in September 1988. Included in the plan is a "Trajectory Analysis" as required by MMS and taken from the Environmental Impact Statement prepared for these particular leases. ARCO is a member of Clean Gulf Associates and will rely primarily on oil spill equipment stored at Grand Isle, Venice, Intracoastal City, and Cameron, Louisiana. The equipment can be deployed and on location within ±12 hours. Exhibit 10 (two pages) contains a detailed description of this contingency plan.

H_2S Classification

ARCO asks that an H_2S classification be determined on ARCO's South Pass Block 61 Field and its associated leases.

ARCO recommends that this South Pass area be classified as absent of H_2S. This statement is made after reviewing fluid and gas analyses on producing wells drilled in South Pass Block 61 Field. Produced fluids were analyzed for H_2S content in the K sand completion of the OCS-G 1608 A-17D well, and the Lower L sand completion of the OCS-G 1611 67A-1A well. No H_2S concentration was reported in these wells.

Discharge of Mud and Cuttings

Drilling of the additional wells in South Pass Block 61 Field will result in the discharge of drill mud and cuttings into Gulf waters as allowed under the EPA's Natural Pollutant Discharge Elimination Systems (NPDES) General Permit GMG 280000. Drilling discharges will be in accordance with the permit requirements (i.e., toxicity analysis, volumes, inventory).

The estimated drill cuttings discharge is strictly a function of the footage drilled and specific bit size. The proposed wells will most likely be drilled with a 9-7/8" bit. With this bit, cuttings volume discharge is estimated at 0.144 bbls/foot. Therefore, for an average 10000' well the cuttings discharge volume is estimated at 1440 bbls/well.

In addition, estimated drilling fluid discharge is the summation of the drill fluid discharge and the completion fluid discharge. Based on an internal company study, average drill fluid discharge is estimated at 5 bbls/drilling hour. Therefore, for a well that is 10000' deep and is drilled at a rate of 50'/hour, drilling operations (200 hours) would discharge approximately 1000 bbls of drill fluid. Completion fluid discharge on the other hand is a function of the production casing string size, and also includes the discharge of the active mud system (±1000 bbl). Fluid discharge due to production casing displacement is estimated at 0.044 bbl/casing foot for 7-5/8", 33.7 lb/ft casing. Therefore, for a 10000' completed well the completion fluid discharge is estimated at ±1440 bbls (440 bbls casing displacement and ±1000 bbls active mud system discharge).

In summary, for an average 10000' completed well the total discharge of mud and cuttings is estimated at ±3900 bbls.

Mud used in drilling operations is made up of various components. Typically these components are fresh water/sea water, barite, gel, caustic soda, lignite, lime, soda ash, and bicarbonate.

Oil based mud is not typically used by ARCO in drilling operations at South Pass. However, in the event that oil based mud is used, it would not be discharged. Any oil based mud will be transported back to shore for appropriate handling.

Please sign one copy of the Transmittal Letter for the confidential information and return it to us for our records. If further data or clarification is required, please call Vicki Arnold at (318) 264-4750.

Sincerely,

ARCO OIL AND GAS COMPANY

M. N. Robertson

vna/5/36

DEVELOPMENT OPERATIONS COORDINATION DOCUMENT (DOCD)
REQUIREMENTS CHECK LIST

I. Initial

Description

__X__ Description of work to be performed

Schedule

__X__ Commence date

__X__ Time to complete each phase

__X__ Total time to complete proposal

Geological, Geophysical, and Cultural Resource

__N/A__ Site-specific shallow hazard analysis (see NTL No. 83-3 for analysis and survey requirements)

__N/A__ Site-specific cultural resource assessment (if cultural resource report is required see NTL No. 75-3, Revision No. 1)

__X__ Structure map of appropriate sands/depth indicating well locations

__X__ Cross-section map

__X__ Surface location, TVD, and BHL of each well

__X__ Spider map

Locations

__X__ Location map of the lease block(s) relative to the shore line (vicinity map)

__X__ Location of onshore support base facility

__X__ Well and platform surface location map (preferably 1":2000') (no confidential information shown)

Oil Spill Contingency Plan Information

X Contingency plan reference

X Equipment base of operations

X Equipment deployment time

Other

X Water depth

X Description of drilling rig, if applicable, with list of pollution prevention equipment

X Air emission calculations (see letter of May 3, 1980)

N/A Environmental Report (ER) if applicable

N/A CZM Consistency Certification if applicable

N/A Address all operational Lease Stipulations

X Estimated life of reserves

X Description of proposed platform(s) and/or well protector(s) including schematic(s)

II. Supplemental (revisions requiring additional permits)

Same requirements as Initial DOCD

III. Revised (revisions not requiring additional permits)

Check list for Initial DOCD is to be applied only to those items in the Revised DOCD which represents a change to the plan

Not to Scale

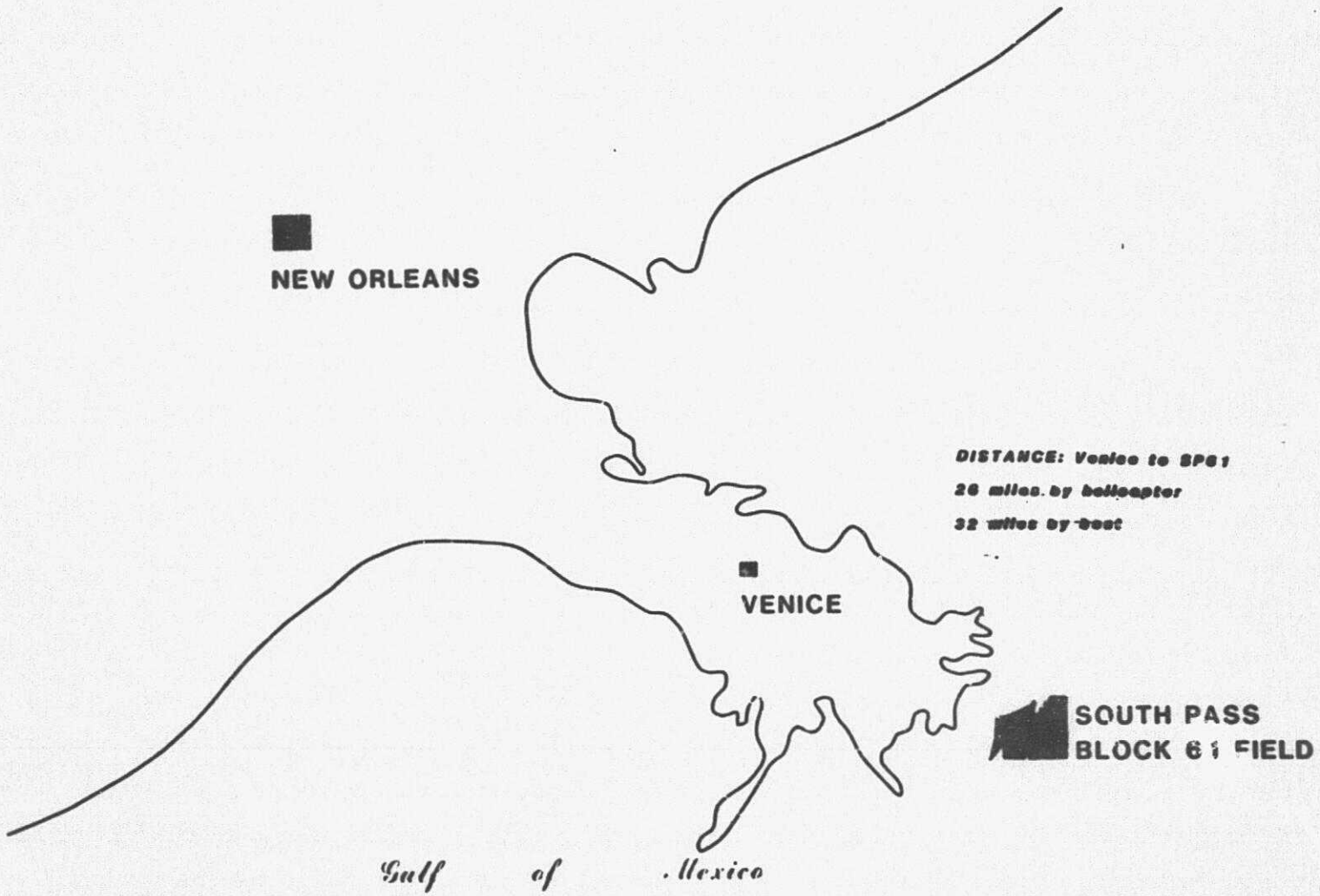


Exhibit 1

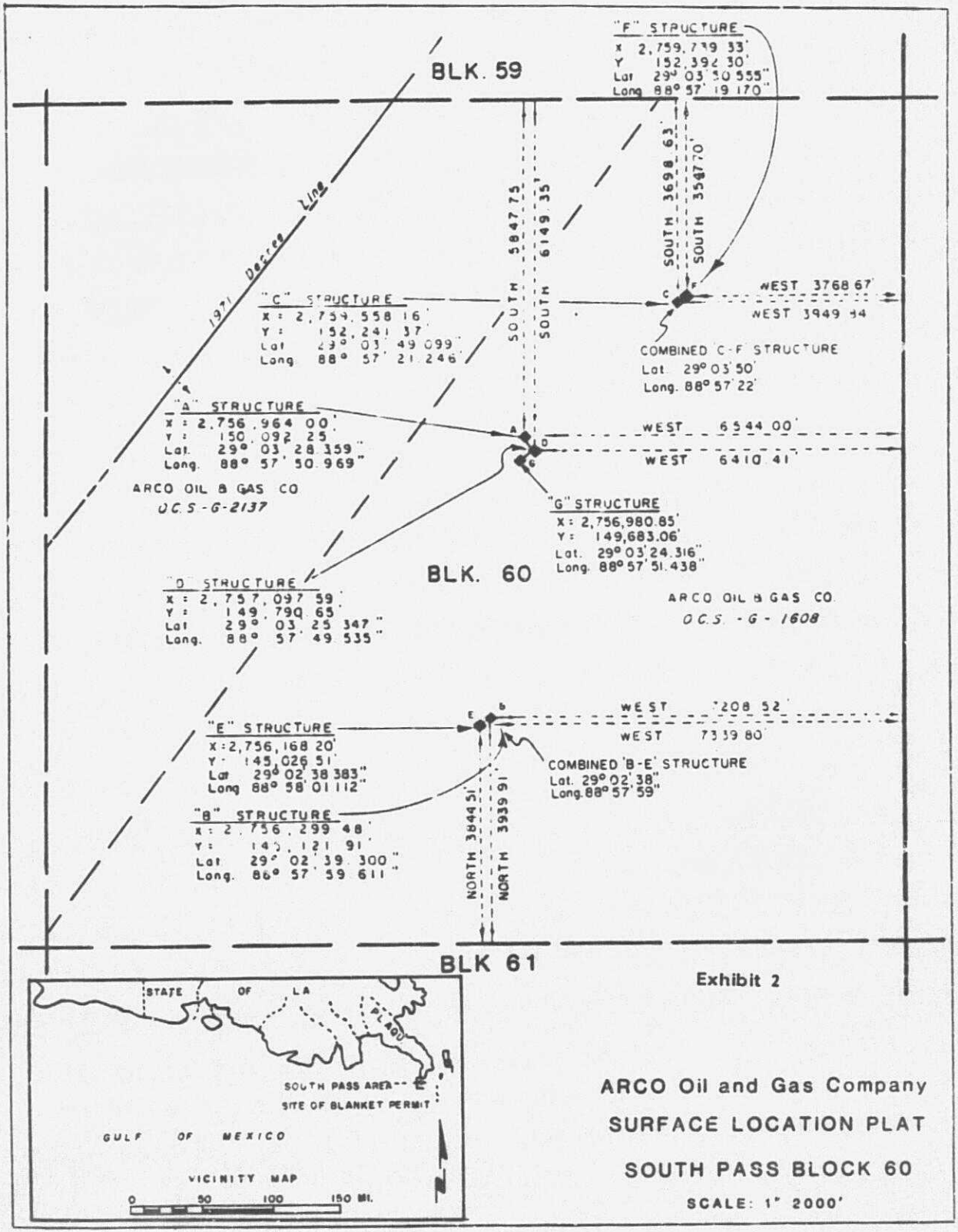


Exhibit 2

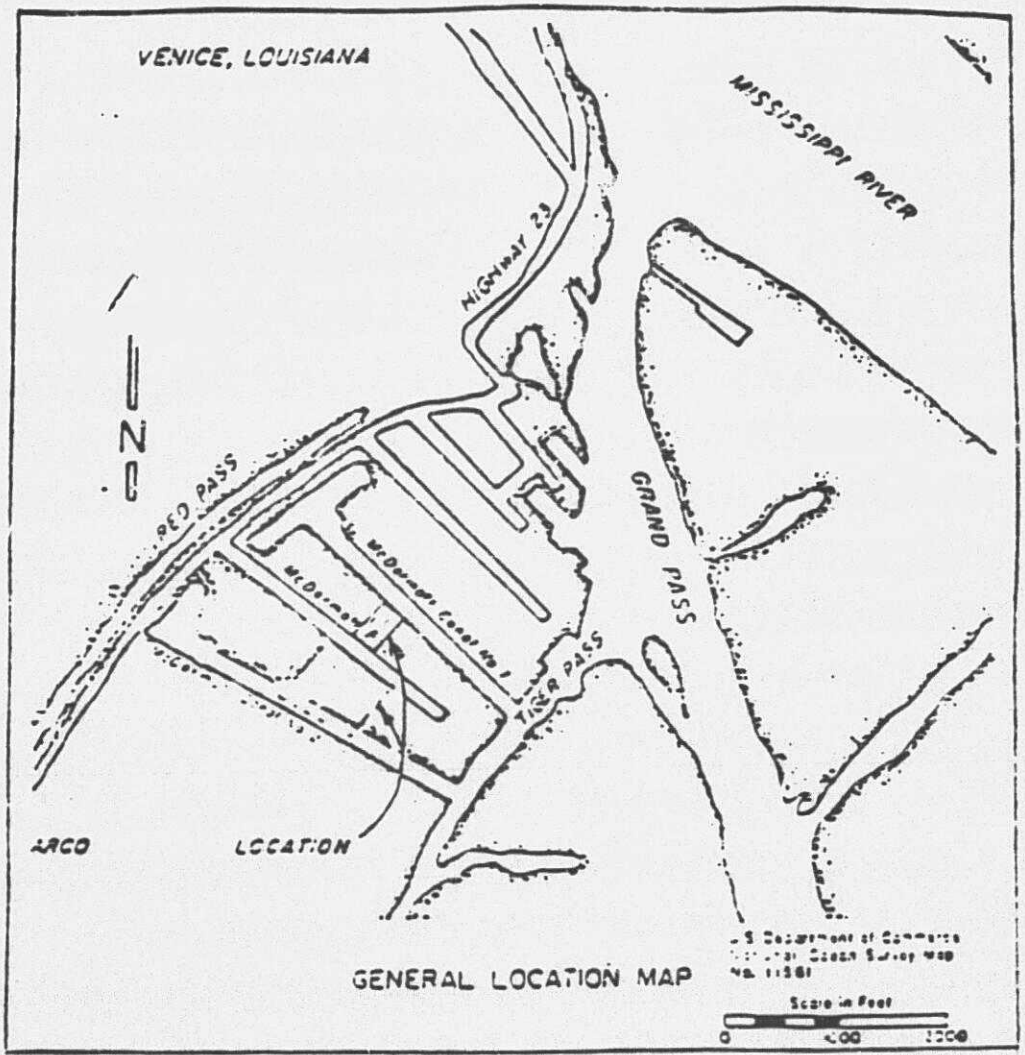
ARCO Oil and Gas Company

SURFACE LOCATION PLAT

SOUTH PASS BLOCK 60

SCALE: 1" 2000'

GENERAL LOCATION MAP
FOR VENICE SHORE BASE



ARCO OIL AND GAS COMPANY	ARCO OIL AND GAS COMPANY
	In McDERMOTT CANAL NO. 2 AT PLAQUEMINES PARISH State: LOUISIANA

Exhibit 3

EXHIBIT 4
"C" PLATFORM DRILLING SCHEDULE FOR REVISED AND SUPPLEMENTAL WELLS

WELL	TARGET RESERVOIR	ESTIMATED DEPTH (TVD)	ESTIMATED SPUD DATE
SUPPLEMENTAL WELLS			
OCS-G 1608 C-45	LLR FF	5300'	04/01/90
OCS-G [illegible]	KRJJ	5000'	05/01/90
OCS-G 1608 C-47	KRFF2	4250'	06/01/90
OCS-G 1608 C-48	KRFE1	4150'	07/01/90
REVISED WELLS			
OCS-G 1611 C-42	LLRKK	11[illegible]	11/01/89
OCS G 1608 C-43	KRCG	5200'	12/01/89
OCS G 1608 C-44	LLRJJ	7500'	01/01/90

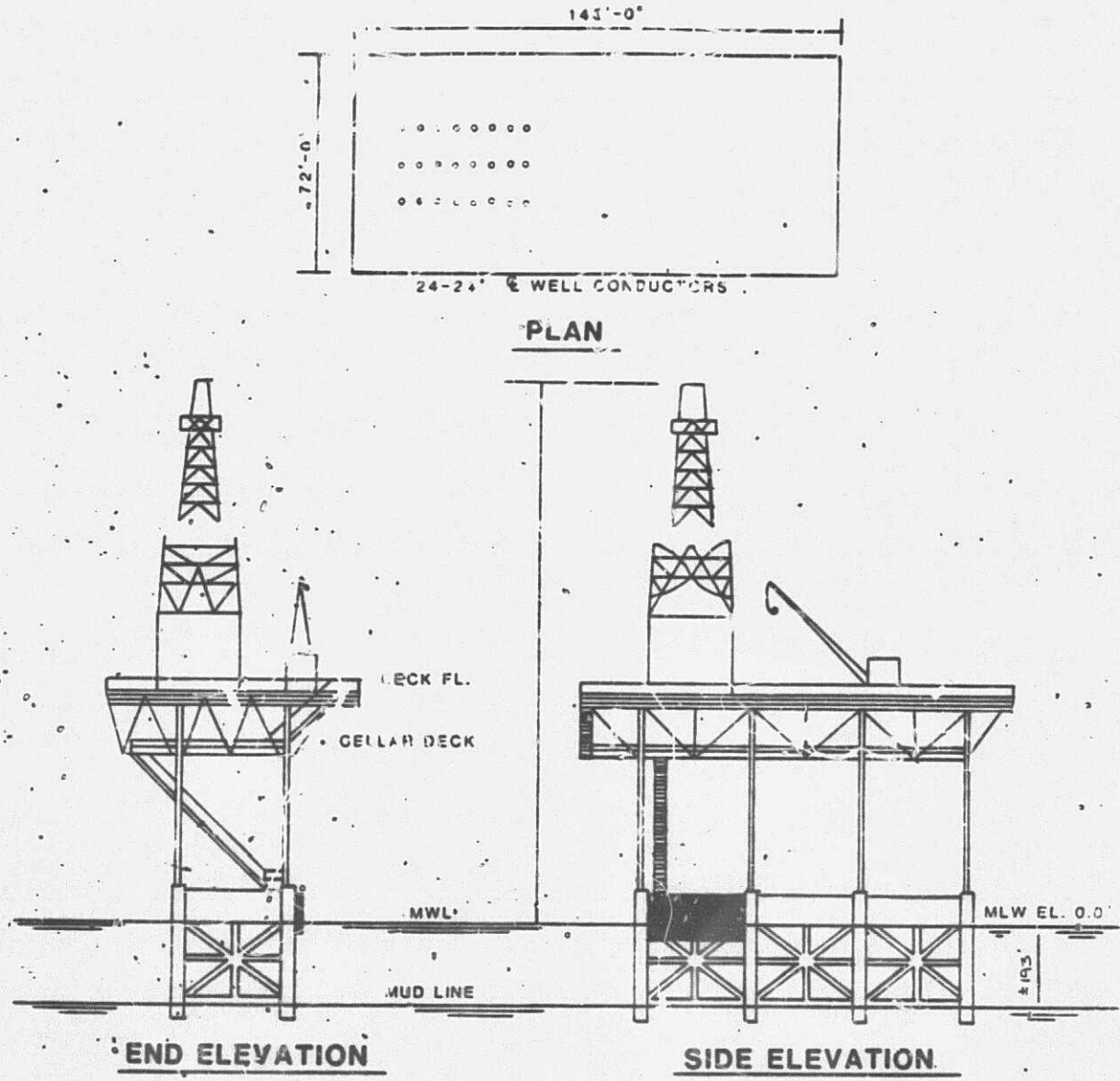
SURFACE LOCATIONS

C Platform — 3950' FEL, 3699' FNL, Blk. 60
Water Depth = ± [illegible]'

RIG

H&P - 101 All Wells

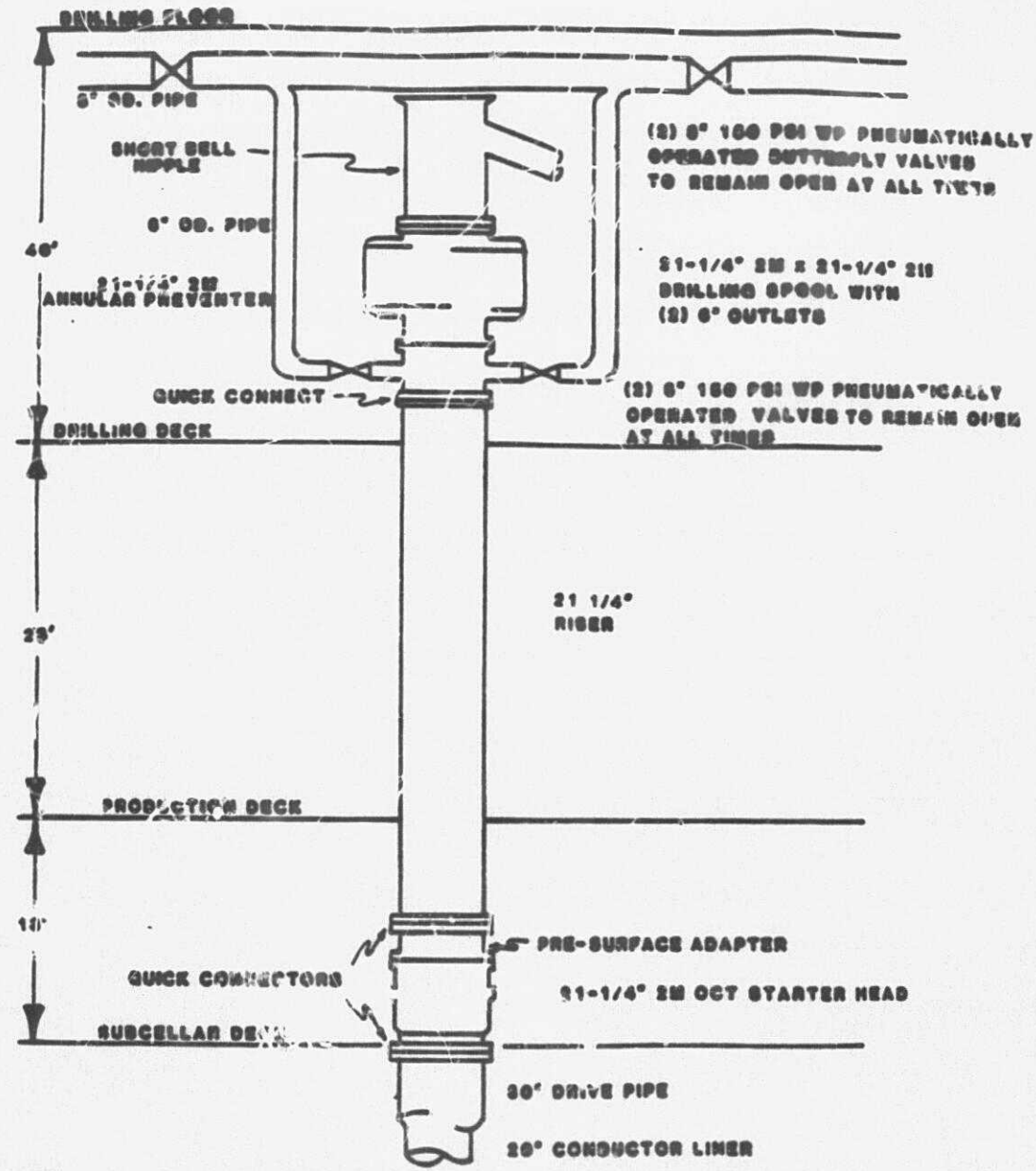
Exhibit 6



TYPICAL SELF-CONTAINED DRILLING PLATFORM

PROPOSED MINERAL DEVELOPMENT
SOUTH PASS AREA
GULF OF MEXICO
APPLICATION BY: ATLANTIC RICHFIELD CO.
LAFAYETTE,LA.

SOUTH PASS BLOCK 60 "C" PLATFORM
HELMERICH & PAYNE RIG 101
DIVERTER SYSTEM AFTER RUNNING 20" CONDUCTOR LINER



NOTE:

THIS DIVERTER SYSTEM WILL BE INSTALLED FROM THE TIME THE 20" CONDUCTOR LINER IS CEMENTED IN PLACE UNTIL THE SURFACE CASING IS LANDED. ALL DIVERTER VALVES WILL REMAIN OPEN AT ALL TIMES. LINES WILL BE FLUSHED OUT DAILY. AT THE FIRST

SP 80 "C" H&P RIG 101
BOP STACK ARRANGEMENT SCHEMATIC

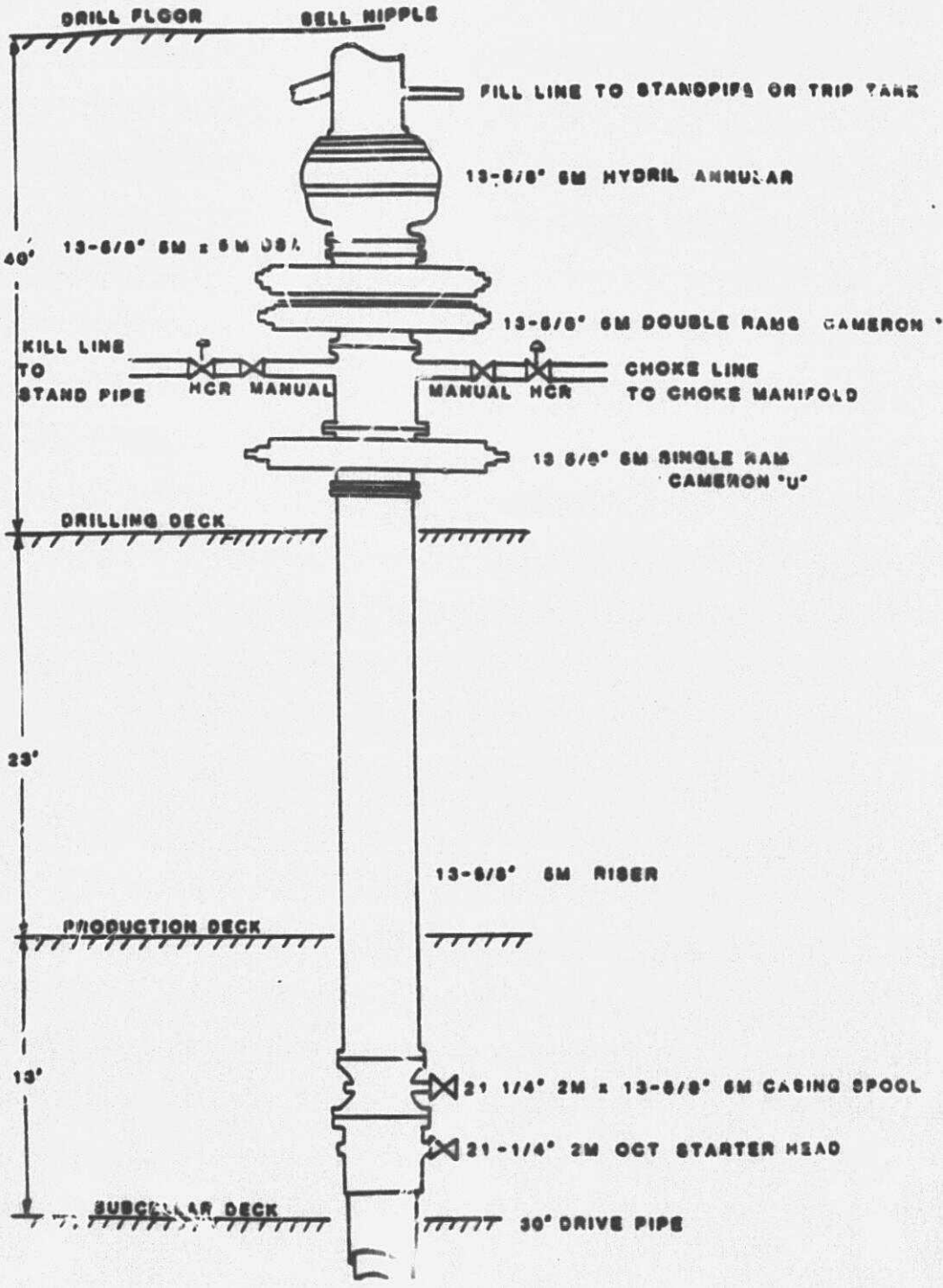


Exhibit 9

ARCO OIL AND GAS COMPANY
A Division of Atlantic Richfield Company

South Pass Block 60

Supplemental Development Operations Coordination Document

Platform 'C'

OCS-G 1511

Air Emissions Data Report

September 14, 1989

Exhibit 10

EPA AIR EMISSIONS DATA

A. Summary of Operations

ARCO Oil and Gas Company's leases in the South Pass Block 61 Field encompass (in part or in whole) Blocks 6, 17, 59, 61, 66, and 67. We currently operate six (6) platforms in Block 60 and one (1) platform in Block 67.

The development drilling on Platform 'C' will be located in Block 60 adjacent to existing 'F' platform, approximately 13 miles ENE of Port Eads, which will be used as the distance in the exemption formulas. This is 13 miles S 21° 09' 32" E from USC and GS Mon. "Calif. 'D'".

Development drilling and well maintenance work on Block 60 'C' platform will be conducted by the H&P 101 natural gas fueled drilling rig.

H&P 101 is a self-contained platform rig having equipment which consists of:

1. Four V-16 Caterpillar G-399 engines
   Natural gas fueled, 870 BHP each. Average of two are used 75% in drilling mode at 75% load, 25% non-drilling mode at 25% load. Assume 80% engine efficiency.

2. Crane - Unit Mariner 650-H
   GM 8V-92N diesel engine, 355 BHP. Used 30% of the time and operates at 50% load.

3. Cementing Unit
   a. Two GM 8V-71N diesel engine driven pumps, 333 rated BHP, average of 5% actual use at continuous rating.

   b. One GM 3-71N diesel cement mixer, 90 rated BHP, 67 continuous BHP, average of 5% actual use at continuous rating.

4. Wireline Unit
   Cummins 378-C-155 diesel engine, 90 BHP GIH - 5% of the time, 85 BHP POOH - 50% of the time, average 4 days/well (each 2 months). Total of 24 days/year.

5. Emergency Rig Generator
   Caterpillar D-379 V-8 diesel, 715 continuous BHP at 1300 RPM, used for emergency backup. Not figured into total emissions.

Block 60 'C' platform deck would have the following platform engines:

1. Two Solar Saturn 1000 BHP turbines to drive the generators (one continuous, one backup).

2. One electric driven fire pump used only in an emergency and is not figured in total emissions.

3. One Detroit Diesel 6-71N pump down pump rated at 200 BHP, with 142 continuous BHP and an average of 30% actual use.

Calculation of Emission Exemptions - Part 250.57.101

Exemption Formulas

1. 33.3 D for NO_x, SO_2, TSP, THC each

2. 3400 $D^{2/3}$ for CO
where D = distance from shore defined as landward of the mean high water mark.

Maximum Allowables

1. 33.3 x 13 = 435.5 tons/year each of NOx, SO2, TSP, THC each

2. 3400 x 13 2/3 = 18,797.8 tons/year of CO

B. EPA AP-42 Emission Factors

	Natural Gas Fueled Internal Combustion Engine (#/HP-HR)	Diesel Fueled Internal Combustion Engine (#/HP-HR)	Turbine Engine (#/HP-HR)
NOx	0.024	0.030837	0.0029
COx	0.0031	0.006674	0.0011
SO2	0.000004	0.0020507	0.000004
TSP	---	0.0022026	---
THC*	0.0097	0.002467	0.00020

* NOTE: Total hydrocarbons (THC) as methane and non-methane.

C: Calculation of Expected Air Emissions for South Pass Block 61 Field

Calculations have been performed assuming one year continuous operation of drilling rigs and platform engines on Block "C" platform. The expected incremental air emissions for this Supplemental Development in the South Pass Block 61 Field are equal to:

Total Incremental Expected Air Emissions (tons/year) for:

NOx, CO, SO2, TSP, THC =

1. South Pass Block 60 Drilling air emissions plus

2. South Pass Block 60 Platform "C" air emissions

(a) South Pass Block 60 Expected Air Emissions from drilling equipment (3) (4) (5)

ENGINE	AVERAGE POWER (HP/HR)	EMISSION TOTALS TONS/YEAR NOx	CO	SO2(1)	TSP	THC
Prime Movers (2)	1088.	114.4	14.8	--	--	46.2
Rig Emer. Generator	(715)	(96.61)	(20.91)	(6.41)	(6.91)	(7.71)
Cement Unit	16.5	2.22	.48	.15	.16	.18
Cement Mixer	3	.32	.10	.03	.03	.04
Crane (3)	53.3	7.20	1.56	.48	.51	.57
Wireline Unit (5)	42.5	.38	.08	.03	.03	.03
	TOTALS	124.52	17.02	.69	.73	47.02

(b) South Pass Block 60 Expected Air Emissions from production equipment Platform "C" (4) (6)

ENGINE	AVERAGE POWER (HP/HR)	EMISSION TOTALS TONS/YEAR NOx	CO	SO2(1)	TSP	THC
Plt. Generator (7)	1000	12.70	4.82	.02	--	.88
Pump Down Pump	43	5.81	1.26	.39	.41	.46
	TOTALS	18.51	6.08	.41	.41	1.34

(1) Analysis of natural gas indicates no sulfur content.

(2) Natural gas fueled engines - use natural gas emission factor in calculation.

(3) Diesel fueled.

(4) The general equation used to calculate the tabulated air emission values is provided on the final page of this section as well as an example of the use of the equation.

(5) Assumes total of 24 days/year.

(6) Assumes 365 days operation.

(7) Use turbine engine emission factor.

Total Expected and Allowable Air Emissions are provided below:

Air Pollutants	(a) + (b) = Expected Air Emissions Tons/Year	Allowables Tons/Year
NOx	143.03	435.5
CO	23.10	18,797.8
SO2	1.10	435.5
THC	1.14	435.5
TSP	48.36	435.5

Note that all expected air emissions are below allowable air emissions.

The general equation used for calculation of the tabulated expected air emissions in Tables A and B for a particular piece of equipment is given by:

(1) Expected Air Emissions (Tons/Year)

= [Continuous BHP of Equipment] x [% Actual Use]

x [Appropriate Air Emission Factor, lbs/HP-HR]

x [8760 Hours/Year] x [1/2000 lbs/ton]

The above equation reduces to:

(2) Expected Air Emissions (Tons/Year)

= [Average Power of Equipment] x [Appropriate Air Emission Factor]

x [4.38]

An example of the use of equation (2) is given below:

The expected yearly air emissions of NOx in tons/year for the platform generator on proposed "C" platform is:

Expected NOx Air Emissions = [1000 (HP/HR)] x [0.0029 (lbs NOx/HP-HR)] x 4.38

From Generator on "C" Platform - 12.70 tons/year of NOx air emissions

OIL SPILL CONTINGENCY PLAN

All operations shall be performed in accordance with industry standards to prevent pollution of the environment. ARCO Oil and Gas Company's Oil Spill Contingency Plan has been approved by MMS. This plan designates an "Oil Spill Response Team" consisting of ARCO and contract personnel. This team's duties are to eliminate the source of any spill, remove all sources of possible ignition, deploy the most reliable means of available transportation to monitor the movement of a slick, and contain and remove the slick if possible.

ARCO Oil and Gas Company is a member of Clean Gulf Associates (CGA). The CGA has four permanent bases in Louisiana at Venice, Grand Isle, Intracoastal City and Cameron; with each base equipped with a fast response skimmer. There is a barge mounted high volume open sea skimmer based at Grand Isle, Louisiana. In addition to providing equipment, the CGA also supplies advisors for clean-up operations. Equipment available from CGA and the base location is listed in the CGA Operation Manual, Volume I, Section III.

Estimated response time for a spill in South Pass 60 'C' platform could vary from 8-12 hours. Based on:

1.	Procure a boat and deploy to nearest CGA Base in Venice, Louisiana.	3.0 hrs.
2.	Load out fast Response Unit and oil spill containment equipment.	2.0 hrs.
3.	Travel time to lease site (30 miles @ 10 M.P.H.)	3.0 hrs.
		8.0 hrs.

Equipment located in Venice, Louisiana would be utilized first with additional equipment transported from the nearest equipment base as required.

In the event a spill occurs from South Pass 60 'C', ARCO Oil and Gas Company has projected trajectory of a spill utilizing information in the Environmental Impact Statement (EIS) for OCS Lease Sales 118 and 122.

The EIS contains oil spill trajectory simulations using seasonal surface currents coupled with wind data, adjusted every 3 hours for 30 days or until a target is contacted. Hypothetical spill trajectories were simulated for each of the potential launch sites across the entire Gulf. These simulations presume 500 spills occurring in each of the four seasons of the year. The results in the EIS were presented as probabilities that an oil spill beginning from a particular launch site would contract a certain land segment within 3, 10, or 30 days. Utilizing the summary of the trajectory analysis (for 10 days) as presented on pages IV 39 through IV 75, the probable projected land fall of an oil spill is as follows. Also listed is the CGA map number corresponding to the land segment which will be utilized to determine environmentally sensitive areas that may be affected by a spill.

AREA	LAND SEGMENT CONTACT	%	CGA MAP NUMBER
19	Plaquemines Parish, LA.	18%	No. 6 and 7
18	Jefferson Parish, LA.	3%	No. 7
17	LaFourche Parish, LA.	5%	No. 7
16	Terrebonne Parish, LA.	2%	No. 6

Section V, Volume II of the CGA Operation Manual containing maps as listed above, also includes equipment containment/cleanup protection response modes for the sensitive areas.

ARCO Oil and Gas Company has 1000' of addition 18" boom at its Venice Shorebase dedicated to the protection of the Pass a Loutre Wildlife Management area.

Section VI, Volume II, of the CGA Operation Manual depicts the protection response modes that are applicable for oil spill clean-up operations. Each response mode is schematically represented to show optimum deployment and operation of the equipment in areas of environmental concern. Implementation of the suggested procedures assures the most effective use of the equipment and will result in reduced adverse impact of oil spills on the environment. Supervisory personnel have the option to modify the deployment and operation of equipment to more effectively respond to site-specific circumstances.