S-21-1608, 2738
S-2262

In Reply Refer To: FO-2-1 May 17, 1989

ARCO Oil and Gas Company
Attention: Mr. M. Nelson Robertson
Post Office Box 51408
Lafayette, Louisiana 70505

Gentlemen:

Reference is made to your Supplemental Development Operations Coordination Document (DOCD) and accompanying information received April 28, 1989, amended May 8, 1989, for Leases OCS-G 1608 and 2938, Blocks 60 and 17, respectively, South Pass Area. This DOCD includes the activities proposed for Wells G-36 through G-40.

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-2262 and should be referenced in your communication and correspondence concerning this DOCD.

Sincerely yours,

(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 2938 (OPS-3-2) (FILE ROOM)
OPS-3-4 w/Public info. Copy of the DOCD
and accomp. info. (PUBLIC RECORDS)

MJTolbert:cck:05/16/89:docdcom-bkp.

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

M. Nelson Robertson
Offshore District Engineer

May 5, 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

Re: Supplemental Development Operations Coordination Document
OCS-G 1608 South Pass Block 60
OCS-G 2137 South Pass Block 60
OCS-G 2938 South Pass Block 17
OCS-G 2942 South Pass Block 59
OCS-G 2943 South Pass Block 59

Hereby submitted is the additional information requested for the supplemental Development Operations Coordination Document (DOCD) for the referenced leases. Listed below is additional information pertaining to the oil spill contingency plans, drilling fluid discharge, and H_2S classification of the subject area.

Oil Spill Contingency

ARCO Oil and Gas Company will utilize the Clean Gulf Associates Venice Base as the primary response base for the South Pass area.

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 8000' well the cuttings discharge volume is estimated at 1150 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 8000' deep and is drilled at a rate of 50'/hour, drilling operations (160 hours) would discharge approximately 800 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 8000' completed well the completion fluid discharge is estimated at ±1350 bbls (350 bbls casing displacement and ±1000 bbls active mud system discharge).

In summary, for an average 8000' completed well the total discharge of mud and cuttings is estimated at ±3300 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.

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 J sand completion of the OCS-G 1608 A-12 well, the K sand completion of the OCS-G 1608 A-17D well, the Middle M sand completion of the OCS-G 2938 A-28A well and the Upper M sand completion of the OCS-G 2938 D-10 well. No H_2S concentration was reported in these wells.

If further data or clarification is required for the supplemental DOCD request, please call Woodrow Coleman at (318) 264-4331.

Sincerely,

ARCO OIL AND GAS COMPANY

M. N. Robertson
cab/8/34

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

M. Nelson Robertson
Offshore District Engineer

April 26, 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

Re: Supplemental Development Operations
Coordination Document
OCS-G 1608 South Pass Block 60
OCS-G 2137 South Pass Block 60
OCS-G 2938 South Pass Block 17
OCS-G 2942 South Pass Block 59
OCS-G 2943 South Pass Block 59

Hereby submitted for your approval is a supplemental Development Operations Coordination Document (DOCD) for leases OCS-G 1608, 2137, 2938, 2942, and 2943, South Pass Block 61 Field, to increase the number of MMS approved wells to be drilled from platform "G", South Pass Block 60. Revised well targets and locations for already approved wells are also included. 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 December 17, 1987 and referenced as FO-2-1, approved drilling activity for wells G-26 through G-35. As of April 25, 1989 all of these wells have been drilled. In addition, the G-30 well will be sidetracked. Revised locations for these wells are shown on Exhibit No. 5.

Description

ARCO Oil and Gas Company, as operator of the South Pass Block 61 Field, proposes to drill a total of five additional wells beyond G-35 on leases OCS-G 1608, 2137, 2938, 2942, 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 6. The bottom hole locations in Exhibit 6 are only estimates which 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 4). Each additional well will be drilled from "G" platform. The surface location of "G" platform is shown on Exhibit 2.

Schedule

Helmerich and Payne (H&P) Rig 101 is currently drilling the platform "G" wells approved under the current supplemental DOCD (FC-2-1). This activity is scheduled to last through April 1989 when drilling is expected to begin on wells G-36 through 40. The entire "G" platform drilling program is scheduled for completion in August 1989. Exhibit 6 includes a projected drilling schedule. The estimated life of the reserves to be developed by these wells in 10 years.

Location of Lease Block, Platform and Onshore Facilities

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 "G" 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.

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 platforms "A", "D" and "G". There are no mudslide deposits at these platform sites. South Pass Block 61 Field is not a known archaeological or historical area. Water depth at the location of "G" platform is ±187'.

Five of the eight copies of this Supplemental DOCD include geological structure maps of J, Upper M, Middle M, and Lower L sands. 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 five

additional wells submitted for approval. H&P 101 is a self contained, modular platform rig (see Exhibit 7). 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 8 and 9). All wells will have surface controlled surface and subsurface safety valves installed.

An air emissions report for H&P 101 is attached as Exhibit 10 (six 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.

H_2S Classification

Produced crude oil and associated gas is anticipated to have no H_2S. This statement is made after having referenced fluid and gas analyses from similar producing reservoirs.

Discharge of Mud/Cuttings

Drilling of the additional wells in South Pass Block 61 Field will result in the discharge of drill mud and cuttings into the water of the Gulf as allowed under the Environmental Protection Agency'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).

Please sign and return one copy of the Shipment of Confidential Information form to us for our records. If further data or clarification is required, please call Woodrow Coleman at (318) 264-4331.

Sincerely,

ARCO OIL AND GAS COMPANY

Nelson Robertson

M. N. Robertson
cab/5/34

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 5, 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

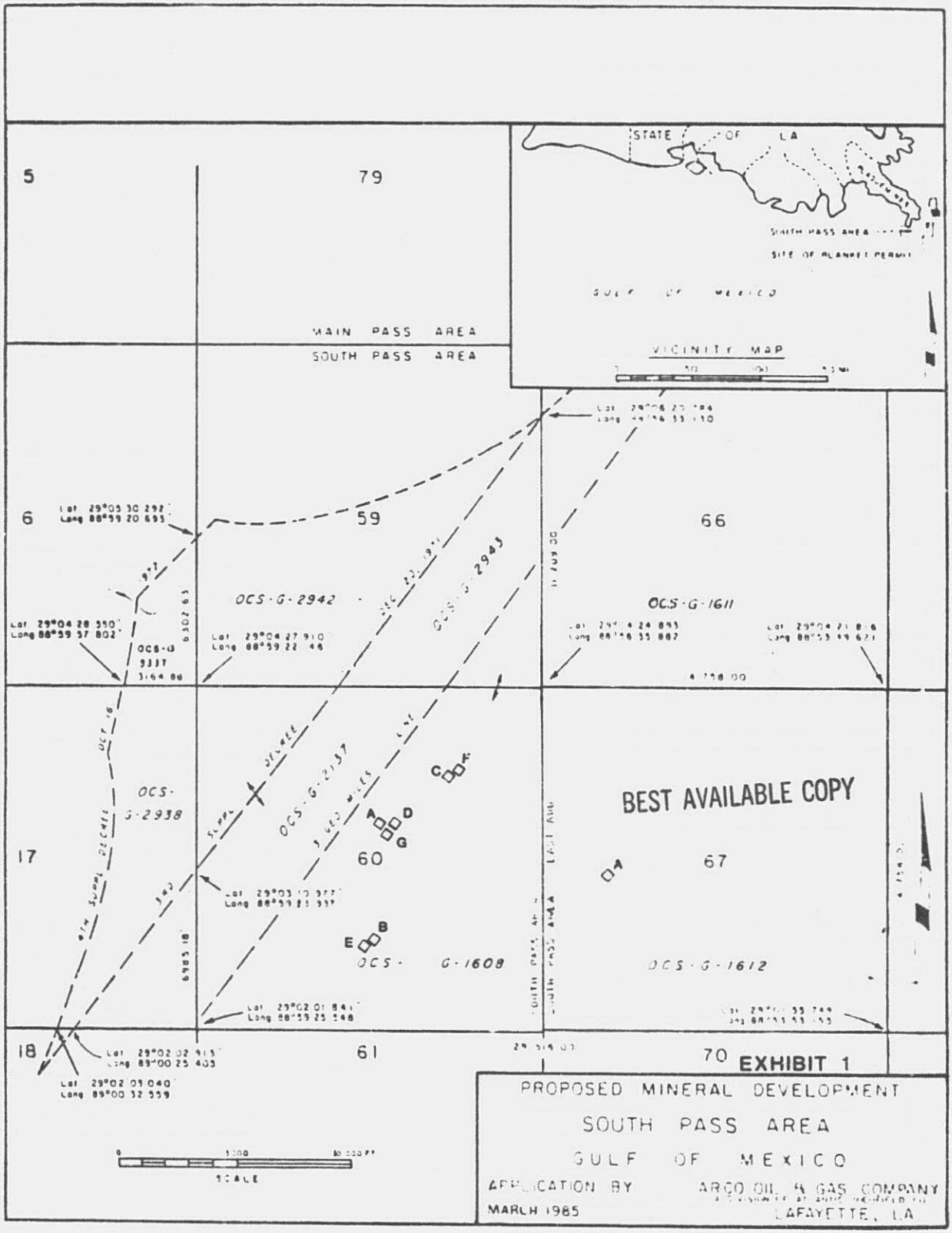
__X__ Description of proposed platform(s) and/or well protector(s) including schematic(s)

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


5
79
MAIN PASS AREA
SOUTH PASS AREA
STATE OF LA
SOUTH PASS AREA
SITE OF BLANKET PERMIT
GULF OF MEXICO
VICINITY MAP
6
59
66
OCS-G-2942
OCS-G-2943
OCS-G-1611
17
60
67
OCS-G-2938
OCS-G-2137
OCS-G-1608
OCS-G-1612
18
61
70
BEST AVAILABLE COPY
EXHIBIT 1
PROPOSED MINERAL DEVELOPMENT
SOUTH PASS AREA
GULF OF MEXICO
APPLICATION BY ARCO OIL & GAS COMPANY
MARCH 1985
LAFAYETTE, LA

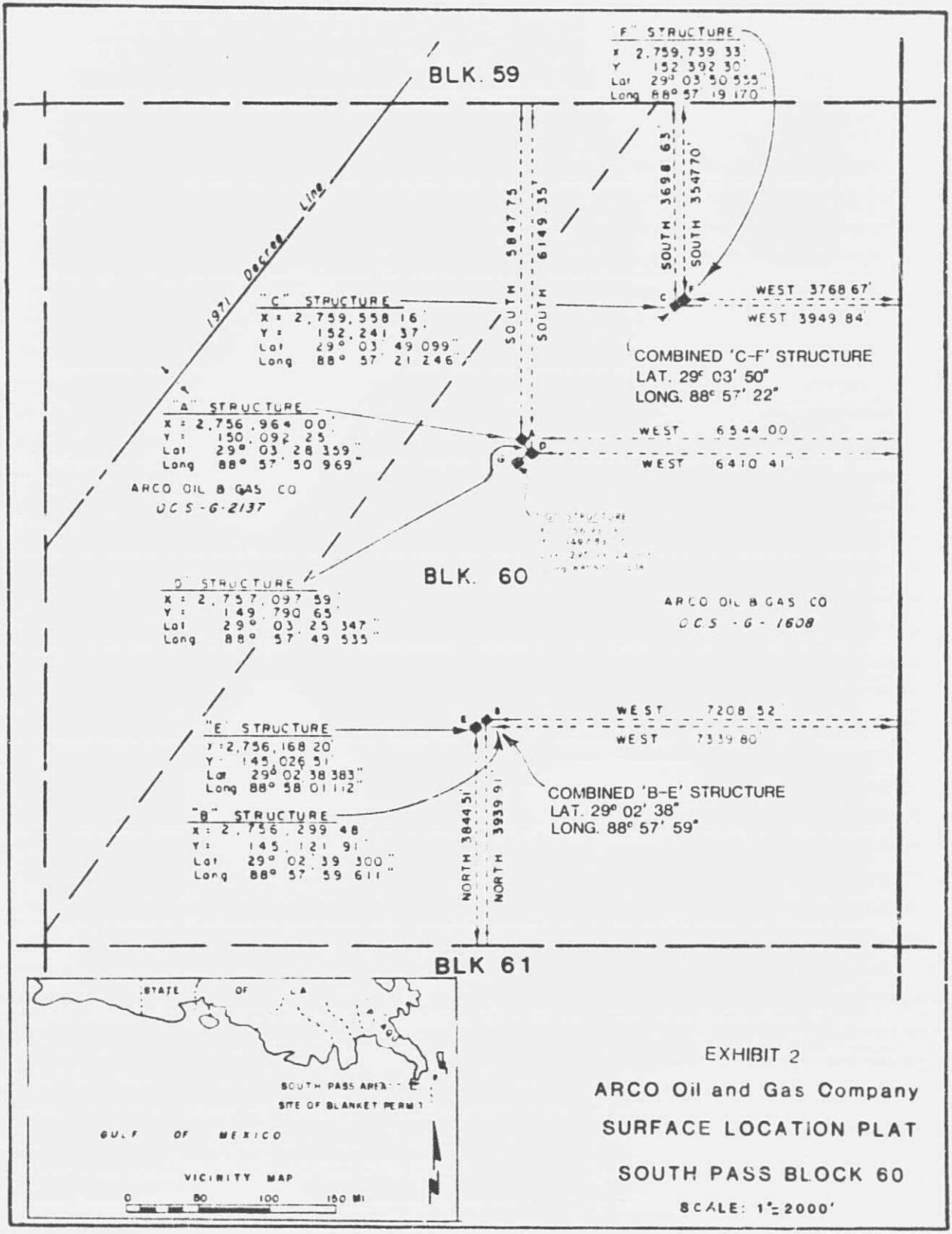


EXHIBIT 2

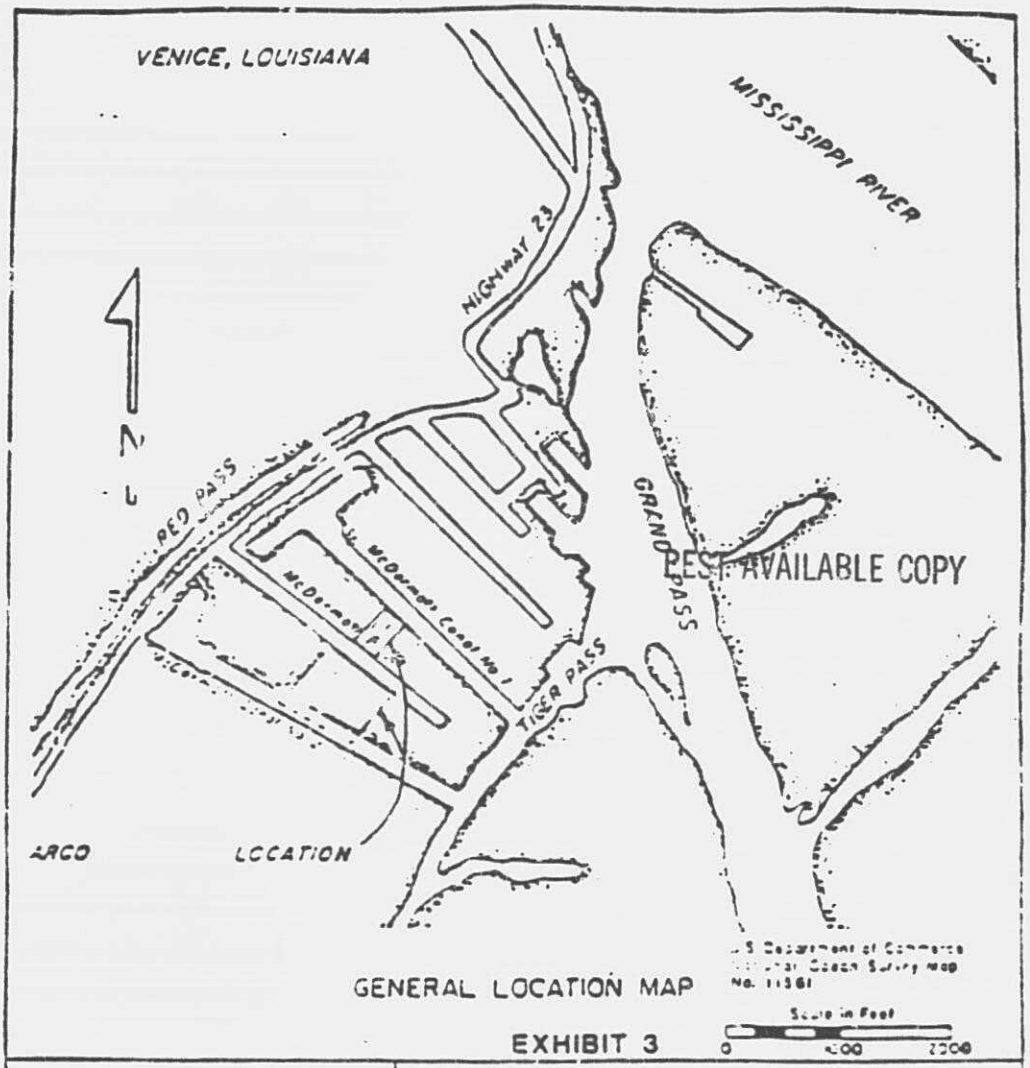
ARCO Oil and Gas Company

SURFACE LOCATION PLAT

SOUTH PASS BLOCK 60

SCALE: 1"=2000'

GENERAL LOCATION MAP FOR VENICE SHORE BASE



GENERAL LOCATION MAP

EXHIBIT 3

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


POSITION APPROXIMATE
OCS-G-
17
ARCo
LA
79
962.06 Ac
G-33
X-2,748,438'
Y-151,690'
TVD 9,100'
G-39
X-2,746,125'
Y-150,440'
TVD 9,165'
G-37
X-2,747,600'
Y-149,320'
TVD 9,600'
G-38
X-2,754,99
Y-149,65
TVD 4,8
G-39ST#2
X-2,756,848'
Y-150,996'
TVD 5,715
G-40
X-2,757,260'
Y-150,380'
TVD 4,600'
BEST AVAILABLE COPY
Exhibit 4
DEVELOPMENT PLAN PLAT
RCO Oil and Gas Company
Southeastern District
AREA EASTERN OFFSHORE
LOCATION SOUTH PASS BLOCK 61 FIELD
HORIZON
SCALE
TENTATIVE BOTTOM HOLE LOCATIONS
OF "G" PLATFORM WELLS

EXHIBIT 5
DRILLING SCHEDULE
SOUTH PASS BLOCK 60 PLATFORM G
REVISED PLAN*

Well	Lease	Target Reservoir	Bot Hol cation (Lambert Coordinates) X	Y	Total Depth (TVD)	Actual Spud Date
G-1	OCS-G 2943	Lower L [illegible]2	2,7[illegible]9,074	156,572	6,041'	8/06/85
G-2	OCS-G 2943	Upper M RAB	2,757,617	157,280	7,208'	9/28/85
G-3	OCS-G 2137	Upper RAA02,3	2,751,006	155,503	9,403'	11/12/85
G-4	OCS-G 2137	Middle M RAA02,3	2,749,924	153,880	9,844'	12/18/85
G-5	OCS-G 2943	Middle M RED	2,757,584	156,981	7,[illegible]	3/[illegible]2/86
G-6	OCS-G 2137	Middle M RAA02,3	2,75[illegible],208	154,8[illegible]7	9,633'	1/[illegible]4/86
G-[illegible]	OCS-G 1608	Lower L RF	2,756,752	149,562	4,623'	(G-7) 6/27/86
G-8	OCS-G 2137	Middle M RAA02,3	2,749,216	152,8[illegible]	9,422'	5/01/86
G-9	OCS-G 1608	M RA-1	[illegible],756,427	150,495	5,839'	7/27/86
G-10	OCS-G 2137	Lower L RH[illegible]	[illegible],754,587	152,295	7,543'	11/02/86
G-11	OCS-G 2137	Lower L [illegible]'	2,75[illegible],153	150,521	7,312'	8/14/86
G-12	OCS-G 2943	Middle M RBB	2,755,529	.985	6,670'	10/04/86
G-13	OCS-G 2137	J RB	755,390	150,700	6,[illegible]0'	03/09/87
G-14ST#1	OCS-G 2137	Middle [illegible]	2,754,588	153,369	7,300'	02/13/88
G-15ST#1	OCS-G 2137	Middle [illegible]	2,753,051	152,206	7,67[illegible]'	01/02/87

* G-1 through G-35 are actual values.

[illegible] Platform X = 2,756,931
Y = 149,683

[illegible] 02/16

EXHIBIT 5
DRILLING SCHEDULE
SOUTH PASS BLOCK 60 PLATFORM G
REVISED PLAN*

Well	Lease	Target Reservoir	Bottom Hole Location (Lambert Coordinates) X	Y	Total Depth (TVD)	Actual Spud Date
G-16	OCS-G 1608	Lower L A RT	2,751,995	144,350	9,220'	07/02/87
G-17ST#1	OCS-G 1608	Upper M [illegible]	2,756,970	150,016	4,984'	12/02/87
G-18	OCS-G 2943	Middle M RB3	2,756,684	156,952	7,100'	04/15/87
G-19ST#1	OCS-G 1608	Lower K2 RU	2,751,752	144,769	9,422'	06/03/87
G-20	OCS-G 2943	Middle M RBB	2,755,572	156,804	7,094'	08/19/87
G-21	OCS-G 2938	Lower M RAA5	2,748,708	151,655	9,544'	09/15/87
G-22	OCS-G 2137	Upper K RJ4	2,754,936	150,962	6,755'	12/17/87
G-23	OCS-G 1608	Upper G RK1	2,755,227	147,221	5,900'	01/15/88
G-24	OCS-G 1608	M RA	2,757,662	150,687	5,2[illegible]'	04/02/88
G-25	OCS-G 1608	Lower L RF3	2,755,827	148,489	5,11[illegible]'	03/11/88

*G-1 through G-35 are actual values.

G Platform X = 2,756,931
Y = 149,683

jlg/92/16

EXHIBIT C
DRILLING SCHEDULE
SOUTH PASS BLOCK 60 PLATFORM G
REVISED PLAN

Well	Lease	Target Reservoir	Bottom Hole Location (Lambert Coordinates) X	Y	Total Depth (TVD)	Actual Spud Date
G-26	OCS-G 1608	Lower K2 RA2	2,751,890	145,309	8,594'	05/28/88
G-27	OCS-G 1608	Upper K RL	2,755,126	147,007	8,583'	05/04/88
G-28	OCS-G 1608	Upper M RF	2,756,244	149,394	5,602'	07/24/88
G-29ST#1	OCS-G 2137	Lower K Stray RA2	2,751,953	149,822	7,537'	08/21/88
G-30ST#2	OCS-G 1608	Lower L RA1	2,756,845	150,996	5,715'	05/01/89
G-31	OCS-G 2942	Lower M RB2 AA2	2,749,765	156,722	10,131'	10/23/88
G-32ST#1	OCS-G 1608	Upper L RF	2,756,913	149,488	4,293'	01/01/89
G-33	OCS-G 1608	Lower M RF	2,755,811	149,675	6,605'	10/03/88
G-34	OCS-G 2942	Upper M RA3	2,751,927	156,629	9,354'	02/12/89
G-35	OCS-G 2137	Middle M RAA2	2,751,638	154,978	9,792'	03/19/89

* G-1 through G-35 are actual values.
** G-30 approved in Supplemental DOCD dated December 1987.

G Platform X = 2,756,931
Y = 149,683

jlg/92/16

EXHIBIT 6
DRILLING SCHEDULE
SOUTH PASS BLOCK 60 PLATFORM G
SUPPLEMENTAL PLAN

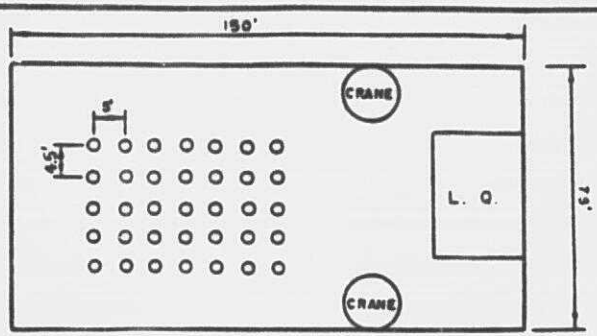
Well	Lease	Target Reservoir	Bottom Hole Location (Lambert Coordinates) X	Y	Total Depth (TVD)	Estimated Spud Date
G-37	OCS-G 1608	J RC	2,754,999	149,353	4,815'	5/10/89
G-3	OCS-G 2938	Middle M RAA6	2,747,300	14 ,320	9,600'	6/05/89
G-38	OCS-G 2938	Upper M RAA5	2,748,438	150,690	9,100'	6/30/89
G-39	OCS-G 2938	Upper M RAA4	2,748,125	150,440	9,165'	7/20/89
G-40	OCS-G 1608	Lower L RF2	2,757,250	150,330	4,600'	8/15/89

* G-1 through G-35 are actual values.

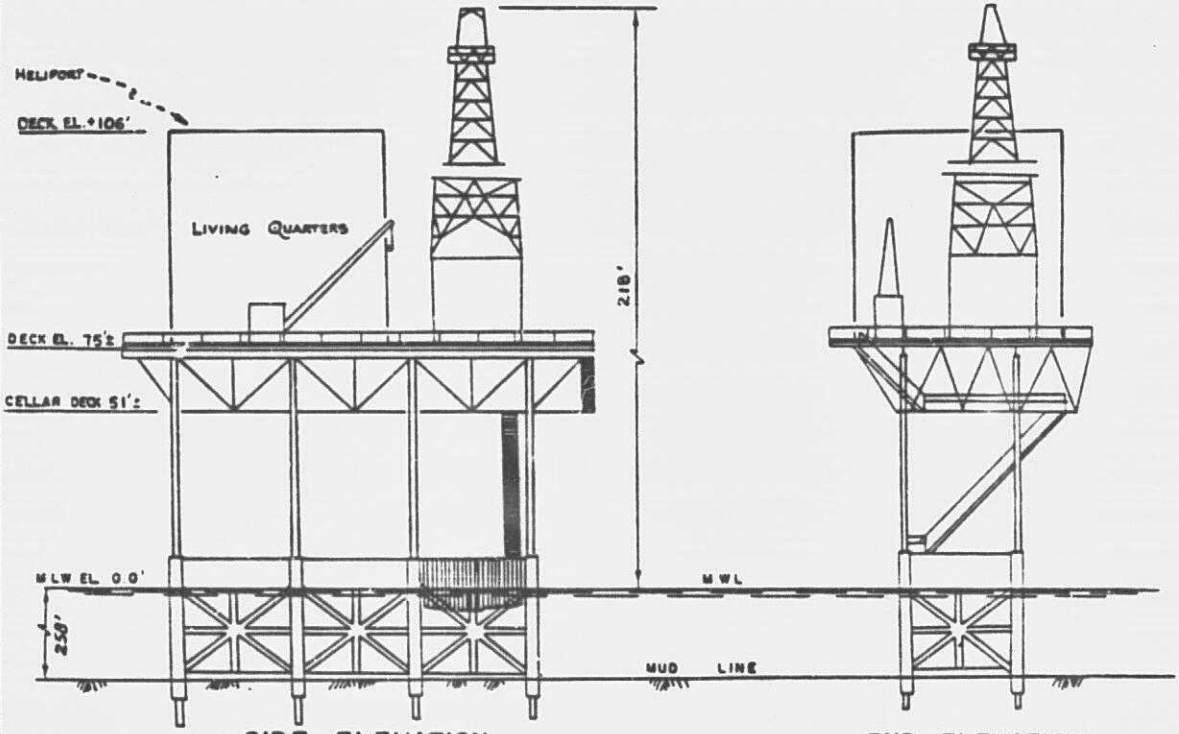
G Platform x = 2,756,931
y = 149,683

jlg/92/16

EXHIBIT 7



PLAN



SIDE ELEVATION

END ELEVATION

TYPICAL SELF CONTAINED DRILLING PLATFORM

" . " STRUCTURE

0 20 40 80 FT.

SCALE

BLOCK 60'

SOUTH PASS AREA

GULF OF MEXICO

APPLICATION BY ARCO OIL & GAS CO A DIVISION OF ATLANTIC RICHFIELD CO.

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

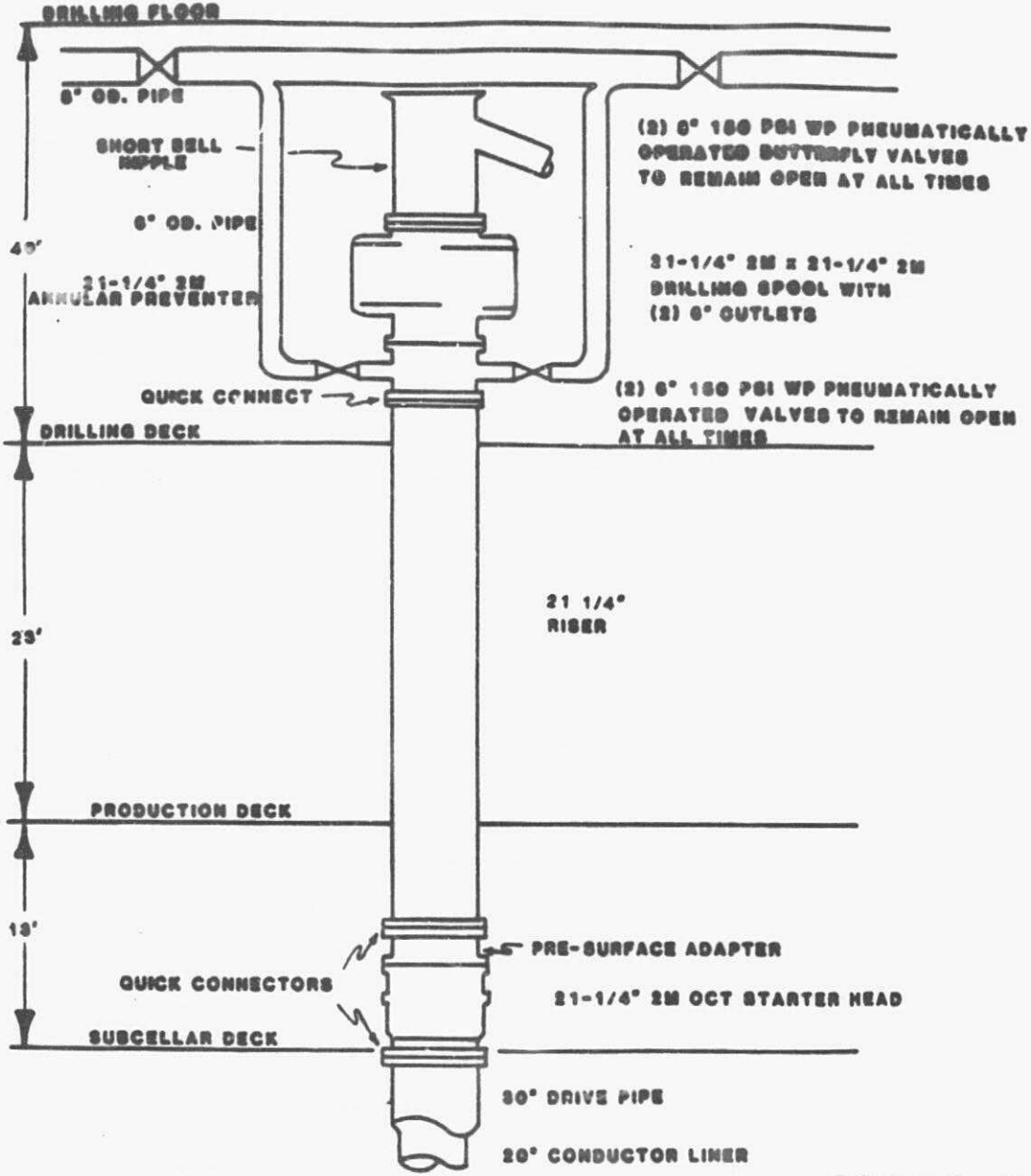


Exhibit No. 8

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 SIGN OF A KICK, THE DRILLER WILL CLOSE THE ANNULAR PREVENTER AND WELL FLUIDS

SP 60-G H&P RIG 101

BOP STACK ARRANGEMENT SCHEMATIC

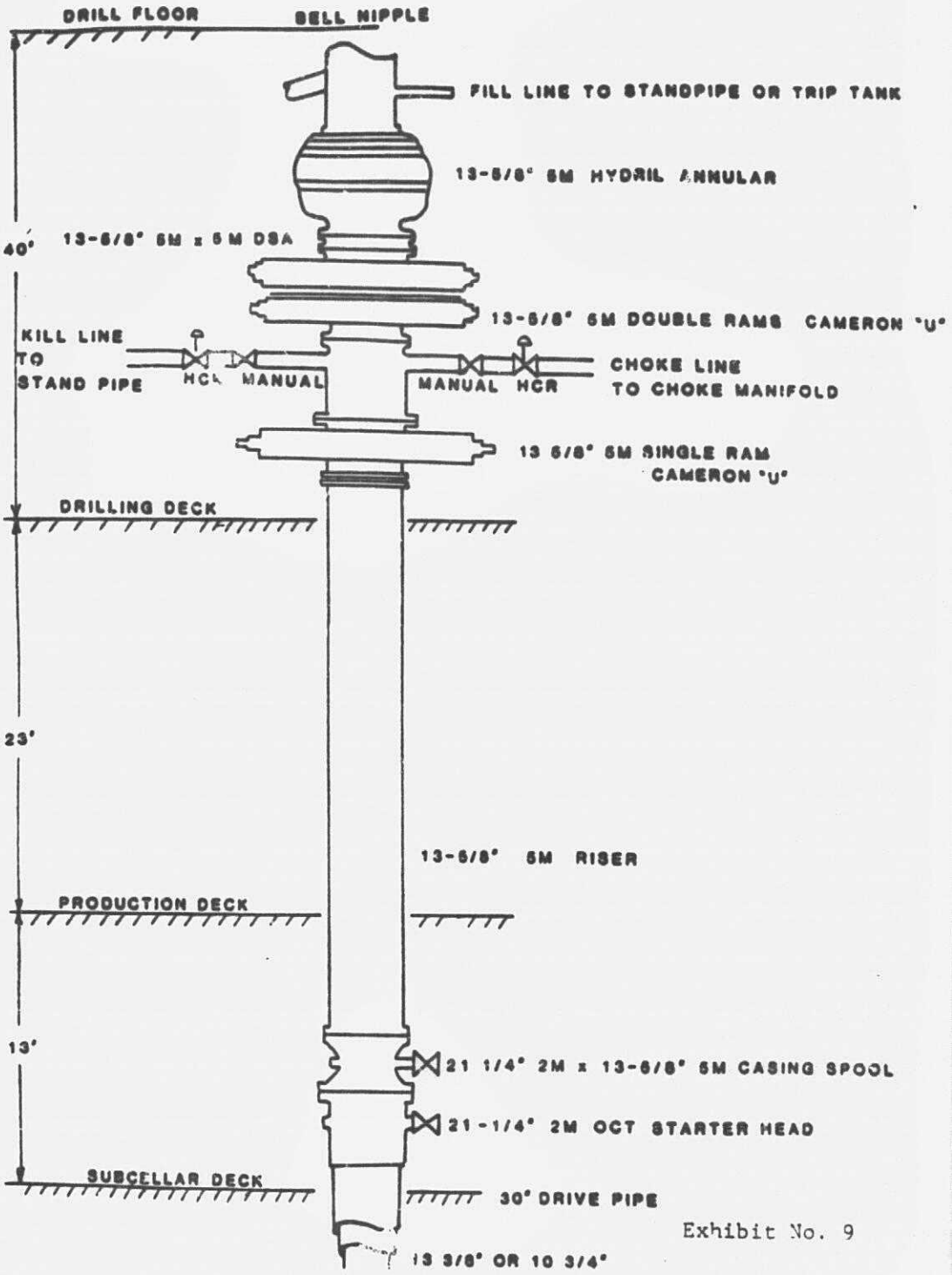


Exhibit No. 9

Exhibit 10

ARCO OIL AND GAS COMPANY
A Division of Atlantic Richfield Company

South Pass Block 60

Supplemental Development Operations Coordination Document

Platform "G"

OCS-G 1608

Air Emissions Data Report

April 26, 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 "G" will be located in Block 60 adjacent to existing "A" and "D" platforms, 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 "G" 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 "G" 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 12V-71 Detroit Diesel - fire pump rated at 504 BHP, 335 continuous BHP. Used only in an emergency and is not figured in total emissions.

3. One Detroit Diesel 6-71 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 NO_x, SO_2, TSP, THC

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)
NO_x	0.024	0.030837	0.0029
CO	0.0031	0.006674	0.0011
SO_2	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 60 "G" 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:

NO_x, CO, SO_2, TSP, THC =

1. South Pass Block 60 Drilling air emissions plus

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

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

Engine	Average Power (HP/HR)	NO_x	Emission Totals tons/year CO	SO_2(1)	TSP	THC
Prime Movers (2)	1088.	114.4	14.8	--	--	46.2
Rig Emergency Generator	(715)	(96.61)	(20.[illegible])	(6.41)	(6.9[illegible])	(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 "G" (4) (6)

Engine	Average Power (HP/HR)	NO_x	Emission Totals tons/year CO	SO_2 (1)	TSP	THC
Platform Generator (7)	1000	12.70	4.82	-	-	.88
Fire Pump (8)	(335)	(46.25)	(9.79)	(3.01)	(3.23)	(3.62)
Pump Down Pump	43	5.81	1.26	.39	.41	.46
	TOTALS	18.51	6.08	.39	.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.

(8) These engines essentially never used, so not included in totals.

Total Expected and Allowable Air Emissions are provided below.

Air Pollutants	(a) + (b) = Expected Air Emissions Tons/Year	Allowables Tons/Year
NO_x	143.03	435.5
CO	23.10	18,797.8
SO_2	1.08	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 1 and 2 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 NO_x in tons/year for the platform generator on proposed "C" platform is:

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

From Generator on "G" Platform - 12.70 tons/year of NO_x air emissions

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