

In Reply Refer To: RP-2-1 ✓

JUL 9 1985

ARCO Oil and Gas Company  
Attention: Mr. M. Nelson Robertson  
Post Office Box 51408  
Lafayette, Louisiana 70506

Gentlemen:

Reference is made to your Supplemental Development Operations Coordination Document (DOCD) received July 1, 1985, for Leases OCS-G 1608 and 2943, Blocks 60 and 59, South Pass Area. This DOCD includes the activities proposed for nine wells.

In accordance with 30 CFR 250.34, revised December 13, 1979, and Notice to Lessees and Operators No. 84-1, this DOCD has been determined to be complete as of July 8, 1985, and is now being considered for approval.

Your control number is S-1665 and should be referenced in your communication and correspondence concerning this DOCD.

Sincerely yours,

*Joe* (Orig. Sgd.) A. Donald Giroir

D. W. Solanas  
Regional Supervisor  
Rules and Production

*EB*

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 (PUBLIC RECORDS ROOM)  
DO-5

ADGobert:gtj:7/5/85:Disk 3a

Oilfield  
Engineering Services

BEST AVAILABLE COPY  
MICROFILMED

**ARCO Oil and Gas Company**

South Louisiana District  
Post Office Box 91408 On Center Station  
Lafayette, Louisiana 70503  
Telephone 337 284 4000



M. Nelson Robertson  
Offshore District Engineer

MINERALS MANAGEMENT SERVICE

June 26, 1985

JUL 01 1985

Mr. D. W. Solanas  
Deputy Minerals Manager  
Minerals Management Service  
Post Office Box 7944  
Metairie, LA 70010-7944

RULES AND PRODUCTION

Reference: Supplemental Development Operations  
Coordination Document  
OCS-G 1608 South Pass Block 60  
OCS-G 2943 South Pass Block 59  
South Pass Block 61 Field

Dear Mr. Solanas:

The Supplemental Development Operations Coordination Document (DOCD) for the OCS-G 1608 and OCS-G 2943 leases requires both revision and supplement. In accordance with your letter OS-7-1, eight (8) copies (five (5) proprietary) of this DOCD are hereby submitted in compliance with applicable provisions of 30 CFR 250.34. A DOCD checklist is included in front of the exhibits for reference.

**REVISED PLANS**

Arco Oil and Gas Company has developed South Pass Block 61 Field thus far from Platforms 'A', 'B', 'C', 'D', and 'E', in Block 60 and Platform 'A' in Block 67. The supplemental DOCD dated March 15, 1985, details additional plans for development from Platform 'G'. The attached supplemental DOCD is required in order to revise and supplement the development plan from Platforms 'C' and 'E'.

There are currently two approved wells that remain to be drilled from 'E' Platform. These wells, the E-30 and E-31, were approved in our supplemental DOCD dated May 24, 1983 for South Pass Block 61 Field. Both of these wells require revision since they will be drilled to new locations. We now plan to drill 7 more wells from 'E' Platform including these revisions.

'C' Platform requires supplement since no additional drilling wells are currently approved. We plan to drill 4 more wells from 'C'.

The location plats for the leases and platforms, drilling schedule, and spider map for the above revisions are included in Exhibits 1, 2, 3, and 4. These exhibits also include the information for the supplemental development plans described in the next section of this write up.

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## SUPPLEMENTAL PLANS

Eleven additional wells are proposed for OCS-G leases 1608 and 2943 from our existing South Pass Block 60 Platforms 'C' and 'E'. Exhibits 1 and 2 are the location maps for these leases and platforms. Seven wells will be drilled from Platform 'E', and four wells from Platform 'C'. The wells will be put on production as they are drilled and completed. No new facilities, pipelines or platforms will be required. Coordinates for the surface and bottom hole locations, true vertical depths, and a projected drilling schedule for these wells are given in Exhibit 3. This information is only an estimate, which may be revised in the future in an effort to optimize development. The approximate bottom hole locations for the wells are plotted on the spider map of the South Pass Block 61 Field (See spider map). The total time for this proposed work is estimated to be two years. The life of the reserves to be developed by these wells is estimated to be 5 years.

The H&P 101 drilling rig currently on 'E' Platform, will be used to complete that work as well as the work on 'C' Platform. The rig will be used for workovers on 'A' platform prior to being moved to 'C' in 1987. This rig is a self contained, modular platform rig commonly used in the Gulf of Mexico. (See Exhibit 5). Drip pans, curbs, drains and sumps are designed into the rig and platforms for pollution control. Cuttings and mud will be disposed of in the prescribed manner outlined in OCS Order No. 7. During drilling operations, diverter systems, blowout preventers, and well control equipment will be provided and maintained in accordance with OCS Order No. 2. (See Exhibits 6 and 7). Attached as Exhibit 8 (pages 1-4) is a list of the available mud additives. In accordance with OCS Order No. 5, all wells will have surface controlled surface and subsurface safety valves installed.

In the event of a spill, ARCO will implement its approved Oil Spill Contingency Plan which is on file with the MMS and updated annually. ARCO is a member of Clean Gulf Associates which can provide spill response within approximately 12 hours from bases at Venice, Grand Isle, Intracoastal City and Cameron in Louisiana.

The base of operations for our offshore activities is in Venice, Louisiana. The base consists of, a docking facility, warehouse, heliport, offices and living quarters and a parking lot. A base coordinator and a dispatcher are on duty at all times to coordinate movement of materials and personnel by boat and helicopter which service the platforms. Communications include private radios, microwave channels and regular telephones.

A previous air emissions report was submitted with our Supplemental Plan S-0966 and is hereby referenced. Exhibit 9 updates the projected yearly emissions from these two platforms.

Five of the eight copies of this DOCD include geological structure maps of the I, UJ, K, LK, and ML Sands, and two representative cross sections of the OCS-G 1008 and OCS-G 2943 leases. 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).

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 me at telephone number (318) 264-4295.

Sincerely,

ARCO OIL AND GAS COMPANY

*Peter Robertson for*

M. N. Robertson

MNR/gmp247/4:ma

attachment

# DOCD CHECK LIST

## DESCRIPTION

✓ Description of work to be performed

## SCHEDULE

✓ Commencement date  
✓ Time to complete each phase  
✓ Total time to complete the work proposed

## LOCATION

✓ Location map of the lease block(s) relative to the shore line  
✓ Description of onshore base facilities, LOCATION Venice, Louisiana  
✓ Location map showing platform(s) location(s) - (non-proprietary)

## GEOLOGICAL AND GEOPHYSICAL DATA

N/A Identification of geological hazards  
N/A Archaeological report submitted  
N/A Surface location relative to anomalies  
✓ Structure maps (proprietary)  
✓ Cross Section (proprietary)  
✓ Spider Map  
✓ Depth: TVD and BHL (for each well)

## OIL SPILL INFORMATION

✓ Oil spill plan referenced  
✓ Base of operations  
✓ Deployment time

## OTHER

✓ List of mud additives  
N/A Production rate  
✓ Estimated life of reserves  
N/A Water depth  
✓ Description of drilling rig if applicable indicating pollution prevention equipment  
N/A Description of the size, length, route, tie-in points and burial depth on proposed pipelines including a pipeline plat  
✓ Calculations for air emissions  
N/A Environmental report if applicable  
N/A CSM Consistency if applicable

BLK. 59

"F" STRUCTURE  
 X = 2,759,739.33'  
 Y = 152,392.30'  
 Lat. 29° 03' 50.555"  
 Long. 88° 57' 19.170"

## "C" STRUCTURE

X = 2,759,558.16'  
 Y = 152,241.37'  
 Lat. 29° 03' 49.099"  
 Long. 88° 57' 21.246"

## "A" STRUCTURE

X = 2,756,964.00'  
 Y = 150,092.25'  
 Lat. 29° 03' 28.359"  
 Long. 88° 57' 50.969"

ARCO OIL & GAS CO.  
 O.C.S. - 6-2137

## "G" STRUCTURE

X = 2,756,930.85'  
 Y = 149,683.06'  
 Lat. 29° 03' 24.316"  
 Long. 88° 57' 51.438"

BLK. 60

## "D" STRUCTURE

X = 2,757,097.59'  
 Y = 149,790.65'  
 Lat. 29° 03' 25.347"  
 Long. 88° 57' 49.535"

ARCO OIL & GAS CO.  
 O.C.S. - 6-1608

## "E" STRUCTURE

X = 2,756,168.20'  
 Y = 145,026.51'  
 Lat. 29° 02' 38.383"  
 Long. 88° 58' 01.112"

## "B" STRUCTURE

X = 2,756,299.48'  
 Y = 145,121.91'  
 Lat. 29° 02' 39.300"  
 Long. 88° 57' 59.611"

BLK 61

R. J. CHAMPAGNE

REG. No. 309

REGISTERED

LAND SURVEYOR

I hereby certify that the above  
 structures are correct.

*R. J. Champagne*

Registered Land Surveyor No. 309  
 State of Louisiana  
 John E. Chance & Associates, Inc.

PUBLIC  
INFORMATION

PLAT

ARCO OIL & GAS CO.  
 A DIVISION OF ATLANTIC  
 RICHFIELD CO.  
 O.C.S. - 6-1608 STR. A,B,C,D,  
 E,F&G

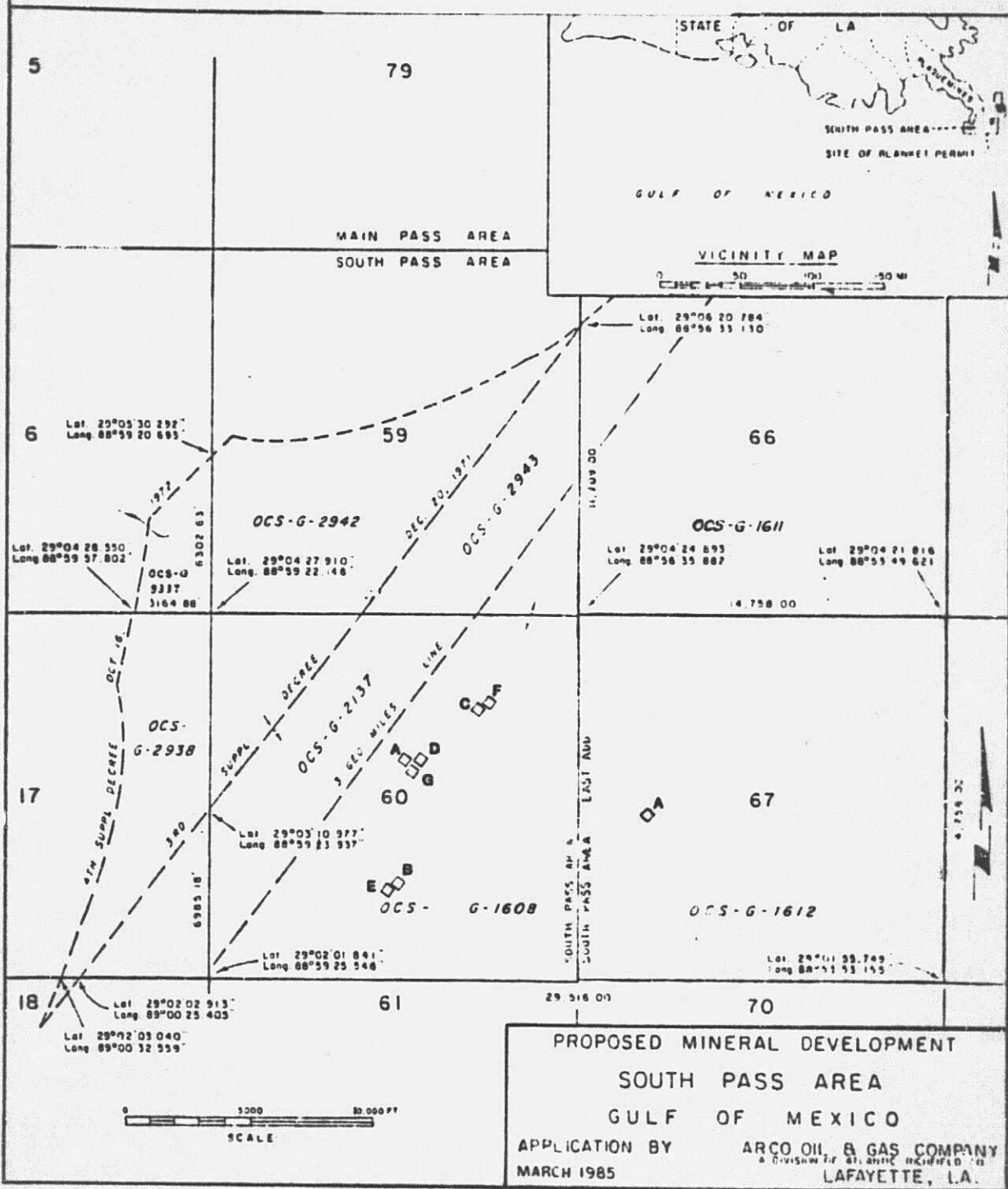
PERMIT PLAT

SOUTH PASS AREA

SCALE: 1" = 2000'

6/25/85

## 154



**EXHIBIT 3**  
**"C" AND "E" PLATFORM DRILLING SCHEDULE FOR REVISED AND SUPPLEMENTAL WELLS**

| <u>RIG</u> | <u>WELL</u>         | <u>TARGET<br/>RESERVOIR</u> | <u>BOTTOM HOLE LOCATION<br/>(LAMBERT COORDINATES)</u> |          | <u>TOTAL<br/>DEPTH<br/>(TVD)</u> | <u>ESTIMATED<br/>SPUD<br/>DATE</u> |
|------------|---------------------|-----------------------------|-------------------------------------------------------|----------|----------------------------------|------------------------------------|
|            |                     |                             | <u>X</u>                                              | <u>Y</u> |                                  |                                    |
| H & P 101  | OCS-G 1608 E-30     | UJ RL                       | 2754620                                               | 145832   | 6350                             | 07/10/85                           |
| H & P 101  | OCS-G 1608 E-31     | UJ RP-4                     | 2755250                                               | 143582   | 6600                             | 08/10/85                           |
| H & P 101  | OCS-G 1608 E-32     | LK RM-4                     | 2755610                                               | 146122   | 5600                             | 09/10/85                           |
| H & P 101  | OCS-G 1608 E-33     | K RP-2                      | 2756330                                               | 143802   | 6000                             | 10/10/85                           |
| H & P 101  | OCS-G 1608 E-34     | I RK-2                      | 2754530                                               | 146862   | 5850                             | 11/10/85                           |
| H & P 101  | OCS-G 1608 E-35     | ML RV-1                     | 2744610                                               | 141852   | 9500                             | 12/10/85                           |
| H & P 101  | OCS-G 1608 E-36     | I RR                        | 2756190                                               | 142892   | 6000                             | 02/10/86                           |
| H & P 101  | OCS-G 2943 C-42     | K RBB                       | 2757778                                               | 156480   | 5500                             | 01/01/87                           |
| H & P 101  | OCS-G 2943 C-30ST#1 | K RKK3                      | 2759158                                               | 154940   | 5400                             | 03/01/87                           |
| H & P 101  | OCS-G 2943 C-43     | K RBB                       | 2756908                                               | 156170   | 5500                             | 04/01/87                           |
| H & P 101  | OCS-G 2943 C-44     | K RJJ-1                     | 2760128                                               | 157770   | 6300                             | 06/01/87                           |

**SURFACE LOCATIONS**

**C Platform**      X = 2759740  
                          Y = 152264

**E Platform**      X = 2756168  
                          Y = 145027



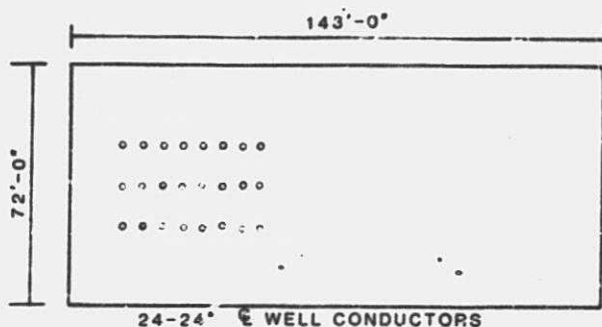
## AIR EMISSIONS DATA

### A. Summary of Operations

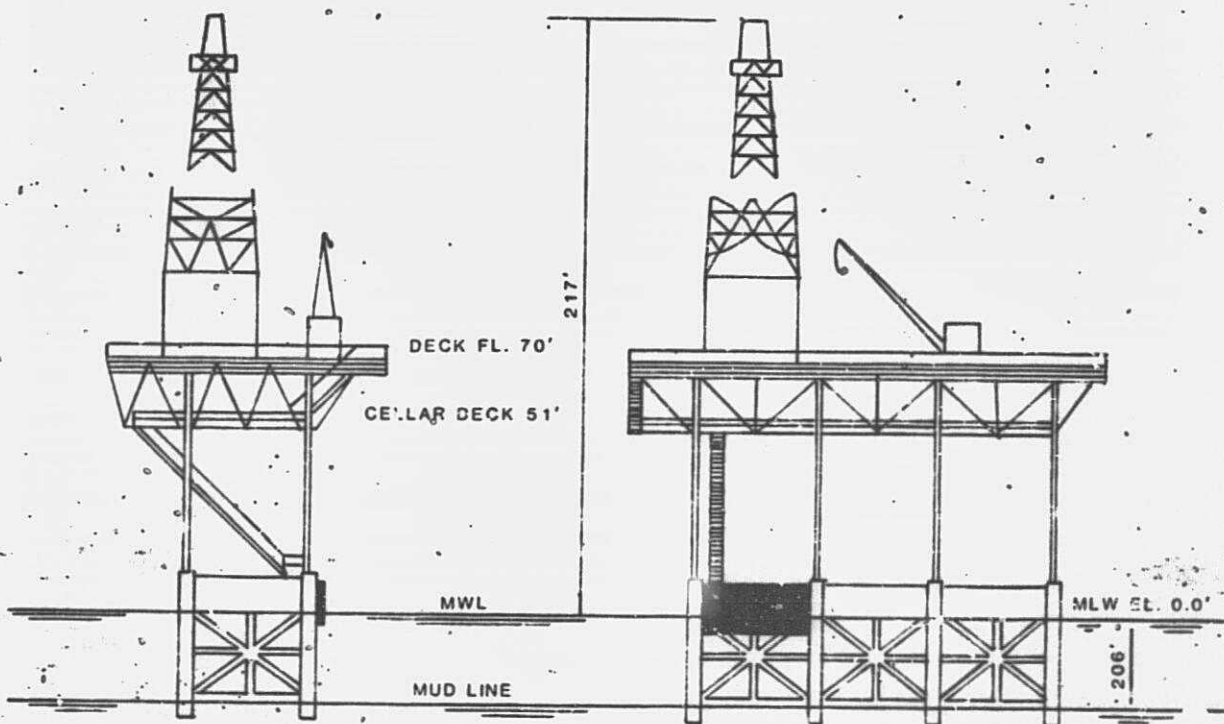
This air emissions report is being submitted with the Supplemental Development Operations Coordination Document dated June 26, 1985, for South Pass Block 61 Field, South Pass Block 60, Platforms "C" and "E". These platforms are located approximately 13 miles southeast of Port Eads, which is the nearest onshore population center.

H&P Rig 101 is currently drilling on Platform "E." It will be used for drilling the remaining approved wells as well as 11 new proposed wells - 4 on Platform "C" and seven on Platform "E" (see well schedule - Exhibit #3 of DOCD).

The following is a description of rig engines and platform equipment along with an estimate of total expected yearly emissions from these two platforms:



**PLAN**



**END ELEVATION**

**SIDE ELEVATION**

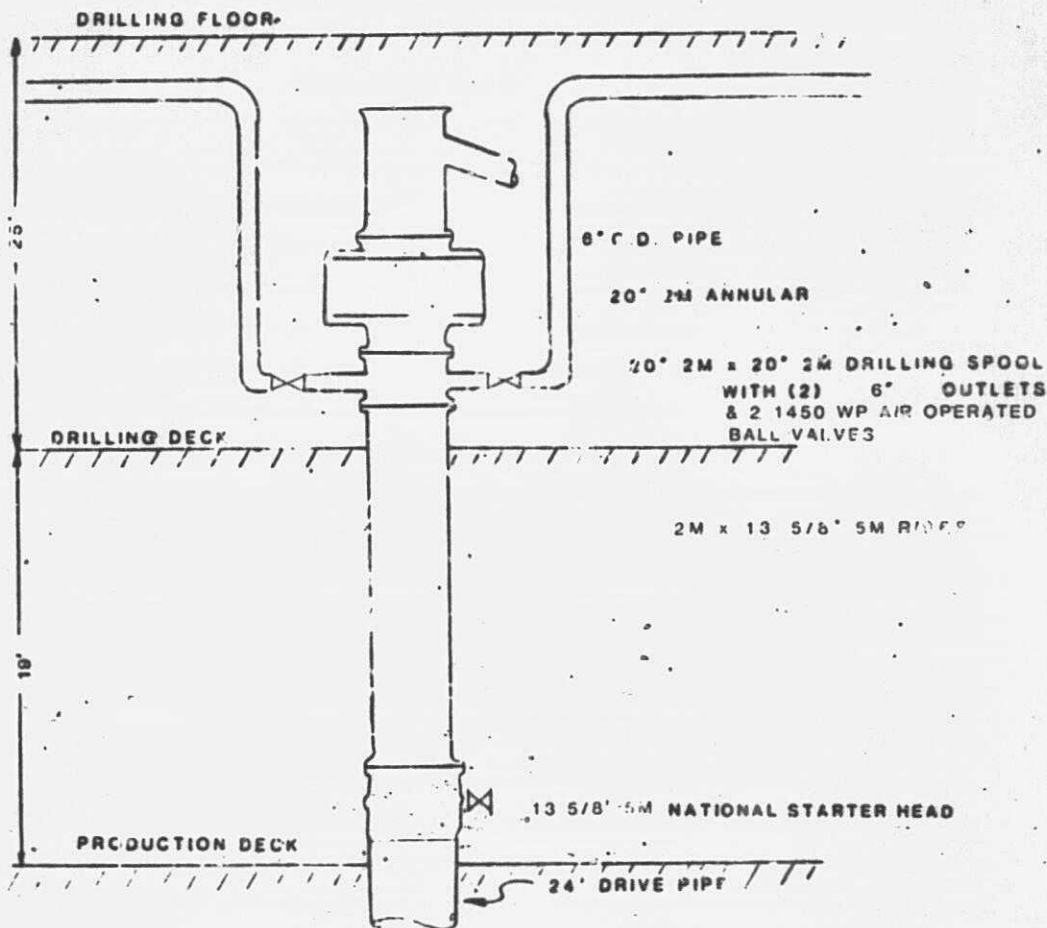
**TYPICAL SELF-CONTAINED DRILLING PLATFORM**

**PROPOSED MINERAL DEVELOPMENT  
SOUTH PASS AREA,  
GULF OF MEXICO**

APPLICATION BY: ATLANTIC RICHFIELD CO.  
LAFAYETTE, LA.

**SP BLK 60 "C" PLATFORM BOOKER 952**

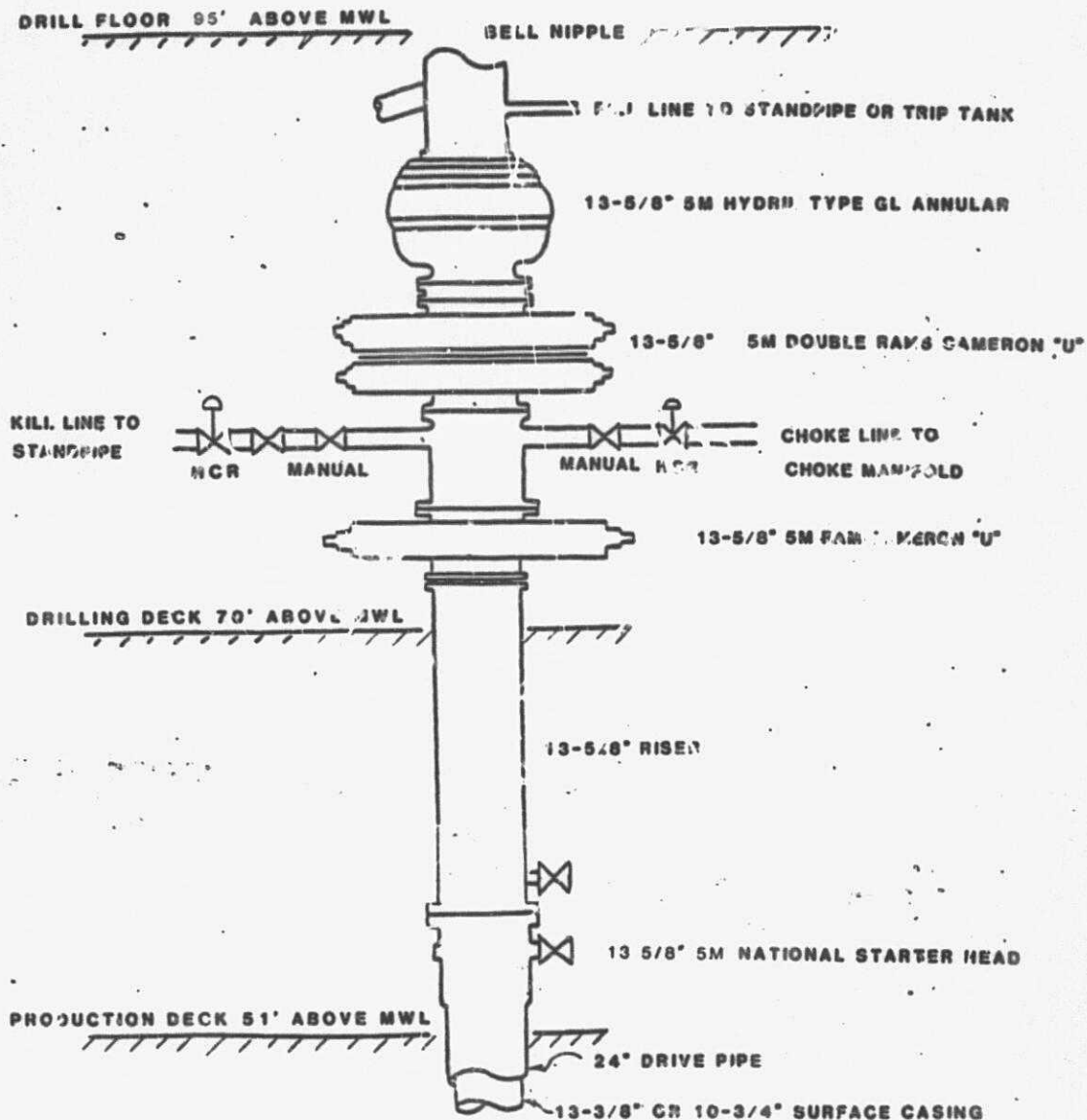
**DIVERTER SYSTEM**



**OPERATION**

THIS DIVERTER SYSTEM WILL BE INSTALLED FROM THE START UNTIL 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 WILL BE AUTOMATICALLY DIVERTED. DEPENDING ON PREVAILING WIND CONDITION AND SIZE OF KICK, ONE DIVERTER LINE MAY THEN BE CLOSED.

**S.P. BLK. 60 "C" PLATFORM BOCKER 952**  
**BOP ARRANGEMENT**



**Exhibit 8 Page 1**  
**COMPARABLE MUD PRODUCTS BY TRADE NAMES**

| Description or Principal Component       | IMCO SERVICES      | Baroid           | Maytag                  | Midchem               | Primary Application                                                                           |
|------------------------------------------|--------------------|------------------|-------------------------|-----------------------|-----------------------------------------------------------------------------------------------|
| <b>WEIGHTING AGENTS AND VISCOSIFIERS</b> |                    |                  |                         |                       |                                                                                               |
| Strite                                   | IMCO BAR           | Baroid           | Magcobar                | Mil-Bar               | For increasing mud weight up to 20 ppg.                                                       |
| Calcium Carbonate                        | IMCO WATE          | CC Wate          |                         | W.O. 30<br>W.O. 50    | For increasing weight of oil muds up to 10.8 ppg.                                             |
| Bentonite                                | IMCO GEL           | Aquagel          | Magcogel                | Milgel                | Viscosity and filtration control in water-base muds.                                          |
| Sub-Bentonite                            | IMCO KILBY         | Baroco           | High Yield Blended Clay | Green Banu Clay       | For use when larger particle size is desired for viscosity and filtration control.            |
| Attapulgite                              | IMCO BRIM GEL      | Zoegel           | Salt Gel                | Salt Water Gel        | Viscosifier in saltwater muds.                                                                |
| Beneficiated Bentonite                   | IMCO HYB           | Quick-Gel        | Kwik-Thik               | Super-Col             | Quick viscosity in fresh-water, upper hole muds with minimum chemical treatment.              |
| Asbestos Fibers                          | IMCO SHURLIFT      | Flosal           | Visquick                | Flosal                | Viscosifier for fresh-water or saltwater muds.                                                |
| Bacterially Produced Polymer             | IMCO XC            | XC Polymer       | Duovis                  | XC Polymer            | Viscosifier and fluid-loss control additive for low-solids muds.                              |
| Sepiolite                                | IMCO DUROGEL       |                  |                         |                       | Viscosifier in all water-base muds, especially high-temperature drilling muds.                |
| <b>DISPERSANTS</b>                       |                    |                  |                         |                       |                                                                                               |
| Sodium Tetraphosphate                    | IMCO PHOS          | Barcofos         | Magco-Phos              | Oil Fos               | Thinner for low pH fresh-water muds where temperatures do not exceed 120°.                    |
| Sodium Acid Pyrophosphate                | SAPP               | ACAP             | SAPP                    | SAPP                  | For treating cement contamination.                                                            |
| Quebracho Compound                       | IMCO QBT           | Taninex          | M-C Quebracho           | Tanico                | Thinner for fresh-water and lime muds.                                                        |
| Modified Tannin                          | DESCO              | Desco            | Desco                   | Desco                 | Thinner for fresh-water and saltwater muds alkalinized for pH control.                        |
| Processed Lignite                        | IMCO LIG           | Carbonox         | Tann A Thin             | Ligco                 | Dispersant, emulsifier and supplementary additive for fluid-loss control.                     |
| Causticized Lignite                      | IMCO THIN          | CC-16            | Caustilig               | Ligcon                | 1-6 ratio caustic-lignite dispersant, emulsifier and supplementary fluid-loss additive.       |
| Modified Lignosulfonate                  | IMCO VC-10         | Calumatin        | Caerser                 | Uni-Cal               | Dispersant and fluid-loss control additive for water-base muds.                               |
| Blended Lignosulfonate Compound          | IMCO RD-111        |                  |                         |                       | Blended multi-purpose dispersant, fluid-loss agent and inhibitor for IMCO RD-111 mud systems. |
| Chrome-Free Lignosulfonate               | IMCO RD 2000       |                  |                         | X-KS Thin             | Dispersant and fluid-loss control additive for water-base muds.                               |
| <b>FLUID-LOSS REDUCERS</b>               |                    |                  |                         |                       |                                                                                               |
| Organic Polymer                          | IMCO DEXTRALOID    | DEXTRID          |                         |                       | Controls fluid loss in water-base systems.                                                    |
| Pregelatinized Starch                    | IMCO LOID          | Impermex         | My-Lo-Jel               | My-Larch              | Controls fluid loss in saturated salt water, and lime muds.                                   |
| Sodium Carboxymethyl Cellulose           | IMCO CMC (Regular) | Cellex (Regular) | Magco CMC (Regular)     | Midchem CMC (Med-Vis) | For fluid-loss control and barite suspension in water-base muds.                              |
| Sodium Carboxymethyl Cellulose           | IMCO CMC (Hi-Vis)  | Cellex (Hi-Vis)  | Magco CMC (Hi-Vis)      | Midchem CMC (Hi-Vis)  | For fluid-loss control and viscosity building in low-solids muds.                             |
| Polyanionic Cellulosic Polymer           | DRISPAC            | Drispac          | Drispac                 | Drispac               | Fluid-loss control additive and viscosifier in salt muds.                                     |
| Polyanionic Cellulosic Polymer           | DRISPAC SUPERLO    | Drispac Superlo  | Drispac Superlo         | Drispac Superlo       | Primary fluid-loss additive and secondary viscosifier in water-base muds.                     |
| Sodium Polyacrylate                      | IMCO SP-101        |                  |                         |                       | Fluid-loss control in calcium-free low solids and nondispersed muds.                          |

\*Cyanan and WL-100 are sold by American Cyanamid and Rotar Engineering, respectively.

## COMPARABLE MUD PRODUCTS BY TRADE NAMES (Continued)

| Description or Principal Component                                                   | IMCO SERVICES     | Baroid            | Mageebar          | Milchem             | Primary Application                                                                                       |
|--------------------------------------------------------------------------------------|-------------------|-------------------|-------------------|---------------------|-----------------------------------------------------------------------------------------------------------|
| <b>LUBRICANTS, DETERGENTS, EMULSIFIERS, AND SURFACTANTS</b>                          |                   |                   |                   |                     |                                                                                                           |
| Extreme Pressure Lubricant                                                           | IMCO EP LUBE      | El-Mud Lube       | Bit Lube          | Lubri-Film          | Used in water-base muds to impart extreme pressure lubricity                                              |
| Processed Hydrocarbons                                                               | SOLTEX            | Soltext           | Soltext           | Soltext             | Used in water-base muds to lower downhole fluid loss and minimize heaving shale.                          |
| Water Dispersible Asphalts                                                           | IMCO HOLECOAT     |                   | STAB-HOLE         | ITI-WD              | Lubricant and fluid-loss reducer for water-base muds that contain no diesel or crude oil.                 |
| Oil Dispersible Asphalts                                                             | IMCO MUD OIL      | Baroid Asphalt    | Pave-A-Hole       | Carbo-Seal          | Lubricant and fluid-loss reducer for water-base fluids that contain diesel or crude oil.                  |
| Oil Soluble Surfactants                                                              | IMCO FREEPIPE     | Skot-Free         | Pipe Lax          | Protocote           | Nonweighted fluid for spotting to free differentially stuck pipe.                                         |
| Detergent                                                                            | IMCO MD           | Con Det           | D-D               | Milchem M           | Use in water-base muds to aid in dropping sand. Emulsifies oil, reduces torque and minimizes bit-balling. |
| Blend of Anionic Surfactants                                                         | IMCO SWS          | Trimulso          | Salinex           | Atlasol & Atlasol S | Emulsifier for saltwater and freshwater muds.                                                             |
| An Organic Entity Neutralized with Amines                                            | IMCO LUBRIKLEEN   | Torg Trim         | DOS-3             | Mil-Plate 2         | Supplies the lubricating properties of oils without environmental pollution.                              |
| Blend of Fatty Acids, Sulfonates, and Asphaltic Materials                            | IMCO SPOT         | SF 100            |                   |                     | Invert emulsion that may be weighted to desired density for placement to free differentially stuck pipe.  |
| <b>DEFOAMERS, FLOCCULANTS, AND BACTERICIDES</b>                                      |                   |                   |                   |                     |                                                                                                           |
| Aluminum Stearate                                                                    | Aluminum Stearate | Aluminum Stearate | Aluminum Stearate | Aluminum Stearate   | Defoamer for lignosulfonate muds                                                                          |
| Liquid Surface-Active Agent                                                          | IMCO DEFOAM L     |                   |                   |                     | Defoamer for all water-base muds.                                                                         |
| Surface-Active Dispersible Liquid Deframer                                           | IMCO FOAMBAN      | W200<br>W300      |                   | LD-7                | All-purpose defoamer.                                                                                     |
| Flocculating Agent                                                                   | IMCO FLOC         | Barafloc          | Flocit            | Separan             | Used to drop drilled solids where clear water is desirable for a drilling fluid.                          |
| Blended Solutions                                                                    | IMCO CIDE         |                   |                   |                     | Bactericide used to prevent fermentation.                                                                 |
| <b>LOST CIRCULATION MATERIALS</b>                                                    |                   |                   |                   |                     |                                                                                                           |
| Fibrous Material                                                                     | IMCO FYBER        | Fibertex          | Mud Fiber         | Mil-Fiber           | Filler as well as matting material                                                                        |
| Nut Shells: Fine                                                                     | IMCO PLUG         | Wall-Nut          | Nut-Plug          | Mil-Plug            | Most often used to prevent lost circulation.                                                              |
| Medium                                                                               | IMCO PLUG         | Wall-Nut          | Nut-Plug          | Mil-Plug            | Used in conjunction with fibers or flakes to regain lost circulation.                                     |
| Coarse                                                                               | IMCO PLUG         | Wall-Nut          | Nut-Plug          | Mil-Plug            | Used where large crevices or fractures are encountered.                                                   |
| Ground Mica: Fine                                                                    | IMCO MYCA         | Micatrix          | Magco-Mica        | Milmica             | Used for prevention of lost circulation.                                                                  |
| Coarse                                                                               | IMCO MYCA         | Micatrix          | Magco-Mica        | Milmica             | Forms a good mat at face of wellbore.                                                                     |
| Cellulose                                                                            | IMCO FLAKES       | Jel Flake         | Cel-O-Seal        | Milflake            | Used to regain lost circulation.                                                                          |
| Combination of granules, flakes, and various materials of various sizes in one sack. | KWIKSEAL          | Kwik-Seal         | Kwik-Seal         | Kwik-Seal           | Used where large crevices or fractures are encountered.                                                   |

## COMPARABLE MUD PRODUCTS BY TRADE NAMES (Continued)

| Classification or Principal Component | IMCO SERVICES                               | Baroid                  | Magco-bar          | Milchem                         | Primary Application                                                                                               |
|---------------------------------------|---------------------------------------------|-------------------------|--------------------|---------------------------------|-------------------------------------------------------------------------------------------------------------------|
| <b>SPECIALTY PRODUCTS</b>             |                                             |                         |                    |                                 |                                                                                                                   |
| Bentonite Extender                    | IMCO GELEX                                  | Barox                   | Benox              | Benex                           | Increases yield of bentonite to form very low-solids drilling fluid.                                              |
| Inhibiting Agent                      | IMCO IIB PAC                                |                         |                    |                                 | Imparts high-temperature fluid-loss control, temperature stability and increased inhibition.                      |
| Synergistic Polymer Blend             | IMCO POLY Rx                                |                         | Resinex            |                                 | Rheological stabilization and filtration control.                                                                 |
| Biodegradable Surfactant              | IMCO FOAM-4 VT                              |                         |                    |                                 | Foaming agent in air or mist drilling.                                                                            |
| High-Temperature Polymer              | IMCO CRILTHERM                              |                         |                    |                                 | High-temperature fluid-loss control.                                                                              |
| Multipurpose Polymer                  | IMCO POLYSAFE                               |                         |                    |                                 | Polymer for fluid-loss control.                                                                                   |
| <b>COMMERCIAL CHEMICALS</b>           |                                             |                         |                    |                                 |                                                                                                                   |
| Sodium Chromate                       | Sodium Chromate                             | Sodium Chromate         | Sodium Chromate    | Sodium Chromate                 | Used in water-base muds to prevent high-temperature gelation.                                                     |
| Sodium Hydroxide                      | Caustic Soda                                | Caustic Soda            | Caustic Soda       | Caustic Soda                    | For pH control in water-base muds.                                                                                |
| Sodium Carbonate                      | Soda Ash                                    | Soda Ash                | Soda Ash           | Soda Ash                        | For treating out calcium sulfate in low pH muds.                                                                  |
| Sodium Bicarbonate                    | Sodium Bicarbonate                          | Sodium Bicarbonate      | Sodium Bicarbonate | Sodium Bicarbonate              | For treating out calcium sulfate in cement in high pH muds.                                                       |
| Barium Carbonate                      | Barium Carbonate                            | Anhyd. ox.              | Barium Carbonate   | Barium Carbonate                | For treating out calcium sulfate (pH should be above 10 for best results).                                        |
| Calcium Sulfate                       | Gypsum                                      | Gypsum                  | Gypsum             | Gypsum                          | Source of calcium for formulating gypsum muds.                                                                    |
| Calcium Hydroxide                     | Lime                                        | Lime                    | Lime               | Lime                            | Source of calcium for formulating lime muds.                                                                      |
| Sodium Chloride                       | Salt                                        | Salt                    | Salt               | Salt                            | For saturated salt muds and resistivity control.                                                                  |
| Chrome Alum (chromic chloride)        | Chrome Alum                                 | Chrome Alum             | Chrome Alum        | Chrome Alum                     | For use in cross-linking XC Polymers, systems.                                                                    |
| <b>OIL-MUD ADDITIVES</b>              |                                             |                         |                    |                                 |                                                                                                                   |
| Primary Emulsifier                    | IMCO KENOL-S (L) and IMCO KEN-X Conc. #1(L) | Invermul                | Vertoil            | Carbu-Tec (D) and Carbu-Tec (L) | Primary additives to form stable water-in-oil emulsion.                                                           |
| Viscosity and Gelling Agent           | IMCO KEN GEL and IMCO KEN-X CONC.#2         | Gel-Tone and Petro-Tone | VG-69              | Carbo-Gel                       | Provides viscosity, weight suspension, and filtration control.                                                    |
| High-Temperature Stabilizer           | IMCO KEN-X Conc. #3                         | Duratone HT             | UV-22 and UV-13    |                                 | Improves emulsion under high-temperature conditions.                                                              |
| Stabilizes Borehole Conditions        | IMCO IIR                                    |                         |                    |                                 | Stabilizes running shale, improves emulsion, weight suspension, and fluid loss under high-temperature conditions. |
| <b>CORROSION INHIBITORS</b>           |                                             |                         |                    |                                 |                                                                                                                   |
| Zinc Compound                         | IMCO SULF-X II                              |                         |                    |                                 | For use as a hydrogen sulfide scavenger in water-base and oil-base muds.                                          |
| Liquid Corrosion Inhibitor            | IMCO CRACK CHEK                             |                         |                    |                                 | Prevent stress cracking of drill strings in an H <sub>2</sub> S environment.                                      |
| A Catalyzed Ammonium Bisulfite        | IMCO XO <sub>2</sub>                        | Coat 777                | A-202              |                                 | For use as an oxygen scavenger.                                                                                   |
| Filming Amine                         | IMCO X-CORR                                 |                         |                    |                                 | Corrosion inhibitor.                                                                                              |

## COMPARABLE MUD PRODUCTS BY TRADE NAMES (Continued)

| Description or Principal Component                 | IMCO SERVICES            | Baroid | Magcober | Milchem | Primary Application                                                                            |
|----------------------------------------------------|--------------------------|--------|----------|---------|------------------------------------------------------------------------------------------------|
| <b>CORROSION INHIBITORS (Continued)</b>            |                          |        |          |         |                                                                                                |
| Filming Amine                                      | IMCO PERMAFILM           |        |          |         | Corrosion inhibitor.                                                                           |
| Organic Polymers                                   | IMCO SCALECHEK           |        |          |         | Scale inhibitor.                                                                               |
| Calcium Oxide                                      | IMCO KENOX               |        |          |         | Calcium source for saponification.                                                             |
| Fatty Acid Emulsifier                              | IMCO KEN SUPREME Conc. A |        | Oilfaze  |         | Primary emulsifier and stabilizer for oil-base drilling fluids.                                |
| Emulsion Stabilizer                                | IMCO KEN SUPREME Conc. B |        | DG-55    |         | Imparts gels, contributes to viscosity for weight suspension, and provides filtration control. |
| Specialty Modified Saponified Fatty Acid Chemicals | IMCO KEN PAK             | SF-100 |          |         | Gelling agent for formulating high-gelation casing packs.                                      |
| Wetting Agent and Dispersant                       | IMCO KEN CAL-L           |        |          |         | Wetting agent and dispersant for oil muds for the reduction and/or stabilization of viscosity. |

NO 15



Exhibit 9

ARCO OIL & GAS COMPANY

A DIVISION OF

ATLANTIC RICHFIELD COMPANY

SOUTH PASS BLOCK 60

SUPPLEMENTAL DEVELOPMENT OPERATIONS COORDINATION DOCUMENT

PLATFORMS "C" AND "E"

OCS-G-1608

AIR EMISSIONS DATA REPORT

June 26, 1985

Air Emissions Data Report

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H&P Rig #101

1. Prime Movers - Four V-16 Caterpillar G-399's 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.  
 $(75\% \times 75\% \times 1740) + (25\% \times 25\% \times 1740) = 1088 \text{ HP/HR average}$
2. Crane - Unit Mariner 650-H  
GM 8V-92N diesel engine, 355 BHP. Used 30% of the time and operates at 50% load.  
 $50\% \times 355 = 177.5 \text{ HP/HR average}$
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. Emergency Rig Generator  
Caterpillar D-379 V-8 diesel, 715 continuous BHP at 1300 RPM, used for emergency back-up. Not figured into total emissions.

Note: All rig engine exhaust stacks at  $\pm 85'$ .

Platform "C" Equipment

1. Two Solar "Saturn" turbine engines - generators  
Natural gas fueled, 1000 HP each  
Only one used at a time, the other is backup. Exhaust stack at  $\pm 65'$ .
2. Pump Down Pump - driven by Detroit Diesel 6-71N  
Diesel fueled, 230 HP at 2100 RPM maximum.  
Used about 10% of the time. Exhaust stack at  $\pm 65'$ .
3. Platform Crane - Detroit Diesel 7-71 rated at 93 continuous BHP. Average of 30% actual use. Exhaust stack at  $\pm 85'$ .

Platform "E" Equipment

1. Two Solar "Centaur" turbine engines  
Natural gas fueled, 3800 HP each at 22,000 RPM  
Only one usually in operation. Exhaust stack at  $\pm 65'$ .
2. One Solar "Saturn" turbine engine  
Natural gas fueled, 1000 HP at 15,000 RPM  
Exhaust stack at  $\pm 65'$ .

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3. Two Waukesha L7042 engines for generators  
Natural gas fueled, 710 continuous HP at 900 RPM  
Exhaust stack at ±65'.
4. Fire water pump driven by Detroit Diesel 12V-71  
Diesel fueled, 460 HP at 2100 RPM  
Only run for emergencies and maintenance. Not figured in  
total emissions. Exhaust stack at ±65'.
5. Platform crane - Detroit Diesel 4-71 rated at 93 continuous  
BHP. Average of 30% actual use. Exhaust stack at ±85'.

B. Calculations of Emission Exemption - Part 250.57-101

Exemption Formulas:

1.  $33.3 D^{2/3}$  for  $NO_x$ ,  $SO_2$ , TSP, THC each
2.  $3400 D^{2/3}$  for  $CO$

Where D = distance for shore defined as landward of the mean high  
water mark, approximately 13 miles from shore to "South Pass  
Block 60, Platform "C".

Maximum Allowables:

1.  $33.3 \times 13^{2/3} = 433$  tons/year each of  $NO_x$ ,  $SO_2$ , TSP, THC
2.  $3400 \times 13^{2/3} = 18,798$  tons/year for  $CO$

C. EPA AP-42 Emission Factors

|        | DIESEL FUELED<br>INTERNAL COMBUSTION<br>ENGINE<br>(#/HP-HR) |
|--------|-------------------------------------------------------------|
| $NO_x$ | 0.030837                                                    |
| CO     | 0.006674                                                    |
| $SO_2$ | 0.0020507                                                   |
| TSP    | 0.0022026                                                   |
| THC    | 0.002467                                                    |

\*NOTE: Total Hydrocarbons (THC) as methane and non-methane

NATURAL GAS FUELED

| <u>INTERNAL COMBUSTION ENGINE</u><br><u>(#/1000 HP-HR)</u> |                                               | <u>TURBINE ENGINE</u><br><u>(#/1000 HP-HR)</u> |                                               |
|------------------------------------------------------------|-----------------------------------------------|------------------------------------------------|-----------------------------------------------|
|                                                            | <u>EPA's AP-42</u><br><u>Emission Factors</u> |                                                | <u>EPA's AP-42</u><br><u>Emission Factors</u> |
| NO <sub>x</sub>                                            | 24                                            | NO <sub>x</sub>                                | 2.9                                           |
| CO                                                         | 3.1                                           | CO                                             | 1.1                                           |
| SO <sub>2</sub>                                            | .004                                          | SO <sub>2</sub>                                | .004                                          |
| TSP                                                        | -                                             | TSP                                            | -                                             |
| *THC                                                       | 9.7                                           | *THC                                           | .2                                            |

\*Total Hydrocarbons (THC) as methane and non-methane.

Air Emissions Data Report  
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EMISSION TOTALS  
(tons/year)

South Pass Block 60, Platform "C"

| Emission Source             | NO <sub>x</sub> | CO    | SO <sub>2</sub> | TSP   | THC   |
|-----------------------------|-----------------|-------|-----------------|-------|-------|
| <u>Drilling-H&amp;P 101</u> |                 |       |                 |       |       |
| Prime Movers                | 146.95          | 31.80 | 9.77            | 10.50 | 11.76 |
| Crane                       | 7.19            | 1.56  | .48             | .51   | .58   |
| Cement Unit-Pump            | 2.25            | .49   | .15             | .16   | .18   |
| Cement Unit-Mixer           | .45             | .10   | .03             | .03   | .04   |
| <u>Production</u>           |                 |       |                 |       |       |
| Saturn Turbine              | 12.70           | 4.82  | .02             | --    | .88   |
| Pump Down Pump              | 3.11            | .67   | .21             | .22   | .25   |
| Platform Crane              | 3.77            | .82   | .25             | .27   | .30   |
| Totals                      | 175.42          | 40.26 | 10.91           | 11.69 | 13.99 |

South Pass Block 60, Platform "E"

| Emission Source             | NO <sub>x</sub> | CO    | SO <sub>2</sub> | TSP   | THC   |
|-----------------------------|-----------------|-------|-----------------|-------|-------|
| <u>Drilling-H&amp;P 101</u> |                 |       |                 |       |       |
| Prime Movers                | 146.95          | 31.80 | 9.77            | 10.50 | 11.76 |
| Crane                       | 7.19            | 1.56  | .48             | .51   | .58   |
| Cement Unit-Pump            | 2.25            | .49   | .15             | .16   | .18   |
| Cement Unit-Mixer           | .45             | .10   | .03             | .03   | .04   |
| <u>Production</u>           |                 |       |                 |       |       |
| Centaur Turbines            | 48.27           | 18.31 | .07             | --    | 3.33  |
| Saturn Turbines             | 12.70           | 4.82  | .02             | --    | .88   |
| Generators                  | 149.27          | 19.28 | .02             | --    | 60.33 |
| Platform Crane              | 3.77            | .82   | .25             | .27   | .30   |
| Totals                      | 370.85          | 77.18 | 10.79           | 11.47 | 77.40 |

Air Emissions Data Report

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

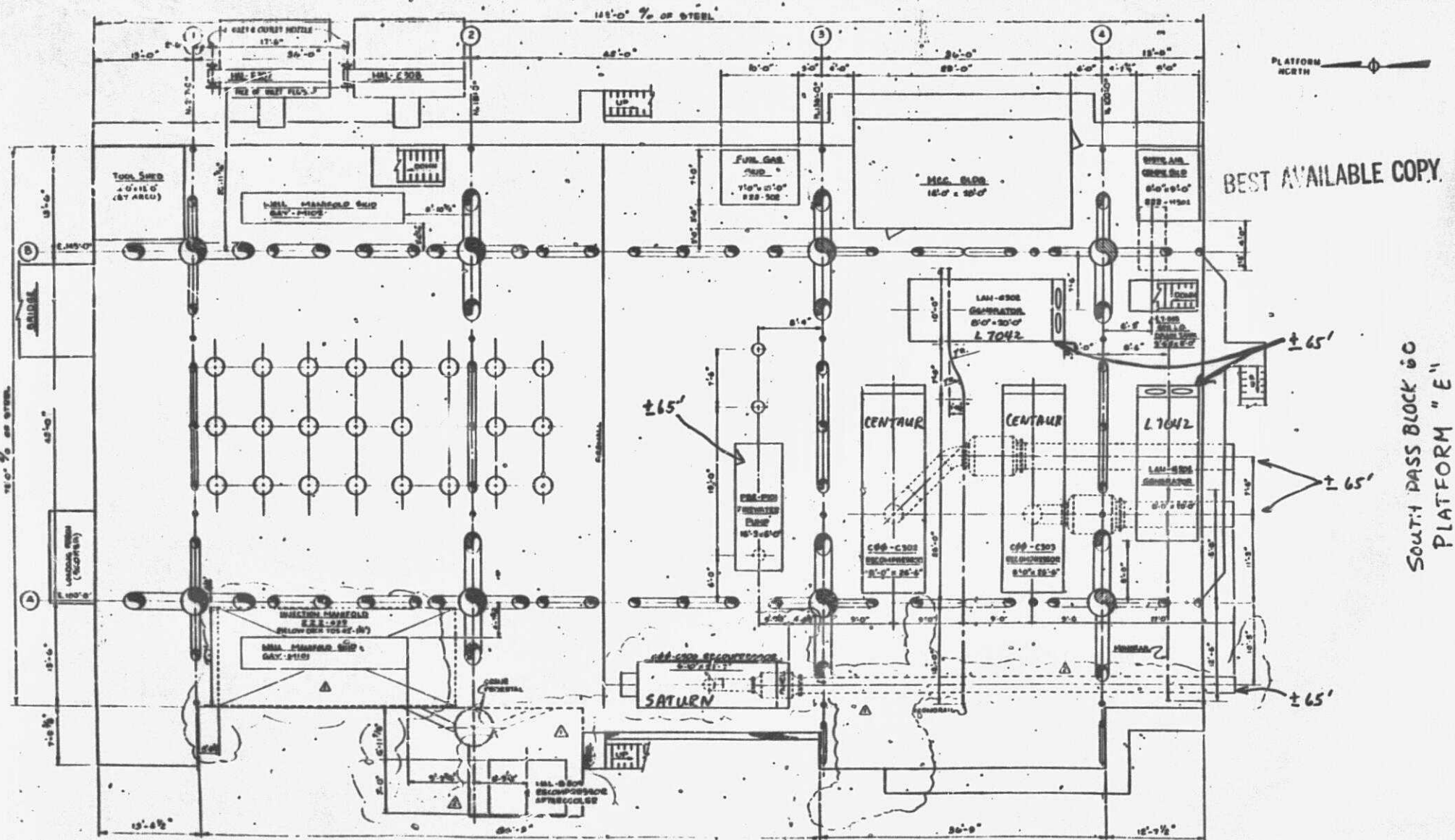
(a) Expected Air Emissions (Tons/Year)

$$\begin{aligned} &= [\text{Continuous BHP of Equipment}] \times [\% \text{ Actual Use}] \times [\% \text{ Operating Power}] \\ &\times [\text{Appropriate Air Emission Factor, lbs/HP-HR}] \\ &\times [1/2000 \text{ lbs/ton}] \times [24 \text{ Hr/Day}] \end{aligned}$$

if the use of the above equation is given below:

The expressed yearly air emission of  $\text{NO}_x$  in tons/year for the two Waukesha 7042 generator engines on Platform "C" is:

$$\begin{aligned} \text{Expected } \text{NO}_x \text{ Air Emissions} &= 2[710 \text{ (HP/HR)}] \times [24 \text{ (lbs } \text{NO}_x \text{ /1000 HP-HR)}] \\ \text{From the Waukesha 7042} &\quad \times [365 \text{ days/year}] \times [1 \text{ ton/2000 lbs}] \times \\ \text{Generator Engine on} &\quad [24 \text{ Hrs/Day}] \\ \text{"C" Platform} &= 149.27 \text{ tons/year of } \text{NO}_x \text{ air emissions} \end{aligned}$$







The following  
Document  
is filmed  
in Two  
images.

SOUTH PASS AREA  
SOUTH PASS - EAST ADDITION

BEST AVAILABLE COPY

31-14612 32

Exhibit 4

ARCO Oil and Gas Company  
South Louisiana District

AREA EASTERN OFFSHORE  
LOCATION SOUTH PASS BLOCK 61 FIELD  
HORIZON SPIDER MAP  
SCALE 1" = 1 MILE CONTOUR INTERVAL 500'  
INTERPRETED BY                      DATE                       
△ - WELLS INJECTING IN THIS ZONE  
○ - WELLS PRODUCING FROM THIS ZONE

