UNITED STATES GOVERNMENT
MEMORANDUM

09/23/98

To: Public Information, (MS 5034)

From: Exploration/Development Plans Section, (MS 5231)

Reference is made to the following plan received September 9, 1998:

Type Plan - Supplemental Development Operations Coordination Document
Lease - OCS-G 14224
Block - 216
Area - Garden Banks
Activities Proposed - Well 2 ST1, & Well 4
Control Number - S-4848
Operator - Amerada Hess

In accordance with 30 CFR 250.204, this plan is hereby deemed submitted and is now being considered for approval.

Reviewing Engineer

noted

AMERADA HESS CORPORATION

K. J. DUPUIS
SUPERVISOR, ENVIRONMENTAL & REGULATORY AFFAIRS

ONE ALLEN CENTER, 500 DALLAS ST.
HOUSTON, TEXAS 77002
(713) 609-5926
FAX (713) 609-5604

September 8, 1998

U.S. DEPARTMENT OF THE INTERIOR
Minerals Management Service
Gulf of Mexico OCS Region
1201 Elmwood Park Blvd.
New Orleans, LA 70123-2394

Attn: Mr. Donald C. Howard
Regional Supervisor
Field Operations (MS 5231)

RE: Supplemental Development Operations Coordination Document
Garden Banks Blocks 216, 259, 260
OCS-G-14224, 7461, 7462
Garden Banks Block 259 Unit
Agreement No. 754391010

Gentlemen:

In accordance with Minerals Management Service Regulations 30 CFR 250.34 relative to revisions to Development Plans, Amerada Hess Corporation (AHC) hereby submits for your review and approval nine (9) copies of a Supplemental Development Operations Coordination Document (DOCD) for the Garden Banks Block 259 Unit (Federal Agreement No. 754391010), comprising Garden Banks Blocks 216, 259 and 260 (OCS-G-14224, 7461 and 7462).

Five (5) copies of the DOCD are considered "confidential" and include certain geological/geophysical data which is to be exempt from public inspection.

Four (4) "public information" copies of the Plan are enclosed which exclude "confidential" information.

It is our estimation that new development activities on Garden Banks 216 could begin on or about October 15, 1998.

Please contact me at (713) 609-5926 if any additional information is required.

With kindest regards,

Keith J. Dupuis

KJD/fet

Enclosures

cc: E. L. Ardoin
R. E. Cain
J. B. Fowler
S. M. Heck
R. R. Pressler
J. V. Simon
C. Files - GB 216, 259 and 260 (File 2.212)
U.S. Dept. of the Interior - MMS
Lafayette District Office

DOCD10.DOC

AMERADA HESS CORPORATION

SUPPLEMENTAL DEVELOPMENT OPERATIONS COORDINATION DOCUMENT

GULF OF MEXICO - OFFSHORE, LOUISIANA

GARDEN BANKS AREA, BLOCKS 216, 259 AND 260

OCS-G-14224, 7461 AND 7462

GARDEN BANKS 259 UNIT

AGREEMENT NO. 754391010

SEPTEMBER 8, 1998

COMPANY CONTACT

KEITH J. DUPUIS (713) 609-5926

AMERADA HESS CORPORATION

500 DALLAS ST., LEVEL 2

HOUSTON, TEXAS 77002

LIST OF ATTACHMENTS

A. Vicinity Plat
B. Well Location Plat
C. Well Location Table
D-1. Geologic Structure Map
D-2. Schematic Cross Section (confidential copies only)
D-3. General Stratigraphic Column (confidential copies only)
E. Bathymetry Map
F. Shallow Hazards Clearance Letter
G. Air Emissions Report

AMERADA HESS CORPORATION
SUPPLEMENTAL DEVELOPMENT OPERATIONS COORDINATION DOCUMENT
GARDEN BANKS BLOCKS 216, 259 AND 260
OCS-G-14224, 7461 AND 7462

I. PROPOSED TYPE AND SEQUENCE OF ACTIVITIES

As designated operator of the Garden Banks Block 259 Unit (Agreement No. 754391010), Amerada Hess Corporation (AHC) has conducted extensive exploratory drilling in the Unit since 1991, especially in Garden Banks Blocks 259 and 260 (OCS-G-7461 and 7462).

More recently, three exploratory wells have been drilled in the southern half of Garden Banks Blocks 215 and in Garden Banks Block 216.

As a result of the exploratory drilling program in the Unit, AHC filed an Initial Development Operations Coordination Document in June 1996 (approved August 15, 1996), to install a compliant tower platform over a previously installed 9-slot template in Garden Banks 260; to drill five additional development wells; to install two (2) pipelines (one oil, one gas); to tie-back and complete eight wells (includes three wells previously drilled); and to commence production from the Garden Banks Block 260 "A" Platform on or about August 1, 1998.

To date, AHC has drilled the five development wells, installed the two pipelines; has installed the "A" Platform and is currently completing the A-1 well. We intend to commence production on the "A" Platform on or about August 30, 1998.

In order to move forward with the development of the Garden Banks Block 259 Unit, AHC now proposes to include Garden Banks Block 216 into our development plans by installing subsea wellheads over two exploratory wells which will be drilled in the lease (Nos. 2ST1 and 4 wells) and to tie these two wells into the Garden Banks Block 260 "A" Platform via an infield flowline bundle.

The following is a proposed schedule of the activities proposed:

ACTIVITY	SCHEDULE
Drill and suspend the GB 216 No. 2 ST 1 well (work approved under POE for GB 216)	June 13, 1998 – August 10, 1998
Install an insulated flowline bundle from the No. 2 ST 1 and No. 4 well locations to GB 260 "A" Platform	October 15, 1998 – November 10, 1998
Complete the previously drilled No. 2 ST 1 well and drill and complete the No. 4 well (work approved under POE for GB 216)	November 15, 1998 - March 10, 1999
Install subsea wellhead tree (No. 2 ST 1)	November 17, 1998 - November 20, 1998
Install umbilical between No. 2 ST 1 and No. 4 wells and the GB 260 "A" Platform	November 7, 1998 - November 15, 1998
Commencement of Production from GB 216	December 15, 1998
Install subsea wellhead tree (No. 4)	March 10, 1998 – March 20, 1998
Cessation of Production	November 30, 2006

Production facilities on the Garden Banks Block 260 "A" Platform have been designed to handle the expected daily production rate of 6000 BOPD and 10 MMCFGD from the Garden Banks Block 216 Nos. 2 ST 1 and 4 wells. The estimated life of the field is eight years.

Permit applications for the installation of the subsea wellhead equipment, flowline bundle and umbilical, and the lease commingling permit will be coordinated through the Gulf of Mexico Region and Lafayette District MMS Offices as applicable. In addition, a Deepwater Operations Plan (DWOP) is beig submitted to the GOM Region Office concurrent with this DOCD.

Attachment A is a Vicinity Map which indicates the location of the Garden Banks Block 216 area relative to the shoreline, and to the other leases in the Garden Banks Block 259 Federal Unit. Attachment B is a plat identifying the proposed location of the two subsea wells and the bottom hole locations of these wells. A table further delineating the surface, bottom hole locations and depths of the two wells is included as Attachment C. Where applicable, "confidential" information is not included in the "public information" copies of this Supplemental DOCD.

II. DESCRIPTION OF DRILLING UNIT

AHC will utilize the Ocean "New Era" to drill and suspend the GB 216 Well #2 ST1. AHC will then utilize the Diamond Drilling "Ocean Rover" semi-submersible drilling rig to complete the No. 2 ST1 and No. 4 wells. The specifications of the drilling rigs, including BOP and diverter system diagrams, will be submitted in conjunction with the permits to drill and complete the wells.

III. WELL LOCATIONS

As previously mentioned in Section I, a Well Location Plat indicating the position of the two subsea wells within Garden Banks Block 216 is included as Attachment B. The surface and bottom hole location are further detailed in the Well Location Table on Attachment C. Where applicable, "confidential" information has been excluded in the "public information" copies of the Plan.

IV. STRUCTURE MAP

A Geologic Structure Map drawn to the top of each hydrocarbon accumulation showing the surface and bottom hole locations of the two subsea wells is included as Attachment D-1.

Attachment D-2 is a Geologic Cross Section and Attachment D-3 is a General Stratigraphic Column which further describes the geology of Garden Banks Block 216. A Geologic Description of Garden Banks Block 216 is included in the Shallow Hazards Clearance Letter (Attachment F). With the exception of the Shallow Hazards Clearance Letter, all of these attachments are excluded from the "public information " copies of the Plan.

V. BATHYMETRY MAP

A Bathymetry Map showing the surface locations of the two subsea wells is included as Attachment E.

VI. SHALLOW HAZARDS

As previously mentioned in the Revised Plan of Exploration for Garden Banks Block 216 (May 29, 1997; approved June 19, 1997) geophysical data necessary for the proposed exploratory drilling program has been gathered by John E. Chance and Associates, Inc. in accordance with the requirements of Notice to Lessees (NTL) 83-3 pertaining to geohazard surveys, with NTL 75-3 (Revision No. 1) and subsequent Letters to Lessees (LTL) pertaining to cultural resource surveys. Three (3) copies of the Hazard Study were previously submitted to the GOM Region Office with the June 1995 Supplemental Plan of Exploration for Garden Banks Block 216.

A Shallow Hazards Clearance letter, based on the above referenced Shallow Hazards Report, for the installation of the flowline and umbilical bundles that will tie into the Garden Banks Block 260 "A" Platform is included as Attachment F. Seismic line data will be submitted with the pipeline permit, as applicable.

The Shallow Hazards Clearance Letter also addresses the issue of installing the flowline within potential areas of chemosynthetic ecosystems in Garden Banks Block 216. This issue was also previously addressed in the Supplemental Plan of Exploration for Garden Banks Block 216 and in other plans previously filed for the Garden Banks Block 259 Unit.

VII. OIL SPILL INFORMATION

Amerada Hess Corporation is a member of Clean Gulf Associates (CGA), and would utilize CGA equipment in the event of an oil spill at Garden Banks Block 216. CGA stores pollution control equipment at several locations along the Gulf of Mexico under its agreement with the Marine Spill Response Corporation (MSRC).

Amerada Hess Corporation's Oil Spill Contingency Plan (OSCP) has been submitted and approved by MMS in accordance with 30 CFR 250.42 (a-i). CGA spill recovery equipment suitable for spills in the Gulf of Mexico is detailed in this Plan. The Amerada Hess OSCP designates an Emergency Response Team consisting of Amerada Hess personnel and contract personnel. The team's duties are to eliminate the source of any spill, remove all sources of potential ignition, deploy transportation to monitor the movement of a slick, and contain and remove the slick if possible.

In the event of a oil spill in Garden Banks Block 216, the primary location for procurement of clean-up equipment would be the CGA/MSRC stockpile at Lake Charles, Louisiana. Equipment will then be transported to AHC's shorebase in Lake Charles, Louisiana. Additional clean-up equipment could be mobilized from the Grand Isle and Galveston, Texas CGA/MSRC stockpile areas. The AHC shorebase in Cameron, Louisiana is located approximately 158 miles northwest of Garden Banks Block 216.

In accordance with LTL's dated October 12, 1988 and September 5, 1989, the following is an estimation of time periods for procurement, mobilization, transportation, and deployment of oil spill response equipment.

	HOURS
A. Procurement Time - It is estimated that 2.0 hours will be required to secure a support vessel for mobilization of the oil spill response equipment from the Lake Charles CGA/MSRC stockpile area. Equipment from the Lake Charles stockpile area would require one hour transport time to AHC's dock at Cameron, Louisiana, which is included in the two-hour time period.	2.0 hours
B. Load Out Time - The time required to transfer the equipment to the transportation vessel will be approximately 1.5 hours.	1.5 hours
C. Travel Time - Based on a transit speed of approximately 10 knots, it is estimated that 16.5 hours would be required to move equipment from the AHC's Cameron base to the deployment site. This time frame is based on a transit distance of 158 miles from Cameron and .5 hour for the vessel to reach open water.	16.5 hours
D. Equipment Deployment - The time required to initiate clean-up operations once the transportation vessel arrives at the spill site is estimated to be 1.0 hour.	1.0 hour
*Estimated Total Time:	21.0 hours

*NOTE: Response time could, due to unforeseen circumstances at the time of a spill, be greater or lesser than the above estimates.

According to the Final Environmental Impact Statements for Gulf of Mexico Sales 142, 143, 166 and 168, particularly Section IV regarding oil spill trajectory analysis, there is less than a 0.5% probability that an oil spill greater than or equal to 1000 bbls. occurring in Garden Banks Block 216 will contact land within 10 days.

The above-mentioned EIS contains oil spill trajectory simulations based on 500 hypothetical oil spills occurring in each of the four seasons of the year. These trajectories were simulated for each of the potential launch sites. Movement of the oil slick for each spill was simulated as a series of displacements resulting from the influence of winds and currents over three hour increments. The simulations continued until the hypothetical spill hit land, moved out of the study area, or thirty days elapsed.

Potential landfall sites were established by dividing the coastline into 54 land segments corresponding to county and/or parish boundaries.

Most important is the fact that should a spill occur during operations in Garden Banks Block 216, Amerada Hess will react as quickly as possible to avoid environmental impact, as would be expected of a prudent operator.

VIII. NEW OR UNUSUAL TECHNOLOGY

As previously stated in the Initial and Revised Plans of Exploration and the Initial DOCD, no new techniques or unusual technology will be required for proposed operations in Garden Banks Block 216.

IX. LEASE STIPULATIONS

Lease Stipulation No. 1, Protection of Archeological Resources, was invoked during the issuance of Garden Banks Block 216 (OCS-G-14224). The MMS determined, subsequent to awarding the lease, that an Archeological Resources Survey would not be required for Garden Banks Block 216, therefore none was conducted.

X. DISCHARGES

As mentioned in the Plans filed for the Garden Banks Block 259 Unit, all discharges associated with operations in Garden Banks Block 216 will be in accordance with the permit limitations of the EPA NPDES General Permit for the Gulf of Mexico.

Amerada Hess Corporation has been assigned the NPDES Permit Number GMG 290003 for Gulf of Mexico operations. Garden Banks Block 216 has been assigned outfall number 244A.

Please note that all produced water from the Nos. 2 and 4 wells will be handled by and discharged at the Garden Banks Block 260 "A" Platform.

XI. HYDROGEN SULFIDE CLASSIFICATION

The August 25, 1995 approval letter for the Initial Plan of Exploration classified Garden Banks Block 216 as a zone where the absence of H_2S has been confirmed. Further, no H_2S was encountered during the drilling of the Garden Banks Block 260 (OCS-G-7462) "A" location (Wells No. 1, No. 1 Sidetrack 1, No. 1 Sidetrack 2), the "C" location (Well No. 3, Well No. 3 Sidetrack 1, Well 259 No. 1 and Well 259 No. 1 Sidetrack 1) and the Garden Banks Block 216 No. 1 Well location (OCS-G-14224). Additionally, no H_2S was encountered during the drilling of the AHC Garden Banks Block 215 Nos. 3 and 4 wells (OCS-G-9216) and the Garden Banks Block 216 No. 2 well (OCS-G-14224). Amerada Hess therefore requests that Garden Banks Block 216 continue to be classified as a "zone where the absence of H_2S has been confirmed."

XII. SUPPORT BASE/ENVIRONMENTAL REPORTS

Amerada Hess will utilize an existing shorebase in Cameron, Louisiana to support operations detailed in this Plan. No expansion of the shorebase will be required.

In addition, the installation of subsea wellheads and flowlines does not warrant revision of the Environmental Report previously submitted as part of the Initial DOCD, therefore no changes are being included in this section of the Revised DOCD.

XIII. COASTAL ZONE CONSISTENCY CERTIFICATION

A Certificate of Coastal Zone Consistency was included in the Initial DOCD and the appropriate Public Notice was published in accordance with the State of Louisiana Coastal Zone Management Program. The installation of subsea wellheads and flowlines does not warrant further Coastal Zone Management review and the previous publication of the Public Notice in the Initial DOCD satisfy Coastal Zone Management requirements.

XIV. AIR EMISSIONS REPORT

Projected air emissions resulting from the installation of the subsea wellheads and flowline (umbilical bundles have been calculated and are included as Attachment G. Please note that air emissions resulting from well completion operations were previously included in the Supplemental Plan of Exploration for Garden Banks Block 216.

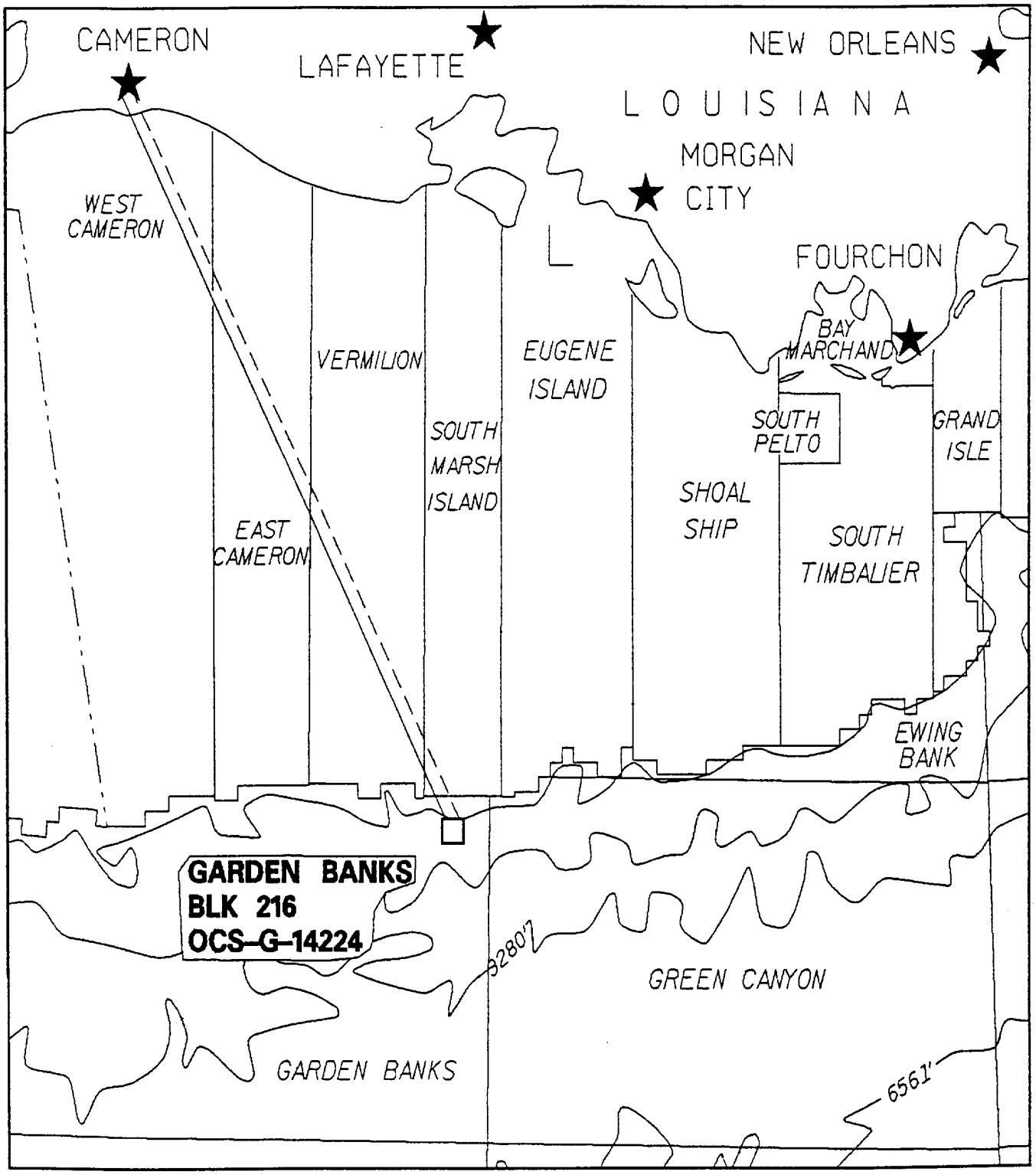
XV. SURETY BOND REQUIREMENTS - 30 CFR 256.61

In order to comply with the requirements of the amended surety bond regulations detailed in the November 5, 1993 Letter to Lessees and Operators, Amerada Hess Corporation submitted a supplement to our existing area-wide bond number 496746-30 to the GOM OCS Region Office of Leasing/Environment on November 24, 1993.

XVI. COMPANY CONTACT

Any inquiries regarding this Plan may be addressed to the following individual:

Keith J. Dupuis
Supervisor, Environmental/Regulatory Affairs
Amerada Hess Corporation
500 Dallas Street
One Allen Center, Level 2
Houston, Texas 77002
(713) 609-5926



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LEGEND

PROPOSED TRANSPORTATION ROUTES

—— **HELICOPTER**

— — **BOAT**

APPROX. 158 MILES TO CAMERON

APPROX. 100 MILES TO NEAREST SHORE

PUBLIC

Attachment

AMERADA HESS CORPORATION

UNITED STATES OFFSHORE EXPLORATION

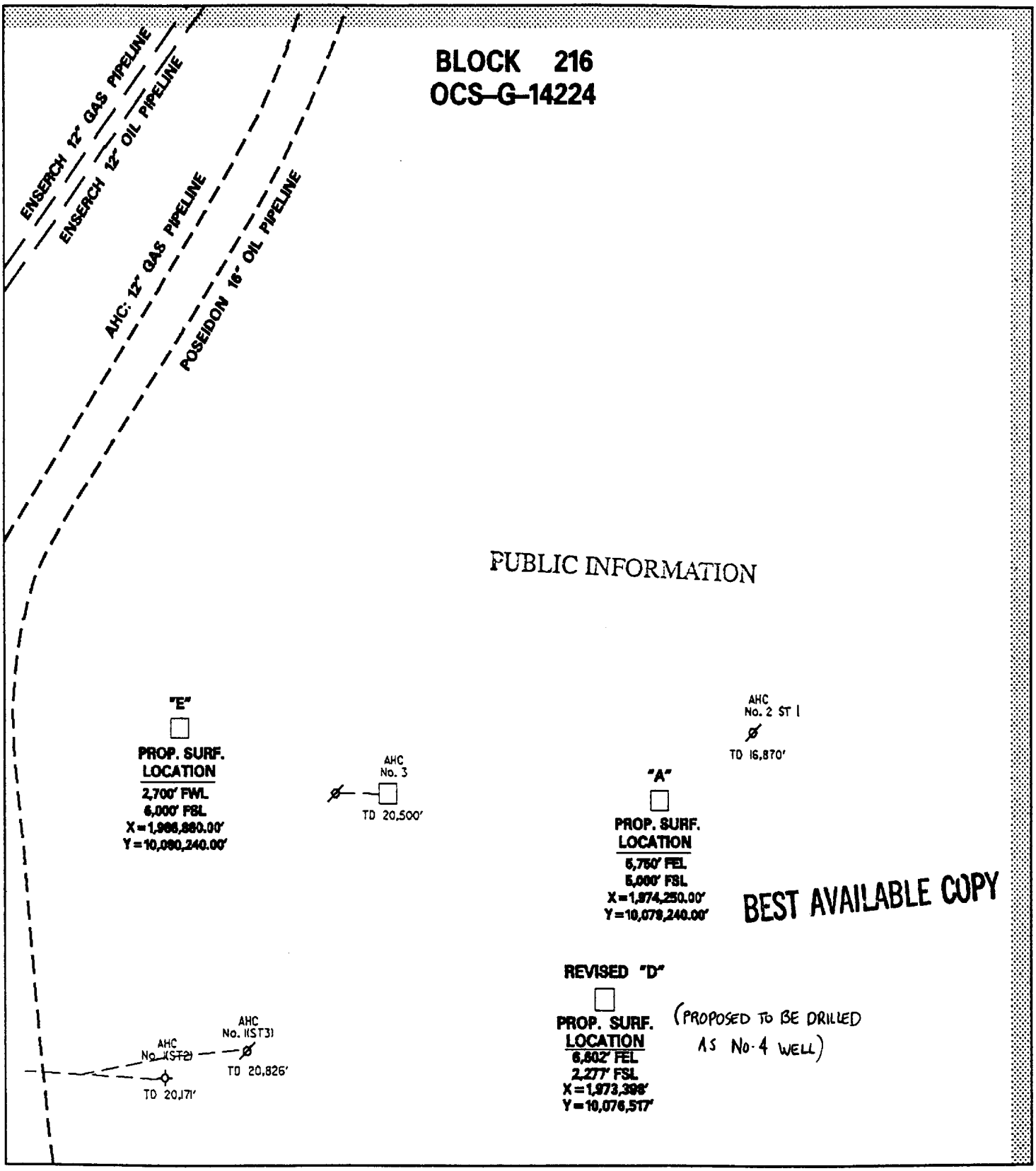
GARDEN BANKS BLK. 216

VICINITY MAP

Date 8-98

X980588PE_2

ATTACHMENT A



LEGEND

- SURFACE LOCATION
- SUSPENDED WELL
- P&A WELL
- UNIT BOUNDARY

PUBLIC

ATTACHMENT No.

AMERADA HESS CORPORATION

UNITED STATES OFFSHORE EXPLORATION

GARDEN BANKS BLK. 216
LOCATION PLAT

0' 2000' 4000'

Date: 8-98

X980608PE.PL

ATTACHMENT B

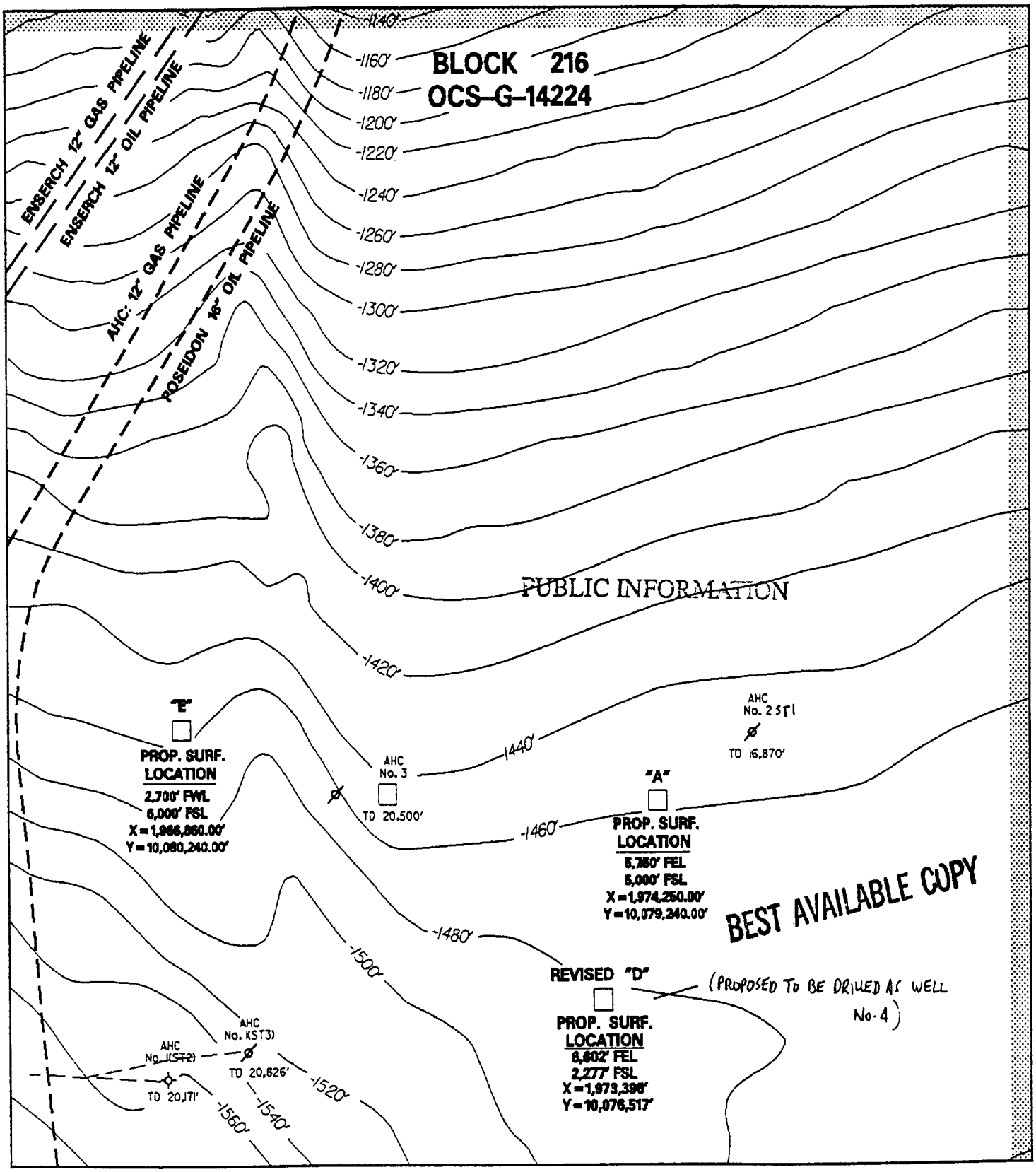
AMERADA HESS CORPORATION
SUPPLEMENTAL DEVELOPMENT OPERATIONS COORDINATION DOCUMENT
HIGH ISLAND BLOCKS A-556/A-557
OCS-G-6238, 3484

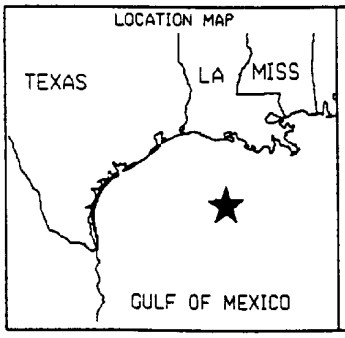
WELL LOCATION TABLE

WELL	*PROPOSED SURFACE LOCATION	WATER DEPTH
No. 2 ST 1	5,839' FSL & 4,305' FEL of GB 216 x = 1,975,695' y = 10,080,079'	1,456'
No. 4 (Well "D" in Revised POE)	*2,277' FSL & 6,602' FEL of GB 216	1,478'

*Denotes Proposed Location

ATTACHMENT C





LEGEND

- SURFACE LOCATION
- SUSPENDED WELL
- P&A WELL
- UNIT BOUNDARY

PUBLIC

ATTACHMENT No.

AMERADA HESS CORPORATION

UNITED STATES OFFSHORE EXPLORATION

GARDEN BANKS BLOCK 216

BATHYMETRY

0' 2000' 4000'

Geophysicists
Geologist

Date 8-98
C.I. = 20'

I980568PE.PL

ATTACHMENT E

AMERADA HESS CORPORATION

INTEROFFICE CORRESPONDENCE

TO: Ron Pressler **MEMO NO.:** RRP/98-21

FROM: D. B. Walker **DATE:** July 29, 1998

SUBJECT: Garden Banks 216
Proposed Surface Location

I recommend the following site as an additional proposed surface location to conduct drilling operations on Garden Banks Block 216.

	LOCATION	WATER DEPTH
Revised 'D'	6,602' FEL: 2,277' FSL	1,477'

I have reviewed the 3-D seismic, high resolution seismic, and the contract hazard interpretation along and around this location. The overall quality of the seismic data is good and the contract interpretation of observed hazards is sound. Based on this data and interpretations, it is my professional opinion there are no surface or near surface hazards that will have any adverse impact on AHC drilling operations at this location.

The following sites have been previously cleared by the MMS as surface locations to conduct drilling operations on Garden Banks Block 216.

	LOCATIONS	WATER DEPTH
'A'	5,750' FEL; 5,000' FSL	1,458'
'E'	2,700' FEL; 6,000' FSL	1,457'
Well #2:	4,305' FEL; 5,839' FSL	1,456'
Well #3:	5,913" FWL; 5,905' FSL	1,447'

HAZARD STUDIES

A high-resolution geophysical survey was acquired by John E. Chance & Associates in May, 1985 on Garden Banks blocks 259 & 260. In October, 1990 John E. Chance & Associates tied into and extended the 1985 survey to cover the southern halves of Garden Banks blocks 215 and 216. The two surveys were combined and an integrated interpretation was made in December 1990. In April 1995, John E. Chance & Associates extended the survey area again to cover the northern half of Garden Banks block 216. The interpretation for the northern half of block 216 has been combined with the 1990 report. Additionally in 1992 John E. Chance & Associates conducted an integrated deep-tow sidescan sonar/subbottom profiler survey over Garden Banks 259/260 which also provided coverage over the majority of Garden Banks blocks 215/216.

These hazard surveys were combined to support a hazard interpretation of Garden Banks block 216 using the Garden Banks Western Phase II 3-D seismic data acquired in June 1989. This has now been updated using Diamond Geophysical Garden Banks 3-D seismic data acquired in February 1997.

GEOLOGIC DESCRIPTION

Block 216 is located along the Plio-Pleistocene flexure trend in north-central Garden Banks. The regional structure in this trend is characterized by large semicontinuous salt masses, salt ridges, salt domes, tabular salt sheets, and interdomal basins.

The proposed 216 Revised 'D' Surface Location will penetrate an untested fault block for Lentic Sands objectives which were penetrated in adjacent fault blocks by the Garden Banks 216 #2 OH, #2 ST and #3 Wells.

BATHYMETRY AND SEAFLOOR FEATURES

The regional seafloor trend across Garden Banks block 216 consists generally of south dip at gradients of 0'/mile to 422'/mile (0° - 4.5°). Water depths across the block range from 1,140' to 1,600'. The local seafloor topography of the western third of block 216 has been modified by north-south trending fault scarps ranging in height from 3' to 50' with dip gradients of up to 9°. No proposed drilling operations will penetrate any identified shallow faults or slumps shallower than 800' below the seafloor.

SHALLOW GAS ACCUMULATIONS

Seismic amplitude anomalies caused by possible shallow gas accumulations exist on Garden Banks block 216 at depths of 800' and deeper. No anomalous amplitudes were noted in the shallow hazard or the high-resolution seismic data within 500' of the proposed location. A small amplitude anomaly was identified on the 3-D seismic data at a depth of approximately 4,200' SS which may be associated with a gas accumulation. While it is not believed that this anomaly represents a potential hazard, all due precautions will be taken when drilling through this interval.

MAN-MADE HAZARDS

Several man-made hazards are known to exist along the Garden Banks block 216:

OCS-G-14224 Garden Banks 216 No. 2 (Temporarily abandoned)
OCS-G-14224 Garden Banks 216 No. 3 (Temporarily abandoned)
OCS-G-9216 Garden Banks 215 No. 2
(2) AHC 12"/16" Pipelines

All of the proposed surface locations are more than 500' from the man-made hazards identified in and adjacent to block 216. This will allow safe clearance for sea-bottom structures and anchor spreads used in semi-submersible drilling operations.

POTENTIAL CHEMO-SYNTHETICS COMMUNITIES

The proposed drilling operations on Garden Banks 216 will be carried out in water depths where chemosynthetic communities are typically found. Therefore, the seafloor areas, which would be disturbed by the proposed drilling operations, have been carefully chosen to avoid impacting possible chemosynthetic communities.

The geophysical hazard studies of Garden Banks blocks 259, 260, 215, 216, 171 and 172 indicate the existence of seismic acoustic void zones which are probably caused by hydrocarbon seepage to the seafloor. The majority of these zones are located within the southeast quadrant of Garden Banks block 260, where the local seafloor topography has been modified by salt diapirism. The areas outlined as acoustic void zones on the hazard survey interpretation provide the only sites suitable for chemosynthetic ecosystems. Therefore, no proposed surface or anchor locations are within 1,000' of any acoustic void zone observed on the shallow hazard data. Additionally, side scan sonar data collected in the 1995 survey did not detect any acoustic void zones or anomalous mounds indicative of suitable environments for chemosynthetic communities. Based on the present level of understanding of chemosynthetic ecosystems and the hazard survey data, it is my professional opinion that the proposed operations will have no adverse impact on chemosynthetic communities.

SUMMARY

Shallow hazard data, high-resolution seismic data, and conventional 3-D seismic data were used to identify potential drilling hazards to a depth of approximately 5,000' below the seafloor. It is my professional opinion that the proposed revised surface location 'D' on Garden Banks Block 216 was chosen on a site clear of surface and near surface drilling hazards.

Sincerely,

D. B. Walker
/dgr
u:/data/msw/rp/gb216apc.doc

RMA Response Management Associates, Inc.

Emergency Response Planning, Training and Management • Environmental/Regulatory Engineering and Compliance

AIR QUALITY REVIEW

INITIAL DEVELOPMENT
OPERATIONS COORDINATION DOCUMENT

09/08/98

COMPANY:	Amerada Hess Corporation
AREA:	Garden Banks
BLOCK(S):	216
LEASE(S):	OCS-G 14224
RIG:	Semi-Submersible
PLATFORM:	Subea Wells No. 2 S/T #1 and No. 4
WELL(S):	N/A
LATITUDE:	X Coordinate: 10,079,340
LONGITUDE:	Y Coordinate: 1,970,060
COMPANY CONTACT:	Susan Wilson
TELEPHONE NO.:	(281) 320-9796
REMARKS:	Emissions associated with this Air Quality Review will address the installation of subsea trees for Wells No. 2 S/T #1 and No. 4; installation of a lease term bulk product pipeline and umbilical and commencement of production. Pennzoil does not propose to perform a well test on the potential productive zone(s).

16000 Stuebner Airline, Suite 520 • Spring (Houston), Texas 77379 • Phone (281) 251-9200 • Metro (281) 320-9796 • FAX (281) 320-9700

GULF OF MEXICO AIR EMISSION CALCULATIONS

General

This document (MMS.XLW) was prepared through the cooperative efforts of those professionals in the oil industry including the API/OOC Gulf of Mexico Air Quality Task Force, who deal with air emission issues. This document is intended to standardize the way we estimate an air emission inventory for Plans of Exploration (POE) and Development, Operations, Coordination Documents (DOCD) approved by the Minerals Management Service (MMS). It is intended to be thorough but flexible to meet the needs of different operators.This first file gives the basis for the emission factors used in the emission spreadsheet as well as some general instructions. The following files, Title Sheet, Factors Sheet,Emissions Spreadsheet,and Summary Sheet will describe and calculate emissions from an activity.

Title Sheet

The Title Sheet requires input of the company's name, area, block, OCS-G number, platform and/or well(s) in the necessary lines. This data will automatically be transferred to the spreadsheet and summary sheet.

Factor Sheet

The emission factors were compiled from the latest AP-42 references or from industry studies if no AP-42 reference was available. Factors can be revised as more data becomes available. A change to this Factor Sheet will be automatically changed in Emission Spreadsheet.

The basis for the factors is as follows:

1. NG Turbines Fuel usage scf/hr = HP X 9.524 (10,000 btu/HP-hr / 1050 btu/scf)
2. NG Engines Fuel usage scf/hr = HP X 7.143 (7,500 btu/HP-hr / 1050 btu/scf)
3. Diesel Fuel usage gals/hr = HP X 0.0483 (7,000 btu/HP-hr / 145,000 btu/gal)

Emission Factors

Natural Gas Prime Movers

1. TNMOC refers to total non-methane organic carbon emissions and these can be assumed equivalent to VOC emissions.

3. The sulfur content assumed is 2000 grains /mmscf (3.33 ppm). If your concentration is different then ratio your emission factor up or down.

Diesel-Fired Prime Movers

1. Diesel sulfur level 0.4% by wt

2. For boats use > 600 HP factors based on AP-42 Vol. II, Table II-3-3.
   Those figures closely match the above values. Include only the emissions from the boats within 25 mile radius of the well/platform.

3. For diesel engines <600 HP VOC emissions equal total HC emissions; for diesel engines>600 HP VOC emissions equal non-methane HC emissions.

Heaters/Boilers/Firetubes/NG-Fired

1. NG Sulfur content is 2000 grains per million cu ft

2. VOCs emissions based on total non-methane HCs

Gas Flares

1. Flare is non-smoking

2. 1050 btu/cu. ft. for NG heating value

3. The sulfur content assumed is 2000 grains /mmscf (3.33 ppm). If your concentration is different then ratio your emission factor up or down or you may use the following formula:

   H2S flared (lbs/hr) = Gas flared (cu ft/hr) X ppm H2S X 10E-06 X 34/379

   SOx emis (lbs/hr) = H2S flared (lbs/hr) X 64/34

Liquid Flares

1. Assume 1% by wt Sulfur maximum in the crude oil.

2. VOC equals non-methane HCs

3. Particulate emissions assumes Grade 5 oil.

Tanks

1. Tank emissions assumes uncontrolled fixed roof tank.

Fugitives

1. Fugitives are based on the 1993 Star Environmental Report. It requires that you count or estimate your components.

Glycol Dehydrator Vent

1. The dehydrated gas rate in SCF/HR must be entered in the spreadsheet. The emission factor is

from the compilation of the Louisiana Survey and an average emissions per gas rate.

Gas Venting

1.The emission factor is based on venting unburned natural gas of average weight.

Emissions Spreadsheet

The emissions from an operation should be presented for a calendar year (1994, 1995, etc.). The operation may include drilling only or drilling in conjunction with other activities such as pipeline installation or production operations. For additional years the Emissions Spreadsheet is renamed Emissions 2, 3, etc.The different operating parameters for each year should entered to calculate revised emissions for that year. The spreadsheet will calculate maximum fuel usage (UNIT/HR) using the known horsepower. It will assume maximum fuel usage is equal to actual fuel (UNIT/DAY) usage unless the actual fuel usage is known. If so, insert actual fuel usage in appropriate column. The emissions will be calculated as follows:

Emission rate (lb/hr) = (HP or fuel rate) X Emission Factor (Potential to emit)

Emissions (tpy)=Emission rate (lb/hr) X load factor(Act Fuel/Max Fuel) X hrsX daysX ton/2000 lbs (Actual emissions)

To customize the spreadsheet for your application it is possible to delete lines for non-applicable equipment/activities or copy/insert an entire line if more than one similiar type of equipment is present.

Also, the production equipment can be customized further by adding the use of the equipment behind each type of engine, i.e.,

Turbine
Turbine - Gas Compressor

Burner
Burner - Line Heater

Summary Sheet

The Summary Sheet is designed to show a proposed estimate of emissions from an activity over a future period of time. In this example ten years was chosen. The first line (Row 7-1994) of the summary sheet is linked to the yearly totals in the Emissions Spreadsheet. The second line (Row 8-1995) is referenced to Emissions2 Spreadsheet. The third line (Row 9- 1996) is referenced to Emissions3 Spreadsheet. If more years of calculations are necessary to reach a constant then the spreadsheet can be copied and linked to the summary sheet for years 1997,1998 etc. Once emissions are constant the values are carried to the end of the ten year period.

AIR EMISSION CALCULATIONS

Fuel Usage Conversion Factors	Natural Gas Turbines		Natural Gas Engines		Diesel Recip. Engine		REF.	DATE
	SCF/hp-hr	9.524	SCF/hp-hr	7.143	GAL/hp-hr	0.0483	AP42 3.2-1	4/76 & 8/84

Equipment/Emission Factors	units	TSP	SOx	NOx	VOC	CO	REF.	DATE
NG Turbines	gms/hp-hr		0.00247	1.3	0.01	0.83	AP42 3.2-2	4/93
NG 2-cycle lean	gms/hp-hr		0.00185	11	0.43	1.5	AP42 3.2-2	4/93
NG 4-cycle lean	gms/hp-hr		0.00185	12	0.72	1.6	AP42 3.2-2	4/93
NG 4-cycle rich	gms/hp-hr		0.00185	10	0.14	8.6	AP42 3.2-2	4/93
Diesel Recip. < 600 hp.	gms/hp-hr	1	0.116375	14	1.12	3.03	AP42 3.3-1	4/93
Diesel Recip. > 600 hp.	gms/hp-hr	0.24	0.8625	11	0.33	2.4	AP42 3.4-1	4/93
NG Heaters/Boilers/Burners	lbs/mmscf	5	0.6	140	2.8	35	AP42 1.4-1/2/3	4/93
NG Flares	lbs/mmscf		0.57	71.4	60.3	388.5	AP42 11.5-1	9/91
Liquid Flaring	lbs/bbl	0.42	6.6	2.3	0.01	0.21	AP42 1.3-1	4/93
Tank Vapors	lbs/bbl				0.03		E&P Forum	1/93
Fugitives	lbs/hr/comp.				0.000025		API Study	12/93
Glycol Dehydrator Vent	lbs/mmscf				6.6		La. DEQ	1991
Gas Venting	lbs/scf				0.0034			

COMPANY	AREA	BLOCK	LEASE	PLATFORM	WELL	LATITUDE	LONGITUDE	CONTACT	PHONE	REMARKS
AMERADA HESS CORPO	GARDEN BANKS	216	OCS-G 14224	MI-SUBMERSIB	2 S/T #1 & #4	Y = 10,079,340	X = 1,970,060	SUSAN WILSON	(281) 320-9798	INST SS TREES & PL & COMM PROD

OPERATIONS	EQUIPMENT		MAX. FUEL	ACT. FUEL	RUN TIME		POUNDS PER HOUR					TONS PER YEAR				
	Diesel Engines	HP	GAL/HR	GAL/D												
	Nat. Gas Engines	HP	SCF/HR	SCF/D												
	Burners	MMBTU/HR	SCF/HR	SCF/D	HR/D	DAYS	TSP	SOx	NOx	VOC	CO	TSP	SOx	NOx	VOC	CO
	PRIME MOVER>600hp diesel	9000	434.7	10432.80	24	3	4.76	17.10	218.06	6.54	47.58	0.17	0.62	7.85	0.24	1.71
	TUGS(2)>600hp diesel	0	0	0.00	0	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	ANCHOR TUGS(3)>600hp diesel	0	0	0.00	0	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	AUXILIARY EQUIP<600hp diesel	0	0	0.00	0	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	VESSELS>600hp diesel	2350	113.505	2724.12	0	0	1.24	4.46	56.94	1.71	12.42	0.00	0.00	0.00	0.00	0.00
	VESSELS>600hp diesel	2350	113.505	2724.12	0	0	1.24	4.46	56.94	1.71	12.42	0.00	0.00	0.00	0.00	0.00
	VESSELS>600hp diesel	650	31.395	753.48	0	0	0.34	1.23	15.75	0.47	3.44	0.00	0.00	0.00	0.00	0.00
PIPELINE & UMBILICAL INSTALLATION	PIPELINE LAY BARGE diesel	6000	289.8	6955.20	24	26	3.17	11.40	145.37	4.36	31.72	0.99	3.56	45.36	1.36	9.90
	SUPPORT VESSEL diesel	14000	676.2	16228.80	24	26	7.40	26.60	339.21	10.18	74.01	2.31	8.30	105.83	3.17	23.09
	ROV WORKBOAT diesel	1500	72.45	1738.80	24	8	0.79	2.85	36.34	1.09	7.93	0.08	0.27	3.49	0.10	0.76
	JACKET RISERS - VESSEL diese	4500	217.35	5216.40	24	8	2.38	8.55	109.03	3.27	23.79	0.23	0.82	10.47	0.31	2.28
SUBSEA 2 S/T #1 INSTALLATION	DERRICK BARGE(TUG) >600 hp	19260	930.258	22326.19	24	3	10.18	36.59	466.65	14.00	101.81	0.37	1.32	16.80	0.50	3.67
	MATERIAL TUG>600hp diesel	2670	128.961	3095.06	24	3	1.41	5.07	64.69	1.94	14.11	0.05	0.18	2.33	0.07	0.51
	CRANE<600hp diesel	0	0	0.00	0	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	GENERATOR>600hp diesel	0	0	0.00	0	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	GENERATOR>600hp diesel	0	0	0.00	0	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	SUPPORT VESSEL diesel	0	0	0.00	6	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	SUPPORT VESSEL diesel	0	0	0.00	0	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	SUPPORT VESSEL diesel	0	0	0.00	0	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	TURBINE nat gas	0	0	0.00	0	0		0.00	0.00	0.00	0.00		0.00	0.00	0.00	0.00
	RECIP.2 cycle lean nat gas	0	0	0.00	0	0		0.00	0.00	0.00	0.00		0.00	0.00	0.00	0.00
	RECIP.4 cycle lean nat gas	0	0	0.00	0	0		0.00	0.00	0.00	0.00		0.00	0.00	0.00	0.00
	RECIP.4 cycle rich nat gas	0	0	0.00	0	0		0.00	0.00	0.00	0.00		0.00	0.00	0.00	0.00
	BURNER nat gas	0	0.00	0.00	0	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	BURNER nat gas	0	0.00	0.00	0	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	BURNER nat gas	0	0.00	0.00	0	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	MISC.	BPD	SCF/HR	COUNT												
	TANK-	0			0	0				0.00					0.00	
	FLARE-		0		0	0		0.00	0.00	0.00	0.00		0.00	0.00	0.00	0.00
	PROCESS VENT-		0		0	0				0.00					0.00	
	FUGITIVES			0.0		0				0.00					0.00	
	GLYCOL STILL VENT-		0		0	0				0.00					0.00	
DRILLING WELL TEST	OIL BURN	0			0	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	GAS FLARE		0		0	0		0.00	0.00	0.00	0.00		0.00	0.00	0.00	0.00
1998 YEAR TOTAL							32.92	118.32	1508.99	45.27	329.23	4.19	15.06	192.12	5.76	41.92
EXEMPTION CALCULATION	DISTANCE FROM LAND IN MILES											3663.00	3663.00	3663.00	3663.00	79288.83
	110.0															

Semi-Submerisble to install subsea wellhead trees. The tow and anchor emissions for the rig were approved under the Plan of Exploration.
Full wellstream production from Subsea Wells No. 2 S/T #1 and No. 4, GB 216, to Amerada's PF "A", GB 260, will not increase the existing emission rate.

ATTACHMENT G

COMPANY	AREA	BLOCK	LEASE	PLATFORM	WELL	LATITUDE	LONGITUDE	CONTACT	PHONE	REMARKS
AMERADA HESS CORPO	GARDEN BANKS	216	OCS-G 14224	MI-SUBMERSIB	2 S/T #1 & #4	Y = 10,079,340	X = 1,970,060	SUSAN WILSON	(281) 320-9796	INST SS TREES & PL & COMM PROD

OPERATIONS	EQUIPMENT		MAX. FUEL	ACT. FUEL	RUN TIME		POUNDS PER HOUR					TONS PER YEAR				
	Diesel Engines	HP	GAL/HR	GAL/D												
	Nat. Gas Engines	HP	SCF/HR	SCF/D												
	Burners	MMBTU/HR	SCF/HR	SCF/D	HR/D	DAYS	TSP	SOx	NOx	VOC	CO	TSP	SOx	NOx	VOC	CO
	PRIME MOVER>600hp diesel	9000	434.7	10432.80	24	10	4.76	17.10	218.06	6.54	47.58	0.57	2.05	26.17	0.79	5.71
	TUGS(2)>600hp diesel	0	0	0.00	0	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	ANCHOR TUGS(3)>600hp diesel	0	0	0.00	0	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	AUXILIARY EQUIP<600hp diesel	0	0	0.00	0	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	VESSELS>600hp diesel	2350	113.505	2724.12	0	0	1.24	4.46	56.94	1.71	12.42	0.00	0.00	0.00	0.00	0.00
	VESSELS>600hp diesel	2350	113.505	2724.12	0	0	1.24	4.46	56.94	1.71	12.42	0.00	0.00	0.00	0.00	0.00
	VESSELS>600hp diesel	650	31.395	753.48	0	0	0.34	1.23	15.75	0.47	3.44	0.00	0.00	0.00	0.00	0.00
PIPELINE & UMBILICAL INSTALLATION	PIPELINE LAY BARGE diesel	0	0	0.00	0	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	SUPPORT VESSEL diesel	0	0	0.00	0	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	ROV WORKBOAT diesel	0	0	0.00	0	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	JACKET RISERS - VESSEL diese	0	0	0.00	0	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
SUBSEA 4 INSTALLATION	DERRICK BARGE(TUG) >600 hp	19260	930.258	22326.19	24	10	10.18	36.59	466.65	14.00	101.81	1.22	4.39	56.00	1.68	12.22
	MATERIAL TUG>600hp diesel	2670	128.961	3095.06	24	10	1.41	5.07	64.69	1.94	14.11	0.17	0.61	7.76	0.23	1.69
	CRANE<600hp diesel	0	0	0.00	0	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	GENERATOR>600hp diesel	0	0	0.00	0	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	GENERATOR>600hp diesel	0	0	0.00	0	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	SUPPORT VESSEL diesel	0	0	0.00	6	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	SUPPORT VESSEL diesel	0	0	0.00	0	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	SUPPORT VESSEL diesel	0	0	0.00	0	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	TURBINE nat gas	0	0	0.00	0	0		0.00	0.00	0.00	0.00		0.00	0.00	0.00	0.00
	RECIP 2 cycle lean nat gas	0	0	0.00	0	0		0.00	0.00	0.00	0.00		0.00	0.00	0.00	0.00
	RECIP 4 cycle lean nat gas	0	0	0.00	0	0		0.00	0.00	0.00	0.00		0.00	0.00	0.00	0.00
	RECIP 4 cycle rich nat gas	0	0	0.00	0	0		0.00	0.00	0.00	0.00		0.00	0.00	0.00	0.00
	BURNER nat gas	0	0.00	0.00	0	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	BURNER nat gas	0	0.00	0.00	0	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	BURNER nat gas	0	0.00	0.00	0	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	MISC.	BPD	SCF/HR	COUNT												
	TANK-	0			0	0				0.00					0.00	
	FLARE-		0		0	0		0.00	0.00	0.00	0.00		0.00	0.00	0.00	0.00
	PROCESS VENT-		0		0	0				0.00					0.00	
	FUGITIVES			0.0		0				0.00					0.00	
	GLYCOL STILL VENT-		0		0	0				0.00					0.00	
DRILLING WELL TEST	OIL BURN	0			0	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	GAS FLARE		0		0	0		0.00	0.00	0.00	0.00		0.00	0.00	0.00	0.00
1999 YEAR TOTAL							**19.18**	**68.92**	**879.03**	**26.37**	**191.79**	**1.96**	**7.05**	**89.93**	**2.70**	**19.62**
EXEMPTION CALCULATION	**DISTANCE FROM LAND IN MILES**											**3663.00**	**3663.00**	**3663.00**	**3663.00**	**79288.83**
	110.0															

Semi-Submerisble to install subsea wellhead trees. The tow and anchor emissions for the rig were approved under the Plan of Exploration.
Full wellstream production from Subsea Wells No. 2 S/T #1 and No. 4, GB 216, to Amerada's PF "A", GB 260, will not increase the existing emission rate.

ATTACHMENT G

AIR EMISSION CALCULATIONS

COMPANY	AREA	BLOCK	LEASE	PLATFORM	WELL
AMERADA HESS COR	GARDEN BANKS	216	OCS-G 14224	SEMI-SUBMERSIBLE	N/A

Year	Emitted Substance				
	TSP	SOx	NOx	HC	CO
1998	4.19	7.05	192.12	5.76	41.92
1999	1.96	7.73	89.93	2.70	19.62
Allowable	3663.00	3663.00	3663.00	3663.00	79288.83