UNITED STATES GOVERNMENT
MEMORANDUM

11/13/97

To: Public Information, (MS 5034)

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

Reference is made to the following plan received October 30, 1997:

Type Plan - Initial Plan of Exploration
Leases - OCS-G 6884 and 15436
Blocks - 780 and 824
Area - Viosca Knoll
Activities Proposed - Wells F and G

Control Number - N-5967

In accordance with 30 CFR 250.33, this plan is hereby deemed submitted and is now being considered for approval.

Michael Tolbert
for Unit Supervisor

MINERALS MANAGEMENT SERVICE

NOTED-SCHEXNAILDRE

MINERALS MANAGEMENT SERVICE
OCT 30 1997
GOM OCS REGION, New Orleans, LA

Shell Offshore Inc.
An affiliate of Shell Oil Company

One Shell Square
PO Box 61933
New Orleans LA 70161-1933
(504) 588-6161

Exploration and Production
Shelf Division
Regulatory Affairs

"PUBLIC INFORMATION COPY"

OCT 29 1997

Mr. Donald C. Howard
Regional Supervisor
Field Operations
MS 5231
Minerals Management Service
1201 Elmwood Park Boulevard
New Orleans, LA 70123-2394

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Dear Mr. Howard:

SUBJECT: INITIAL PLAN OF EXPLORATION (POE)
VIOSCA KNOLL BLOCKS 780 AND 824
OCS-G 6884 AND OCS-G 15436
OFFSHORE LOUISIANA/ALABAMA

Shell Offshore Inc. (SOI), Shelf Division, Regulatory Affairs, is hereby submitting, for your approval, our initial POE for the captioned location. SOI is requesting your approval for Well Locations F and G. We plan to commence operations on or about January 3, 1998.

We have included, for your review, various attachments which contain the necessary supporting data for our intended operations. These attachments are:

1) General Information and Sequence of Activities;
2) Vicinity Map and Transportation Routes;
3) Surface Locations and Bathymetry Map;
4) Mud and Completion Fluid Components and Additives;
5) Oil Spill Contingency Plan;
6) Air Emissions Data;
7) Waste and Pollutants Discharges;
8) CZM Statement and Public Notice (Louisiana/Alabama);
9) Anchor Sites and Chemosynthetic Organisms Comments;
*10) Bottom Hole Locations and Map;
*11) Structure Maps;
*12) Geologic Cross Section;
*13) Description of Activities and H_2S Statement;
*14) Site Specific - Shallow Drilling and Hazards Report; and
15) Environmental Report.

*These attachments contain proprietary data and as such are free from disclosure under the "Freedom of Information Act".

Should you require additional information, please contact the undersigned at (504) 588-6242.

Yours very truly,

Diana J. Bilbo
Regulatory Affairs Specialist

DJB:LSB

Attachments

REFER TO CONTROL NO. N-5967

SHELL OFFSHORE INC. - POE
SCHEDULE OF ACTIVITIES AND GENERAL INFORMATION
VIOSCA KNOLL BLOCKS 780 AND 824
OCS-G 6884 AND OCS-G 15436
OFFSHORE LOUISIANA/ALABAMA

SCHEDULE OF ACTIVITIES

SOI is herein requesting approval for Well Locations F and G to be drilled from surface locations in Viosca Knoll Block 780, OCS-G 6884. Well Location F will bottom hole in Viosca Knoll Block 780 and Well Location C will bottom hole in Viosca Knoll Block 824, OCS-G 15436. Drilling is scheduled to commence on or about January 3, 1998. Drilling each well is expected to require approximately 50 days.

DRILLING WELL LOC.	START DATE	END DATE
F	JANUARY 3, 1998	FEBRUARY 21, 1998
G	FEBRUARY 22, 1998	APRIL 12, 1998

GENERAL INFORMATION

ONSHORE SUPPORT BASE

The principle onshore support base for both air and boat traffic during this activity will be Shell's existing Venice Terminal. No expansion of the terminal will be required for these activities.

DRILLING RIG SAFETY FEATURES

The floater rig "Bill Shoemaker" or similar drilling rig we plan to use will comply with all of the regulations of the American Bureau of Shipping (ABS), International Maritime Organization (IMO), and the United States Coast Guard (USCG).

LEASE STIPULATION STATEMENT

Shell Offshore Inc. will comply with all items stated in Stipulation No. 1--Protection of Archaeological Resources and Stipulation No. 3--Military Area.

POLLUTION-PREVENTION FEATURES

All waste, except that authorized for discharge, is collected and transported to shore for disposal. Sewage is treated prior to being dumped overboard.

DRILLING OPERATIONS

All drilling operations will be conducted under the provisions of 30 CFR, Part 250, Subpart D, and other applicable regulations and notices, including those regarding the avoidance of potential drilling hazards and safety and pollution prevention control. No new or unusual technology will be employed during drilling operations. No shallow hazards are expected.

WELL ABANDONMENT

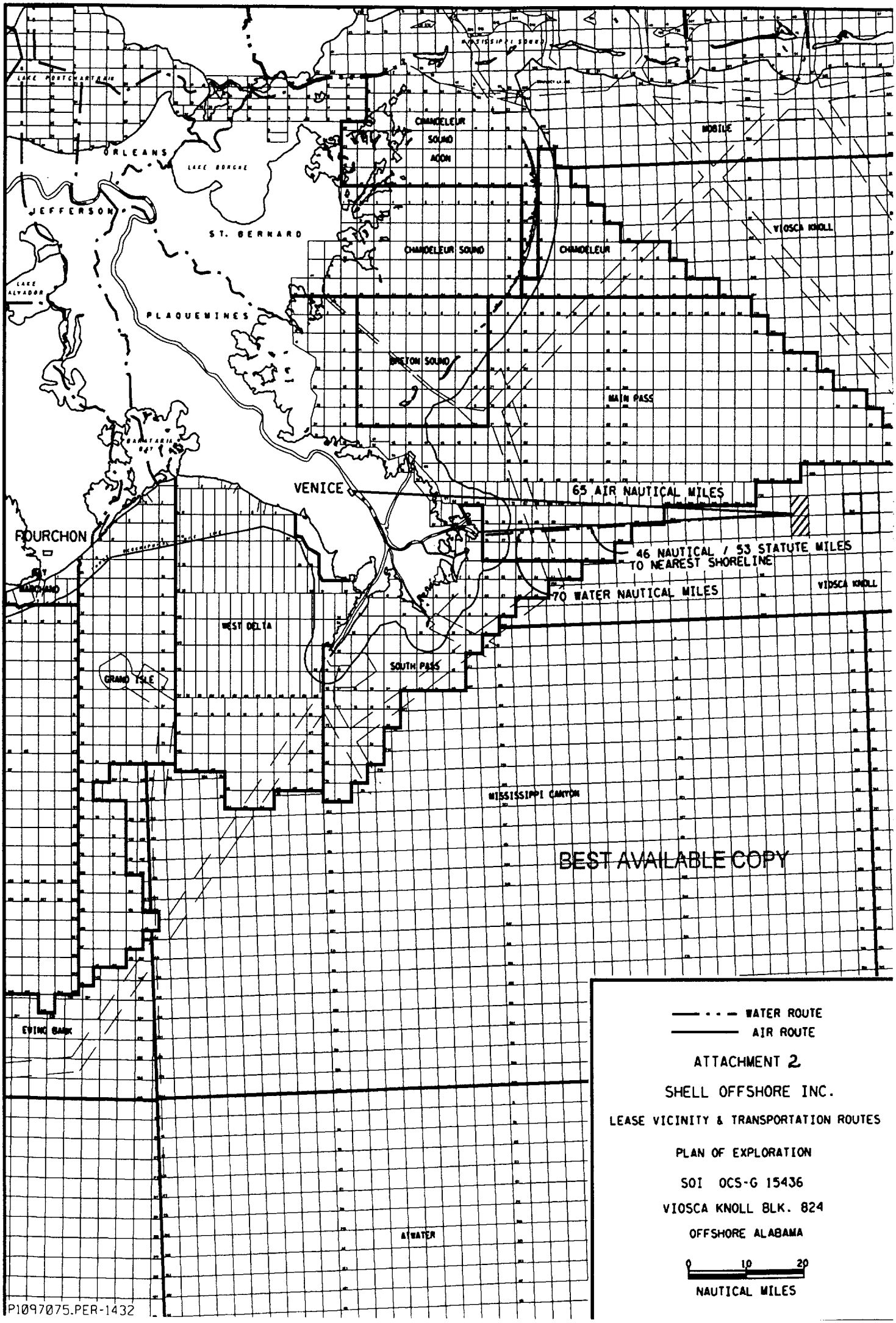
The wells will be drilled, evaluated, and either temporarily or permanently abandoned in accordance with 30 CFR, Part 250, Subpart G. If further development, or production activities are to be undertaken thereafter, appropriate plans will be submitted.

AREA WIDE BOND RIDER

Refer to SOI's Bond Rider No. 5206292 which totals $3,000,000 and complies with Letter to Lessees and Operators dated November 5, 1993. (30 CFR Part 256)

OIL SPILL CONTINGENCY PLAN

SOI's Oil Spill Contingency Plan was submitted September 13, 1996 and is currently being reviewed by the MMS. Also, we are operating under our worst case discharge scenario.



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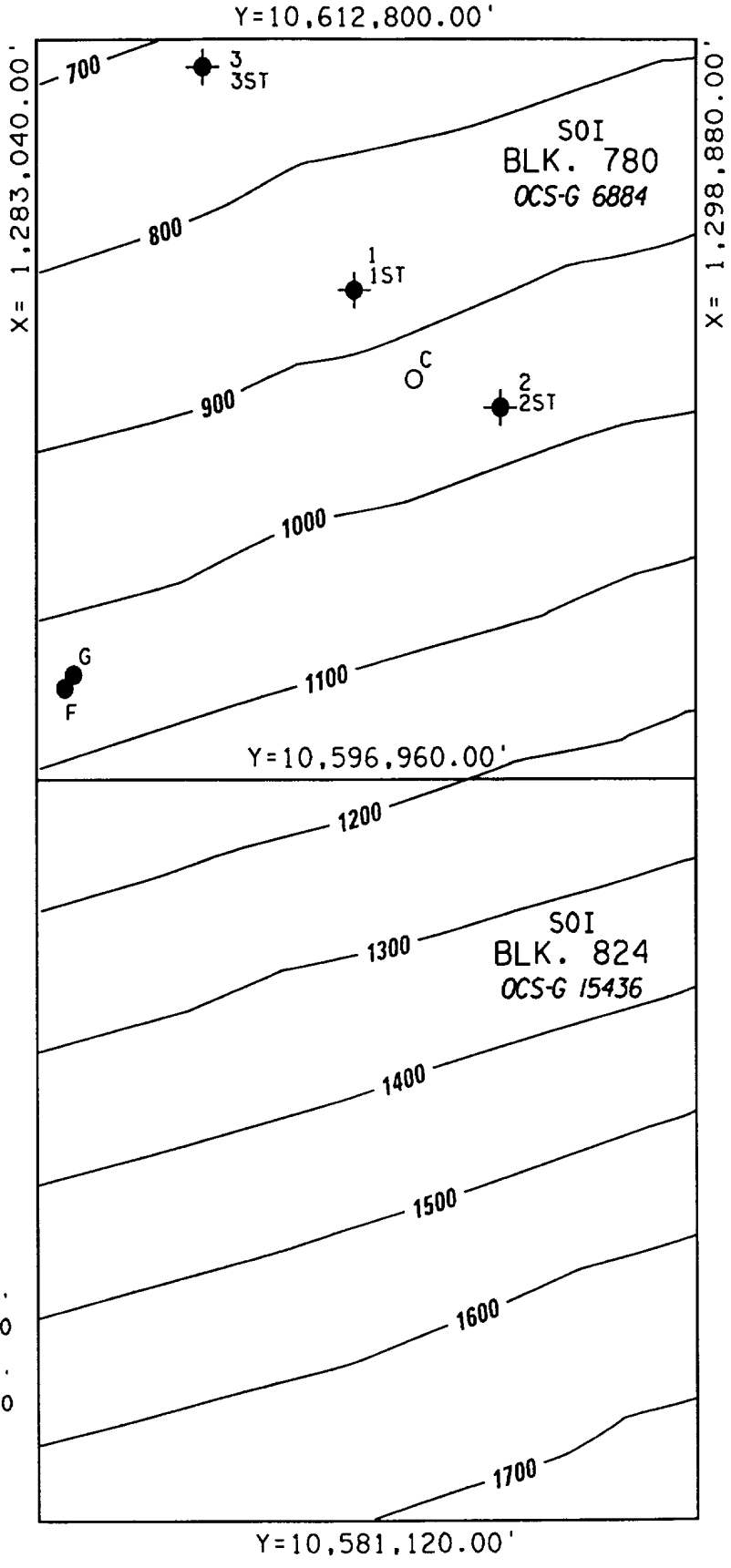
SHELL OFFSHORE INC. - POE
VIOSCA KNOLL BLOCKS 780 AND 824
SURFACE LOCATIONS
OCS-G 6884 AND OCS-G 15436
OFFSHORE LOUISIANA/ALABAMA

PROPOSED SURFACE LOCATIONS

F X=1,283,720.00', Y=10,598,900.00'
1940' FSL & 680' FWL OF BLK. 780

G X=1,283,930.00', Y=10,599,190.00'
2230' FSL & 890' FWL OF BLK. 780

ATTACHMENT 3A



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● DRILLED SURFACE LOCATIONS

1,1ST X=1,290,623.00', Y=10,607,418.00'
5382' FNL & 7583' FWL OF BLK. 780

2,2ST X=1,294,153.00', Y=10,604,902.00'
7898' FNL & 4727' FEL OF BLK. 780

3,3ST X=1,287,028.00', Y=10,612,194.00'
606' FNL & 3988' FWL OF BLK. 780

○ PREVIOUSLY APPROVED SURFACE LOCATION

C X=1,292,069.00', Y=10,605,515.00'
7285' FNL & 6811' FEL OF BLK. 780

● PROPOSED SURFACE LOCATIONS

F X=1,283,720.00', Y=10,598,900.00'
1940' FSL & 680' FWL OF BLK. 780

G X=1,283,930.00', Y=10,599,190.00'
2230' FSL & 890' FWL OF BLK. 780

ATTACHMENT 3B

SHELL OFFSHORE INC.

PROPOSED SURFACE LOCATION & BATHYMETRY

PLAN OF EXPLORATION

SOI OCS-G 15436, VIOSCA KNOLL BLK. 824

VIOSCA KNOLL
BLOCK 824

OFFSHORE ALABAMA

0 4000'

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BAKER HUGHES INTEQ

WATER BASE ADDITIVES

Mil-Bar	Barite (Barium Sulfate)	Shale-Bond	Natural Occurring Asphalt
Densimix	Hematite	ProtectoMagic M	Air-Blown Asphalt
W.O. 30	Sized Calcium Carbonate	Caustic Soda	Sodium Hydroxide
Milgel	Bentonite	Aluminum Stearate	Aluminum Stearate
Salt Water Gel	Attapulgite	Lime	Calcium Hydroxide
Super-Col	High Yield Bentonite	Soda Ash	Sodium Carbonate
New-Vis	Polymer Viscosifier	M.D.	Detergent
XCD Polymer	Xanthan Gum	LD-8	Defoamer
Mil-Temp	Sulfonated Styrene	Salt	Sodium Chloride
New-Thin	Polymeric Deflocculant]	Drispac	Polyanionic Cellulose
Uni-Cal	Chrome Lignosulfonate	Gyp	Gypsum
SAPP	Sodium Acid Pyrophosphate	Acetic Acid	Acetic Acid
Bio-Lose	Non-Fermenting CM Starch	Diaseal M	Diatomaceous Earth
Chemtrol X	Selective Polymer Blend	Mil-Mica	Mica Flakes
Filtrex	Polyanionic Lignin Resin	Mil-Plug	Nut Shells
Ligco	Lignite	KOH	Potassium Hydroxide
Ligcon	Cauticized Lignite	MF-1	Selective Flocculant
Mil-Starch	Pre-Gelatinized Starch	Soltex	Sulfonated Asphalt
Perma-Lose HT	Non-Fermenting Polymerized Starch	Polydrill	Polymeric HTHP Filtration Control
Pyro-Trol	AMPS Co-Polymer	X-Cide 207	Biocide
Kem-Seal	Co-Polymer for HTHP Filtration Control	Aqua-Magic	Glycol/Asphalt Blend
Mil-Pac	Polyanionic Cellulose	Peneteq	ROP Enhancement
CMC	Sodium Carboxymethylcellulose	Bicarb	Sodium Bicarbonate
Mil-Gard	Zinc Carbonate	Chek-Loss	Seepage Control
Alplex	Aluminum Complex	Mil-Gard	Calcium Carbonate
Bio-Drill 1402	Modified Glycol	Lubezol 1000	Lubricant
New-Drill HP	PHPA Blend	Kwik-Seal	Blended LCM
New-Drill Plus	PHPA 100% Active	HF 100 N	Lubricant/Glycol
New-Drill LD	PHPA in Glycol Carrier		

OIL MUD ADDITIVES

Carbo-Mul	Secondary Emulsifier	Carbo-Trol	Filtration Control
Carbo-Tec	Primary Emulsifier	Surf-Cote	Oil Wetting Agent
Carbo-Gel	Organophilic Hectorite Viscosifier	DFE 304	Proprietary
Carbo-Vis	Organophilic Clay	DFE 417	Proprierary

SYNTHETIC ADDITIVES

Bio-Cote	Wetting Agent	Syn-Teq	Food Grade Paraffin
Bio-Mul	Detergent Alkylate	Iso-Teq	Olefin Isomer
Bio-Tec	Emulsifier		

SPOTTING FLUIDS

Black Magic SFT	Spotting Fluid Concentrate
Bio-Spot	Low Toxicity Spotting Fluid
Black Magic Clean	Synthetic Spotting Fluid

ATTACHMENT 4

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M-I DRILLING FLUIDS - DRILLING MUD COMPONENTS

DESCRIPTION	M-I DRILLING
WEIGHT MATERIALS	
Standard barite	M-I BAR
High density hematite	FER-OX
Acid Soluble-low density calcium carbonate	LO-WATE
VISCOSIFIERS	
Wyoming bentonite	M-I GEL
Befeficiated bentonite	GEL SUPREME
Attapulgite	SALT GEL
Bentonite extender and flocculant	GELEX
Xanthan gum biopolymer	XC-POLYMER XCD
PHPA	POLYPLUS RD
Hydroxyethyl cellulose	HEC LIQUID HEC
CORROSION INHIBITORS	
Water dispersible blended amine	CONQOR 101
Persistant filming amine	CONQOR 202
Brine soluble blended amine	CONQOR 303A
Modified organic inhibitor blend	CONQOR 404
Scale inhibitor	SI-1000
Sulfide scavenger	SULF-X
Biocide	BACBAN III
Oxygen scavenger	Oxygen Scavenger
FILTRATION CONTROL AGENTS	
Organic polymer	RESINEX
Pregelatinized starch	MY-LO-JEL
Modified polysaccharide	POLY-SAL THRMPAC UL
Sodium carboxmethyl cellulose	CMC
Polyanionic cellulose	POLYPAC Drispac
Sodium polyacrylate	SP-101
Starch preservative	BACBAN III
SHALE STABALIZERS	
Polyacrylamide-high molecular weight	POLY-PLUS
Polymer-surfactant blend	SHALE-CHEK
Blown asphalt	STABILHOLE
Sulforized asphalt	Soltex

DESCRIPTION	M-I DRILLING
DISPERSANTS & DEFLOCCULENTS	
Lignite	TANNATHIN
Potassium lignite	K-17
Chrome lignite	XP-20
Chrome lignosulfonate	SPERSENE VC-10
Chrome-free lignosulfonate	SPERSENE.CF
Calcium lignosulfonate	Setan
Tannin extract blend	QUEBRACHO
Polyacrylate-low molecular weight	TACKLE
Modified chrome tannin	Desco
Modified chrome-free tannin	Desco CF
Sodium tetraphosphate	PHOS
Sodium acid pyrophosphate	SAPP
LUBRICANTS, EMULSIFIERS, SURFACTANTS	
Low-toxicity lubricant	LUBE-167
Graphite	Graphite
Drilling detergent	DD
Non-ionic surfactant	DMS
Non-ionic emulsifier	DME
Blend of ionic surfactants	SALINEX
Non-ionic surfactant gilsonite coupler	HME
Stuck pipe solution	PIPELAX ENV PIPELAX W
Defoamer	DEFOAM-X
COMMERCIAL CHEMICALS	
Sodium hydroxide - NaOH	Caustic Soda
Sodium bicarbonate-$NaHCO_3$	Sodium Bicarbonate
Sodium carbonate-Na_2CO_3	Soda Ash
Sodium chloride-NaCl	Salt
Calcium hydroxide-$Ca(OH)_2$	Lime
Calcium Oxide-CaO	Hotlime Kenox
Calcium sulfate $CaSO\text{-}2H_2O$	Gypsum
Potassium chloride-KCL	Potassium Chloride
Calcium chloride-$CaCl_2$	Calcium Chloride
Salt-NaCl	Salt

DESCRIPTION	M-I DRILLING
LOST CIRCULATION MATERIALS	
Net Shells	NUT PLUG
Mica	MICA
Cellulose	MIX II
Blended LCM	Kwik-Seal
Blended Hi fluid loss LCM	Diasael M
Granular plastic chips	Pheno-seal
SIZED SALT ADDITIVES	
Polymer Blend	Thixsal-Plus
Starch	FL-7 Plus
Salt	Watesal-A
Mg Oxide	PH Buffer
Salt	Plug-sal
Mg Chloride	CM-TH
Glycol	HF-100N
OIL MUD PRODUCTS	
Diesel oil mud system	VERSADRIL
Mineral oil mud system	VERSACLEAN
Basic emulsifier package	VERSAMUL
Organophilic clay	VG-69
Primary emulsifier	VERSACOAT
Oil-wetting agent	VERSAWET
Fluid loss control agent	VERSATROL
Oil mud thinner	VERSATHIN
Viscosifier	VERSAMOD VERSA-HRP
Surfactant cleaner	KLEEN-UP
SYNTHETIC MUD PRODUCTS	
Synthetic mud system	NOVADRIL
Dimer acid	NOVAMOD
Fatty acid	NOVAMUL
Synehetic oligomer	NOVASOL
Fatty acid	NOVATHIN
Blended tall oil	NOVAWET

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Baroid Drilling Fluids, Inc.

AKTAFLO-E	Emulsifier/Water-wetting agent	BARO-LUBE	Lubricant	CELTONE	Viscosifier Filtration control agent.
ALDACIDE-C	Microbiocide	BARO-LUBE GOLD SEAL	Lubricant	CELTONE II	Viscosifier Filtration control agent.
AKTAFLO-S	Surfactant	BARO-SEAL (F,M,C)	Lost circulation material	CELTONE III	Viscosifier Filtration control agent.
AQUACEL	Viscosifier/Filtration control agent	BARO-SPOT	Spotting fluid	CELTONE IV	Viscosifier Filtration control agent.
AQUACEL GOLD SEAL	Viscosifier/Filtration control agent	BARO-TROL	Shale stabilizer	CEM-CF	Shale stabilizer
BARABLOK/BARABLOK 666	Filtration control agent	BXR	Rubber stabilizer Filtr. control agent	CEM-CT	Shale stabilizer
BARA-DEFOAM I	Defoamer	BXR-L	Borehole stab. Filt. control agent	CEM-CF	Shale stabilizer
BARA-DEFOAM HP	Defoamer	CARBONOX	Filtration control agent/Thinner	CEM-HP	Lubricant
BARA-DEFOAM W300	Defoamer	CAT-300	Filtration control agent	CEM-SF	Shale stabilizer
BARABRINE DEFOAM	Defoamer	CAT-CEL	Bridging agent	CEM-3000	Shale stabilizer
BARACARB 5, 25, 50, 150, 600, 1200	Bridging agent/Weighting agent (grades 5 & 25)	CAT-HI	Filtration control agent/ Viscosifier	HY-SEAL	Lost circulation material
BARACAT	Shale control agent	CAT-LO	Filtration control agent	IMPERMEX	Filtration cntrl agnt.
BARACOR 44	Hydrogen sulfide scavenger	CAT-THIN	Deflocculant	INVERMUL-NT	Emulsifier Filtrn cntrl agnt.
BARACOR 95	Alkalinity control agent	CAT-VIS	Viscosifier	JELFLAKE (reg TM Dow Chem.)	Lost circulation material
BARACOR 100	Corrosion inhibitor	CC-16	Filtration control agent/Thinner	K-LIG	Thinner Filtrn cntrl agnt.
BARACOR 700	Corrosion inhibitor	CELLEX Regular	Filtration control agent	LIGNO-THIN	Thinner Filtrn cntrl agnt.
BARACOR 1451	Corrosion inhibitor	CELLEX HV	Filtration control agent	LIGNOX	Thinner Filtrn cntrl agnt.
BARACTIVE	Polar activator	CLAYSEAL	Shale stabilizer	LOLOSS (reg. TM Rheox-Pendeen, Inc.)	Viscosifier
BARAFILM	Corrosion inhibitor	CON-DET	Wetting agent	LUBRA-BEADS (C,F)	Lubricant
BARAFLOC	Flocculant	DEXTRID	Filtration control agent	MICATEX (C,F,M)	Lost circulation material
BARAFOAM	Foaming agent	DEXTRID-LT	Filtration control agent	NO-SULF	Hydrogen sulfide scavenger
BARAFOS	Thinner	DEXTRID-LTE	Filtration control agent	OMC	Oil mud conditioner
BARA-KLEAN	Degreaser	DRILFOAM	Foaming agent	OMC-2	Oil mud conditioner
BARA-KLEAN FL	Wall cleanup formulation	DRILTREAT	Oil-wetting agent	OMC-42	Oil mud conditioner
BARAMEX	Filtration control agent	DURATONE HT	Filtration control agent	PAC-L	Filtration control agent
BARAPAK	Suspension agent	ENVIRO-SPOT	Spotting fluid	PAC-R	Filtrn cntrl agnt./Viscosifier
BARASCAV D	Oxygen scavenger Thermal extender for polymers	ENVIRO-THIN	Thinner/filtration control agent	PETROFREE	Emulsion fluid
BARASCAV L	Oxygen scavenger Thermal extender for polymers	ENVIRO-TORQ	Lubricant	PLUG-GIT	Lost circulation material
BARAZAN	Viscosifier filtration control agent	EP MUDLUBE	Extreme pressure lubricant	POLYAC	Filtration control agent
BARAZAN D	Viscosifier	EZ CORE	In-situ emulsifier	Q-BROXIN (reg TM Co. Pat.)	Thinner/Filtrn cntrl agt
BARODENSE	Weighting agent	EZ-MUD	Shale stabilizer Viscosifier	RM-63	Rheology modifier
BAROFIBRE	Seepage loss additive	EZ-MUD DP	Shale stabilizer Viscosifier	RV-310	Viscosifier
BAROID	Weighting agent	EZ MUL NT	Emulsif. Filtration control agent	SDI	Defoamer
BAROID Oil Absorbent	Oil absorbent	FIBERTEX		STABILITE	Thinner
BAROID Rig Wash		FILTER-CHEK	Filtration control agent	SUSPENTONE	Suspension agent
THERMA-VIS	Viscosifier	TORQ-TRIM II	Lubricant	THERMA-CHEK	Filtrn cntrl agnt/Viscosifier
TORQ-TRIM II	Lubricant	WALLNUT (C,F,M)	Lost circulation material	THERMA-CHEK-LV	Filtration control agent
TRIMULSO	Emulsifier	X-VIS	Oil mud yield enhancer	THERMA-THIN DP	Deflocculant
X-TEND II	Rheology extender	ZEOCEL	Viscosifier		

WATER BASED SYSTEMS

POLYMOX	Lime based system	Q-BROXIN/CYP	Lignosulfonate/CYP	CARBONOX/Q-BROXIN	Lignite/Lignosulfonate
LOW PH	Low pH	K-LIG/KOH	Pot. Lignite Pot. Hydroxide	EZ MUD	PHPA
FACHEXTRID	Pre-Treated	CAT-I	Cationic	EXTENDED AQUACEL	Extended Bentonite
CEM	Glycol Enhanced	BAROID MILLING FLUID	MMH/MMS Milling Fluids	THERMA-DRIL	High Temperature Fluid
SATURATED SALT SYSTEM					

OIL BASED SYSTEMS

INVERMUL	Diesel based	INVERMUL RF	Relaxed filtrate diesel based	INVERMUL 1W	1000 wtr ratio diesel based
INVERMUL 50/50	50/50 wtr ratio diesel based	ENVIROMUL	Mineral oil based	ENVIROMUL RF	Relaxed filtrate min. oil based
ENVIROMUL 1W	1000 wtr ratio min. oil based	ENVIROMUL 50/50	50/50 wtr ratio min. oil based		

ESTER BASED SYSTEMS

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DOWELL FLUIDS SERVICES			
Product	**Description**	**Specialty Products**	
Barite	Barium Sulfate	AP-21 Defloc.	Sodium Polyacrylate
Bentonite	Bentonite	Drilling Detergent	Detergent
Untreated Bentonite	Bentonite	FLOPLEX*	Modified Polysaccharide
Attapulgite	Salt Gel	HYMUL*	Non-ionic surfactant
Treating Chemicals		IDBOND*	Acrylate / Acrylamide (Liquid)
Benex	Clay Extender	IDBOND* P100	Acrylate / Acrylamide (Power)
Chrome Free Lignosulphonate	Chrome Free Lignosulfonate	IDCAP*	Shale Inhibitor
Chrome Lignosulphonate	Blended Lignosulfonate	IDCIDE* P	Bactericide
CMC Lo Vis (Tech)	Sodium Carboxymethyl Cellulose	HI-TEMP*	High Temp. Fluid Loss Additive
CMC Regular	Sodium Carboxymethyl Cellulose	IDFLO*	Organic Polymer (fluid loss)
DESCO Dispersant	Tannin Based Thinner	IDFLO*LT	Organic Polymer (fluid loss)
DESCO CF Dispersant	Tannin based	IDFLO *HTR	Organic Polymer (fluid loss)
Drispac Reg.	Polyanionic Cellulose	IDFREE*	Mud Concentrate for spotting Fluid
Drispac Superlo	Polyanionic Cellulose	IDF-FLR*	Polyanionic Cellulose (viscosifier)
HF100 Shale Stabilizer	Shale Stabiliser	IDF-FLR-XL*	Polyanionic Cellulose (fluid loss)
Lignite	Lignite	IDLUBE*	Organic Lubricant
Caustic Lignite	Caustized Lignite	IDSPERSE*P	Polymer (Hi Temp Dispersant)
Chrome Lignite	Chrome Lignite	IDTEX*W	Sulphonated Asphaltine Shale Stabil.
Drispac Liquid Viscosifier	Polyanionic Cellulose liquid	IDTHIN*500	Dispersant (polymer)
MOR-REX	Organic Polymer (fluid loss)	IDVIS*	Pure Xanthan Gum
Potassium Lignite	Potassium Lignite	IDWASH*	Detergent
SOLTEX	Sulfonated Asphalt	Polylig Deflocculant	Chrome-free oxidized lignin derivative
Starch	Pregelatinized Starch	POLYTEMP*	Polymer, High Temp, Filtration Control
Commercial Chemicals		PTS-200*	Liquid PolymerTemp. Stabiliser
Aluminum Stearate	Aluminum Stearate	PTS-300*	Liquid Polymer Temp. Stabiliser
Calcium Bromide 53%	Calcium Bromide 53%	VISPLEX*	Mixed Metal Hydroxide
Calcium Chloride 94-97%	Calcium Chloride	KELZAN XC Polymer	Pure Xanthan Gumr
Caustic Soda	Calcium Chloride	KELZAN XCD Polymer	Treated Xanthan Gum
Defoamer	Defoamer (usually alcohol based)	STAPLEX 500	Shale Stabiliser (polyglycol)
Gypsum	Gypsum (Plaster of Paris)	**INTERDRILL* OIL MUDS**	
Lime	Calcium Hydroxide	INTERDRILL* DEFLOC	Dispersant
Potassium Hydroxide	Potassium Hydroxide	INTERDRILL* EMUL	Primary emulsifier
Sodium Acid Pyrophosphate	Sodium Acid Pyrophosphate	INTERDRILL* FL	Secondary emulsifier
Soda Ash	Sodium Carbonate	INTERDRILL* OW	Oil Wetting Agent
Sodium Bicarbonate	Bicarbonate of Soda	INTERDRILL* S	Fluid Loss Additive
Sodium Chloride	Salt	INTERDRILL* VISTONE	Viscosifier
Calcium Carbonate F/M/C/Ex.C	Calcium Carbonate	**TRUDRILL* SYSTEM**	
LCM		TRUDRILL* S	Fluid Loss Additive
KWIKSEAL (Fine)	Loss Circulation	TRUMUL*	Emulsifier
KWIKSEAL (Med)	Loss Circulation	TRUPLEX*	Extender
KWIKSEAL (Coarse)	Loss Circulation	TRUSPERSE*	Wetting Agent
Liquid Casing	Loss Circulation	TRUVIS*	Viscosifier
Mica (F/M/C)	Mica	TRUVIS* HT	High Temp Viscosfier
OM Seal	Loss Circulation (oil based mud)	**ULTIDRILL* SYSTEM**	
Walnut Shells (Fine/Med)	Walnut Shells (Fine)	ULTIDRILL*	Synthetic Base
Magna Fibre (Fine/Regular)	Loss Circulation	ULTIDRILL* EMUL HT	Primary Emulsifier
CORROSION CONTROL PRODUCTS		ULTIDRILL* EMUL D	Secondary Emulsifier Rheology Mod
IDFILM* 220	Corrosion Inhibitor	ULTIDRILL* OW	Oil Wetting Agent
IDFILM* 820	Corrosion Inhibitor	**COMPLETION AND WORK**	
IDSCAV* 110	Oxygen Scavenger	IDCARB* 75	Sized Calcium Carbonate
IDSCAV* ES	H2S Scavenger	IDCARB* 150	Sized Calcium Carbonate
Zinc Oxide	Zinc Oxide	IDFAC*	Surfactant
IDZAC L	H2S Scavenger Liq.	HEC	Hydroxyethyl Cellulose
* Mark of Schlumberger		HEC L	Hydroxyethyl Cellulose Liq.

BAKER HUGHES INTEQ

WATER BASE ADDITIVES

-Bar	Barite (Barium Sulfate)
simix	Hematite
) 30	Sized Calcium Carbonate
ecl	Bentonite
Water Gel	Attapulgite
er-Col	High Yield Bentonite
-Vis	Polymer Viscosifier
) Polymer	Xanthan Gum
Temp	Sulfonated Styrene
-Thin	Polymeric Deflocculant
Cal	Chrome Lignosulfonate
P	Sodium Acid Pyrophosphate
Lose	Non-Fermenting CM Starch
nuol X	Selective Polymer Blend
ex	Polyanionic Lignin Resin
o	Lignite
on	Causticized Lignite
Starch	Pre-Gelatinized Starch
ie-Lose HT	Non-Fermenting Polymerized Starch
-Trol	AMPS Co-Polymer
-Seal	Co-Polymer for HTHP Filtration Control
ac	Polyanionic Cellulose
	Sodium Carboxymethylcellulose
Card	Zinc Carbonate
x	Aluminum Complex
Drill 1402	Modified Glycol
Drill HP	PHPA Blend
Drill Plus	PHPA 100% Active
Drill LD	PHPA in Glycol Carrier

Shale-Bond	Natural Occurring Asphalt
ProtectoMagic M	Air-Blown Asphalt
Caustic Soda	Sodium Hydroxide
Aluminum Stearate	Aluminum Stearate
Lime	Calcium Hydroxide
Soda Ash	Sodium Carbonate
M.D.	Detergent
LD-8	Defoamer
Salt	Sodium Chloride
Drispac	Polyanionic Cellulose
Gyp	Gypsum
Acetic Acid	Acetic Acid
Diaseal M	Diatomaceous Earth
Mil-Mica	Mica Flakes
Mil-Plug	Nut Shells
KOH	Potassium Hydroxide
MF-1	Selective Flocculant
Soltex	Sulfonated Asphalt
Polydrill	Polymeric HTHP Filtration Control
X-Cide 207	Biocide
Aqua-Magic	Glycol/Asphalt Blend
Peneteq	ROP Enhancement
Bicarb	Sodium Bicarbonate
Chek-Loss	Seepage Control
Mil-Gard	Calcium Carbonate
Lubezol 1000	Lubricant
Kwik-Seal	Blended LCM
HF 100 N	Lubricant/Glycol

OIL MUD ADDITIVES

-Mul	Secondary Emulsifier
-Tec	Primary Emulsifier
-Gel	Organophilic Hectorite Viscosifier
-Vis	Organophilic Clay

Carbo-Trol	Filtration Control
Surf-Cote	Oil Wetting Agent
DFE 304	Proprietary
DFE 417	Proprietary

SYNTHETIC ADDITIVES

ote	Wetting Agent
ul	Detergent Alkylate
N	Emulsifier

Syn-Teq	Food Grade Paraffin
Iso-Teq	Olefin Isomer

SPOTTING FLUIDS

Magic SFT	Spotting Fluid Concentrate
ol	Low Toxicity Spotting Fluid
Magic Clean	Synthetic Spotting Fluid

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DOWELL FLUIDS SERVICES

Product	Description
Barite	Barium Sulfate
Bentonite	Bentonite
Untreated Bentonite	Bentonite
Attapulgite	Salt Gel
Treating Chemicals	
Benex	Clay Extender
Chrome Free Lignosulphonate	Chrome Free Lignosulfonate
Chrome Lignosulphonate	Blended Lignosulfonate
CMC Lo Vis (Tech)	Sodium Carboxymethyl Cellulose
CMC Regular	Sodium Carboxymethyl Cellulose
DESCO Dispersant	Tannin Based Thinner
DESCO CF Dispersant	Tannin based
Drispac Reg.	Polyanionic Cellulose
Drispac Superlo	Polyanionic Cellulose
HF100 Shale Stabilizer	Shale Stabilizer
Lignite	Lignite
Caustic Lignite	Caustitized Lignite
Chrome Lignite	Chrome Lignite
Drispac Liquid Viscosifier	Polyanionic Cellulose liquid
MOR-REX	Organic Polymer (fluid loss)
Potassium Lignite	Potassium Lignite
SOLTEX	Sulfonated Asphalt
Starch	Pregelatinized Starch
Commercial Chemicals	
Aluminum Stearate	Aluminum Stearate
Calcium Bromide 53%	Calcium Bromide 53%
Calcium Chloride 94-97%	Calcium Chloride
Caustic Soda	Calcium Chloride
Defoamer	Defoamer (usually alcohol based)
Gypsum	Gypsum (Plaster of Paris)
Lime	Calcium Hydroxide
Potassium Hydroxide	Potassium Hydroxide
Sodium Acid Pyrophosphate	Sodium Acid Pyrophosphate
Soda Ash	Sodium Carbonate
Sodium Bicarbonate	Bicarbonate of Soda
Sodium Chloride	Salt
Calcium Carbonate FAVC/Ex.C	Calcium Carbonate
LCM	
KWIKSEAL (Fine)	Loss Circulation
KWIKSEAL (Med)	Loss Circulation
KWIKSEAL (Coarse)	Loss Circulation
Liquid Casing	Loss Circulation
Mica (FAVC)	Mica
OM Seal	Loss Circulation (oil based mud)
Walnut Shells (Fine/Med)	Walnut Shells (Fine)
Magma Fibre (Fine/Regular)	Loss Circulation
CORROSION CONTROL PRODUCTS	
IOFILM* 220	Corrosion Inhibitor
IOFILM* 820	Corrosion Inhibitor
IOSCAV* 110	Oxygen Scavenger
IOSCAV* ES	H2S Scavenger
Zinc Oxide	Zinc Oxide
IOZAC L	H2S Scavenger Liq.

Product	Description
Specialty Products	
AP-21 Defoa.	Sodium Polyacrylate
Drilling Detergent	Detergent
FLOPLEX*	Modified Polysaccharide
HYMUL*	Non-Ionic surfactant
IDBOND*	Acrylate / Acrylamide (Liquid)
IDBOND* P100	Acrylate / Acrylamide (Power)
IDCAP*	Shale Inhibitor
IDCIDE* P	Bactericide
IDI-TEMP*	High Temp. Fluid Loss Additive
IDFLO*	Organic Polymer (fluid loss)
IDFLO*LT	Organic Polymer (fluid loss)
IDFLO *HTR	Organic Polymer (fluid loss)
IDFREE*	Mud Concentrate for spotting Fluid
IDF-FLR*	Polyanionic Cellulose (Viscosifier)
IDF-FLR-XL*	Polyanionic Cellulose (fluid loss)
IDLUBE*	Organic Lubricant
IDSPERSE*P	Polymer (Hi Temp Dispersant)
IDTEX*W	Sulphonated Asphaltine Shale Stabl.
IDTHIN*500	Dispersant (polymer)
IDVIS*	Pure Xanthen Gum
IDWASH*	Detergent
Poly lig Deflocculant	Chrome-free oxidized lignin derivative
POLYTEMP*	Polymer, High Temp, Filtration Control
PTS-200*	Liquid Polymer Temp. Stabilizer
PTS-300*	Liquid Polymer Temp. Stabilizer
VISPLEX*	Mixed Metal Hydroxide
XCELZAN XC Polymer	Pure Xanthan Gum
XCELZAN XCD Polymer	Treated Xanthan Gum
STAPLEX 300	Shale Stabilizer (polyglycol)
INTERDRILL* OIL MUDS	
INTERDRILL* DEFLOC	Dispersant
INTERDRILL* EMUL	Primary emulsifier
INTERDRILL* FL	Secondary emulsifier
INTERDRILL* OW	Oil Wetting Agent
INTERDRILL* S	Fluid Loss Additive
INTERDRILL* VISTONE	Viscosifier
TRUDRILL* SYSTEM	
TRUDRILL* S	Fluid Loss Additive
TRUMUL*	Emulsifier
TRUPLEX*	Extender
TRUSPERSE*	Wetting Agent
TRUVIS*	Viscosifier
TRUVIS* HT	High Temp Viscosifier
ULTIDRILL* SYSTEM	
ULTIDRILL*	Synthetic Base
ULTIDRILL* EMUL HT	Primary Emulsifier
ULTIDRILL* EMUL D	Secondary Emulsifier Rheology Mod
ULTIDRILL* OW	Oil Wetting Agent
COMPLETION AND WORK	
IDCARB* 75	Sized Calcium Carbonate
IDCARB* 150	Sized Calcium Carbonate
IDFAC*	Surfactant
HEC	Hydroxyethyl Cellulose
HEC L	Hydroxyethyl Cellulose Liq.

* Mark of Schlumberger

OIL SPILL CONTINGENCY PLAN
PLAN OF EXPLORATION
SOI OCS-G 6884, VIOSCA KNOLL BLOCK 780
SOI OCS-G 15436, VIOSCA KNOLL BLOCK 824
OFFSHORE ALABAMA

In accordance with the requirements specified in 30 CFR 250 Subpart C of the Operating Regulations we submit for approval the following information:

30 CFR 250.42 (a) Oil Spill Trajectory Analysis

Reference: Oil Spill Risk Analysis: Central and Western Gulf of Mexico, Outer Continental Shelf, Lease Sales 157 and 161 (OCS Report, MMS 95-0026, page 99)

This report shows the following probabilities of a major oil spill from the subject lease block (Launch Area C-55) striking major land segment within ***Ten*** days.

PROBABILITIES	LAND SEGMENT
07%	**19**
04%	**20**
03%	**21**
02%	**22**
04%	**23**
01%	**24**
<0.5%	**any other land segment**

30 CFR 250.42(b) Equipment Identification and Response Times

The drilling plans proposed rely primarily on the Marine Spill Response Corporation's (MSRC) spill response equipment stored at the MSRC land base in Fort Jackson, La. Specific response equipment available is detailed in the MSRC Equipment Manual. MSRC can be notified through their national response number at 800-259-6772, or their regional number at (318) 475-6400.

Land Based Response Times (in Hours)

SOI Spill Management Team & Contractor Notification 0.50
Boat & Crew Procurement.....2.00
Inland Travel Time 3.00
Fort Jackson to South West Pass Sea Buoy (41 Miles @ 12 Knots)
Open Water Travel Time 6.00
S.W Pass Sea Buoy to VK780 (82.5 Miles @ 12 Knots)
Total Estimated time to Respond 11.50

30 CFR 250.42(c) Dispersant-Use Plan

Our dispersant use plan and discussion of dispersant application methods and toxicity is outlined in Section VII of our OSCP. Also included is an outline for procedures to be followed to obtain approval for dispersant use. Vioska Knoll 780 is a ***Good*** candidate for ***Dispersant Application*** according to the Region 6 FOSC Pre-Approved Dispersant Use Manual (greater than 10 Meters deep and further than 3 nautical miles from shore). Through MIRG, Shell Offshore has access to Airborne Support Inc. out of Bourg, Louisiana for dispersant application.

30 CFR 250.42(d) Response Equipment Inspection and Maintenance

MSRC inspects and maintains their equipment as per their U.S. Coast Guard OSRO classification. General contractor responsibilities are outlined in Section V of our OSCP.

30 CFR 250.42(e) Spill Detection and Notification Procedures

Procedures for early detection include daily visual observations. Also, all employees are instructed to report all sightings of oil on the water to their supervisor immediately. Procedures for timely notification including names and phone numbers of persons to contact are outlined in Sections II and IV of our OSCP.

30 CFR 250.42(f) Equipment, Materials and Supplies Inventory

The drilling plans proposed rely primarily on the MSRC spill response equipment stored at the MSRC land base in Fort Jackson, La. Specific response equipment available is detailed in the MSRC Equipment Manual.

30 CFR 250.42(g) Specific Response Procedures

Procedures to follow upon discovery of an oil spill are detailed in Section III of the SOI Oil Spill Contingency Plan. Membership of SOI's oil spill response team is outlined in Section IV. Training and drills conducted for oil spill response team members is outlined in Section X of the OSCP. SOI will establish an operation center in accordance with the procedure in Section III of the OSCP, page 5. These facilities have adequate communications, hand-held radios and walkie-talkies to support the response team efforts. Also, we will make every attempt to reduce our projected response time by giving consideration to transporting oil spill response cleanup equipment from a contractor's base by the fastest available means to a vessel-loading location as close as practical to our proposed operations.

30 CFR 250.42(h) Oil Recovery Information

SOI has a Blanket Service Agreement with Newpark Services Inc. that includes the disposal of oil-contaminated material and soil.

30 CFR 250.42(i) Monitoring and Predicting Spill Movement

SOI has access to SpillNet, a computerized oil spill trajectory and response resource database.

30 CFR 250.42(j) Alaska Provisions for Ignition of an Uncontrolled Spill Source are not applicable.

AIR EMISSION CALCULATIONS

COMPANY	SHELL OFFSHORE INC.	
AREA	VIOSCA KNOLL	
BLOCK	780, 824	
LEASE	OCS-G 15436, 6884	
PLATFORM		
WELL	2	
LATITUDE	N 29 12'1.934	
LONGITUDE	W 88 7'6.062	
COMPANY CONTACT	G. HARDY	
TELEPHONE NO.	(504)588-6378 Office. (504) 588-4573 Fax.	
REMARKS	POE. Drill 2 wells, Complete 0. Both wells drilled from same location. Tugboat - 2 days total.	
	Drilling - 50 days/well. Helicopter - 6 trips/wk.	
	Workboat 4 days/wk. Crewboat 0 days.	

ATTACHMENT 6

COMPANY	AREA	BLOCK	LEASE	PLATFORM	WELL	LATITUDE	LONGITUDE	CONTACT	PHONE	REMARKS
SHELL OFFSHORE INC.	VIOSCA KNOLL	780, 824	OCS-G 15436	0	2	N 29 12'1.934	0	G. HARDY	(504)588-6378	Workboat 4 days/wk. Crewboat 0 days.

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												
	[redacted]	MMBTU/HR	SCF/HR	SCF/D	HR/D	DAYS	TSP	SOx	NOx	VOC	CO	TSP	SOx	NOx	VOC	CO
DRILLING	PRIME MOVER>600hp diesel	2200	106.26	2550.24	24	100	1.16	7.22	53.30	1.60	11.63	1.40	8.66	63.96	1.92	13.96
	PRIME MOVER>600hp diesel	2200	106.26	2550.24	24	100	1.16	7.22	53.30	1.60	11.63	1.40	8.66	63.96	1.92	13.96
	PRIME MOVER>600hp diesel	2200	106.26	2550.24	24	100	1.16	7.22	53.30	1.60	11.63	1.40	8.66	63.96	1.92	13.96
	PRIME MOVER>600hp diesel	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
(CEMENT UNIT)	AUXILIARY EQUIP<600 HP Diesel	500	24.15	579.60	1	100	0.26	1.64	12.11	0.36	2.64	0.01	0.08	0.61	0.02	0.13
	CRANE	480	23.18	556.42	8	100	0.25	1.58	11.63	0.35	2.54	0.10	0.63	4.65	0.14	1.01
	EMERGENCY GENERATOR	570	27.53	660.74	4	13	0.30	1.87	13.81	0.41	3.01	0.01	0.05	0.36	0.01	0.08
(WORK BOAT)	VESSELS > 600 hp diesel	3900	188.37	4520.88	12	58	2.06	12.80	94.49	2.83	20.62	0.72	4.45	32.88	0.99	7.17
(CREW BOAT)	VESSELS > 600 hp diesel	2300	111.09	2666.16	12	0	1.22	7.55	55.73	1.67	12.16	0.00	0.00	0.00	0.00	0.00
TUGBOAT	VESSELS > 600 hp diesel	9600	463.68	11128.32	12	2	5.07	31.51	232.60	6.98	50.75	0.06	0.38	2.79	0.08	0.61
	VESSELS > 600 hp diesel	9600	463.68	11128.32	12	2	5.07	31.51	232.60	6.98	50.75	0.06	0.38	2.79	0.08	0.61
	VESSELS > 600 hp diesel	4500	217.35	5216.40	12	2	2.38	14.77	109.03	3.27	23.79	0.03	0.18	1.31	0.04	0.29
PIPELINE	PIPELINE LAY BARGE diesel	0	0	0	0	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
INSTALLATION	SUPPORT VESSEL diesel	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
	PIPELINE BURY BARGE diesel	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
	SUPPORT VESSEL diesel	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
FACILITY	DERRICK BARGE diesel	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
INSTALLATION	MATERIAL TUG diesel	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
						0										
PRODUCTION	RECIP.<600hp diesel	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
	RECIP.>600hp diesel	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
	SUPPORT VESSEL diesel	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
	TURBINE 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
	RECIP.2 cycle lean 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
	RECIP.4 cycle lean 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
	RECIP.4 cycle rich 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
	[redacted]	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	OIL BURN	0				0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
WELL TEST	GAS FLARE		0		0	0		0.00	0.00	0.00	0.00		0.00	0.00	0.00	0.00
1998	YEAR TOTAL						20.11	124.88	921.92	27.66	201.15	6.18	32.14	237.29	7.12	61.77
EXEMPTION CALCULATION	DISTANCE FROM LAND IN MILES											1764.90	1764.90	1764.90	1764.90	48612.03
	53.0															

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AIR EMISSION CALCULATIONS

COMPANY	AREA	BLOCK	LEASE	PLATFORM	WELL
SHELL OFFSHORE INC.	VIOSCA KNOLL	780, 824	OCS-G 15436	6884	2

Year	Emitted Substance				
	TSP	SOx	NOx	HC	CO
1998	5.18	32.14	237.29	7.12	51.77
1999	0.00	0.00	0.00	0.00	0.00
2000	0.00	0.00	0.00	0.00	0.00
2001	0.00	0.00	0.00	0.00	0.00
2002	0.00	0.00	0.00	0.00	0.00
2003	0.00	0.00	0.00	0.00	0.00
2004	0.00	0.00	0.00	0.00	0.00
2005	0.00	0.00	0.00	0.00	0.00
2006	0.00	0.00	0.00	0.00	0.00
2007	0.00	0.00	0.00	0.00	0.00
Allowable	1365.30	1365.30	1365.30	1365.30	40930.22

MUD AND CUTTINGS DISCHARGE VOLUMES

FIELD: VK 824
WELL: Typical

All mud and cuttings will be discharged in compliance with the NPDES General Permit GMG 290103 for Discharge of Effluents. No fluids containing free oil will be discharged. Daily discharge rates will vary over the life of the well.

Estimated cuttings volume discharge is calculated as follows:

Hole Size (in)	+X% Washout
26.000	100
17.500	75
12.250	50
8.500	50

Estimated mud volume discharge is calculated as follows:

Hole Size (in)	Multiplier
26.000	8
17.500	4
12.250	4
8.500	4

Data Summary and Calculations:

Drilling Days	Depth (ft)	Depth BML (ft)	Hole Size (in)	Casing Size (in)	Interval Length (ft)	Cuttings Volume (bbl)	Mud Volume (bbl)
5	2500	1250	26.000	20.000	1250	1642	6567
10	5500	4250	17.500	13.375	3000	1562	3570
15	9200	7950	12.250	9.625	3700	809	2157
20	15600	14350	8.500	7.000	6400	674	1797
				Total per well (bbls)		4686	14090

These calculations are based on a water base or a disposable synthetic drilling fluid.
If an oil base mud were to be used, there will be no discharge of cuttings or associated mud.

ATTACHMENT 7

COASTAL ZONE MANAGEMENT
CONSISTENCY CERTIFICATION

PLAN OF EXPLORATION
Type of Plan

VIOSCA KNOLL BLOCKS 780 AND 824
Area and Block

SOI OCS-G 6884/OCS-G 15436
Lease Number

The proposed activities described in detail in the Plan comply with Louisiana's approved Coastal Resources Program and will be conducted in a manner consistent with such programs.

Such findings are summarized on the final page of the attached Environmental Report (ER).

A request is being made to the office of state journal, the Morning Advocate, published in Baton Rouge, for publication on November 7, 1997 of our notice of development plans. Additionally, arrangements have been made with the Plaquemines Gazette in Plaquemines Parish, Louisiana, for publication on November 7, 1997 of our notice of exploration plans.

SHELL OFFSHORE INC. (SOI)
Operator

D. J. Bilbo
Regulatory Affairs
E&P - Shelf Division

OCT 29 1997

Date

ATTACHMENT 8A

LB730102.djb

PUBLIC NOTICE
PLAN OF EXPLORATION
SOI OCS-G 6884/OCS-G 15436
VIOSCA KNOLL BLOCKS 780 AND 824
OFFSHORE LOUISIANA/ALABAMA

Public Notice of Federal Consistency review of a Proposed Exploration Plan by the Coastal Management Section/Louisiana Department of Natural Resources for the Plan's consistency with the Louisiana Coastal Resources Program.

Applicant:	Shell Offshore Inc. E&P - Shelf Division Regulatory Affairs P. O. Box 61933 New Orleans, LA 70161-1933
Location:	Viosca Knoll Blocks 780 and 824 OCS-G 6884 and OCS-G 15436
Lease Offering Date:	June 1984 (VK 780) September 1995 (VK 824)
Description:	Proposed exploration for the above area provides for the exploration for oil and gas. Exploration activities will include drilling from a floater rig and transport of drilling crews and equipment by helicopter and/or cargo vessel from an onshore base located at Venice, Louisiana. No ecologically sensitive species or habitats are expected to be affected by these activities.

A copy of the plan described above is available for inspection at the Coastal Management Section Office located on the 10th Floor of the State Lands and Natural Resources Building, 625 North 4th Street, Baton Rouge, Louisiana. Office hours: 8:00 a.m. to 5:00 p.m., Monday through Friday. The public is requested to submit comments to the Coastal Management Division, Attention OCS Plans, P. O. Box 44487, Baton Rouge, Louisiana 70804-4487. Comments must be received within 15 days of the date of this notice or 15 days after the Coastal Management Section obtains a copy of the plan and it is available for public inspection. This public notice is provided to meet the requirements of the NOAA Regulations on Federal Consistency with approval Coastal Management Programs.

COASTAL ZONE MANAGEMENT
CONSISTENCY CERTIFICATION

PLAN OF EXPLORATION
Type of Plan

VIOSCA KNOLL BLOCKS 780 AND 824
Area and Block

SOI OCS-G 6884/OCS-G 15436
Lease Number

The proposed activities described in detail in the Plan comply with Alabama's approved Coastal Resources Program and will be conducted in a manner consistent with such programs.

Such findings are summarized on the final page of the attached Environmental Report (ER).

SHELL OFFSHORE INC. (SOI)
Operator

D. J. Bilbo
Regulatory Affairs
E&P - Shelf Division

OCT 29 1997
Date

ATTACHMENT 8B

LB730103.djb

PUBLIC NOTICE
PLAN OF EXPLORATION
SOI OCS-G 6884/OCS-G 15436
VIOSCA KNOLL BLOCKS 780 AND 824
OFFSHORE LOUISIANA/ALABAMA

Public Notice of Federal Consistency review of a Proposed Exploration Plan by the Coastal Management Section/Louisiana Department of Marine Resources for the Plan's consistency with the Alabama Coastal Resources Program.

Applicant:	Shell Offshore Inc. E&P - Shelf Division Regulatory Affairs Room 846 P. O. Box 61933 New Orleans, LA 70161-1933
Location:	Viosca Knoll Blocks 780 and 824 OCS-G 6884 and OCS-G 15436
Lease Offering Date:	June 1984 (VK 780) September 1995 (VK 824)
Description:	Proposed exploration for the above area provides for the exploration for oil and gas. Exploration activities will include drilling from a floater rig and transport of drilling crews and equipment by helicopter and/or cargo vessel from an onshore base located at Venice, Louisiana. No ecologically sensitive species or habitats are expected to be affected by these activities.

SUPPLEMENTAL PLAN OF EXPLORATION
ANCHOR CLEARANCE AND
CHEMOSYNTHETIC ORGANISMS COMMENTS
SHELL, OCS-G 6884, VIOSCA KNOLL 780
OFFSHORE, ALABAMA

Viosca Knoll 780, Proposed Location F:

x = 1,283,720	680' FWL
y = 10,598,900	1940' FSL

Viosca Knoll 780, Proposed Location G:

x = 1,283,930	890' FWL
y = 10,599,190	2230' FSL

Scientific investigations have discovered the presence of benthic communities thriving near active fluid expulsion zones on the seafloor in some areas of the Gulf of Mexico. For this reason, Shell examined all shallow hazards data covering Proposed Location F and G.

There is no evidence of shallow faulting, slumping, or hydrocarbon seepage zones on the seafloor in the vicinity of Proposed Locations F and G.

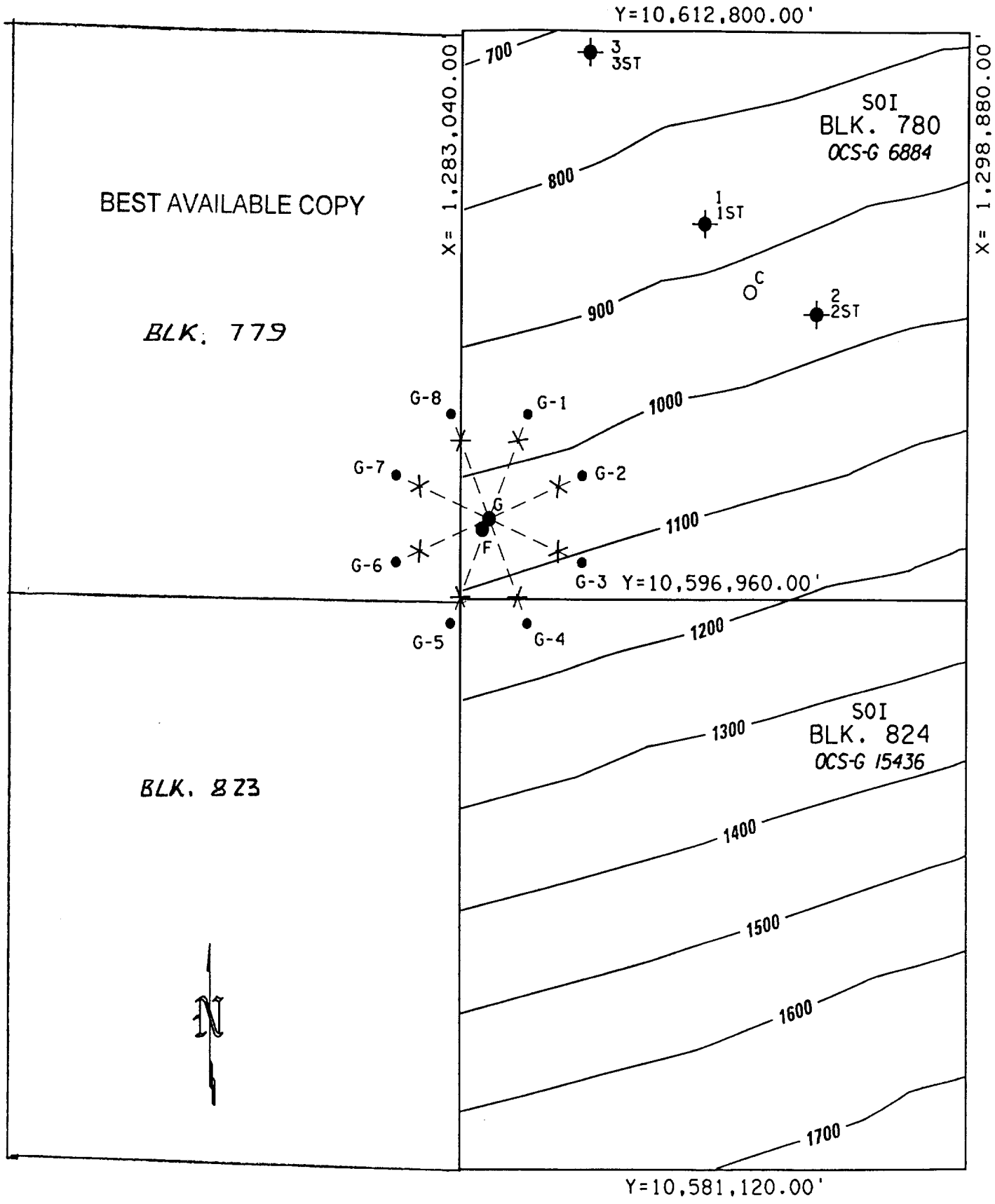
The anchor pattern for Proposed Location G was also investigated. There is no evidence of shallow faulting, slumping or hydrocarbon seepage zones on the seafloor in the vicinity of the anchor pattern for Proposed Location F.

There are no pipelines in the vicinity of the anchor pattern for Proposed Location G.

Based on a high-resolution geophysical survey, consisting of side-scan sonar and Enhanced Surface Renderings and amplitude renderings will not disturb any chemosynthetic organisms.

R.A. Foster
Senior Geophysicist

A. C. Nunez
Shallow Hazards Interpreter



*	Bearing	Coordinates X	Coordinates Y	Length to Anchor	Length of Chain on Bottom
G-1	22.5°	1,285,135	10,602,100	3150	2350
G-2	67.5°	1,286,840	10,600,395	3150	2350
G-3	112.5°	1,286,840	10,597,985	3150	2350
G-4	157.5°	1,285,135	10,596,280	3150	2350
G-5	202.5°	1,282,725	10,596,280	3150	2350
G-6	247.5°	1,281,020	10,597,985	3150	2350
G-7	292.5°	1,281,020	10,600,395	3150	2350
G-8	337.5°	1,282,725	10,602,100	3150	2350

ATTACHMENT 9B

SHELL OFFSHORE INC.

ANCHOR SITE LOCATIONS

PLAN OF EXPLORATION

SOI OCS-G 15436, VIOSCA KNOLL BLK. 824

VIOSCA KNOLL
BLOCK 824

OFFSHORE ALABAMA

0 4000'

ENVIRONMENTAL REPORT (PLAN OF EXPLORATION) GULF OF MEXICO: OFFSHORE ALABAMA, MISSISSIPPI, AND LOUISIANA VIOSCA KNOLL AREA BLOCK 780 (OCS-G 6884) AND BLOCK 824 (OCS-G 15436)

24 October 1997

Prepared for:

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Prepared by:

Continental Shelf Associates; Inc.
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Telephone: (561) 746-7946

ATTACHMENT 15

1. TITLE PAGE
ENVIRONMENTAL REPORT
(PLAN OF EXPLORATION)
GULF OF MEXICO: OFFSHORE ALABAMA, MISSISSIPPI, AND LOUISIANA
VIOSCA KNOLL AREA
BLOCK 780 (OCS-G 6884)
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2. DESCRIPTION OF THE PROPOSED ACTION

2.a DESCRIPTION OF PROPOSED TRAVEL MODES AND ROUTES AND FREQUENCY FOR MOVING SUPPLIES AND PERSONNEL TO AND FROM THE OFFSHORE ACTIVITY SITE AND THE ONSHORE BASES

Shell Offshore Inc. plans to conduct exploratory activities in Viosca Knoll Area Blocks 780 and 824. Helicopters and boats will move supplies and personnel to and from the offshore and onshore locations. Helicopters will make approximately six round trips per week and work boats will make approximately four round trips per week. If servicing only the proposed lease area, helicopters and boats will normally take the most direct route, weather and traffic conditions permitting (see **Figure 1**).

2.b IDENTIFICATION OF SUPPORT BASES AND NUMBER AND TYPES OF NEW WORKERS ASSOCIATED WITH THE PROPOSED ACTIVITIES

The support base will be located in Venice, Louisiana. The base is capable of providing the services necessary for the proposed activities. No new facilities or workers will be needed for the proposed activities. The initial Outer Continental Shelf (OCS) Socioeconomic Data Base Report will be developed after the Minerals Management Service (MMS) and the States of Alabama, Louisiana, and Mississippi have identified the specific parameters to be addressed in these semiannual reports.

2.c IDENTIFICATION OF THE NUMBER, LOCATION, AND SIZE OF ANY NEW SUPPORT FACILITIES THAT WILL NEED TO BE PROVIDED FOR THE PROPOSED ACTIVITIES

No new support facilities will be needed for the proposed activities.

2.d DESCRIPTION OF ANY NEW TECHNIQUES OR UNUSUAL TECHNOLOGY THAT MAY AFFECT COASTAL WATERS

No new techniques or unusual technology will be used during the proposed activities.

2.e MAPS SHOWING LOCATION OF THE PROPOSED ACTIVITIES IN RELATION TO EACH OF THE AFFECTED STATES' COASTAL ZONES

Figure 1 shows the location of the proposed activities in relation to each of the affected States' coastal zones. The proposed activities will take place in waters adjacent to the States of Alabama, Mississippi, and Louisiana.

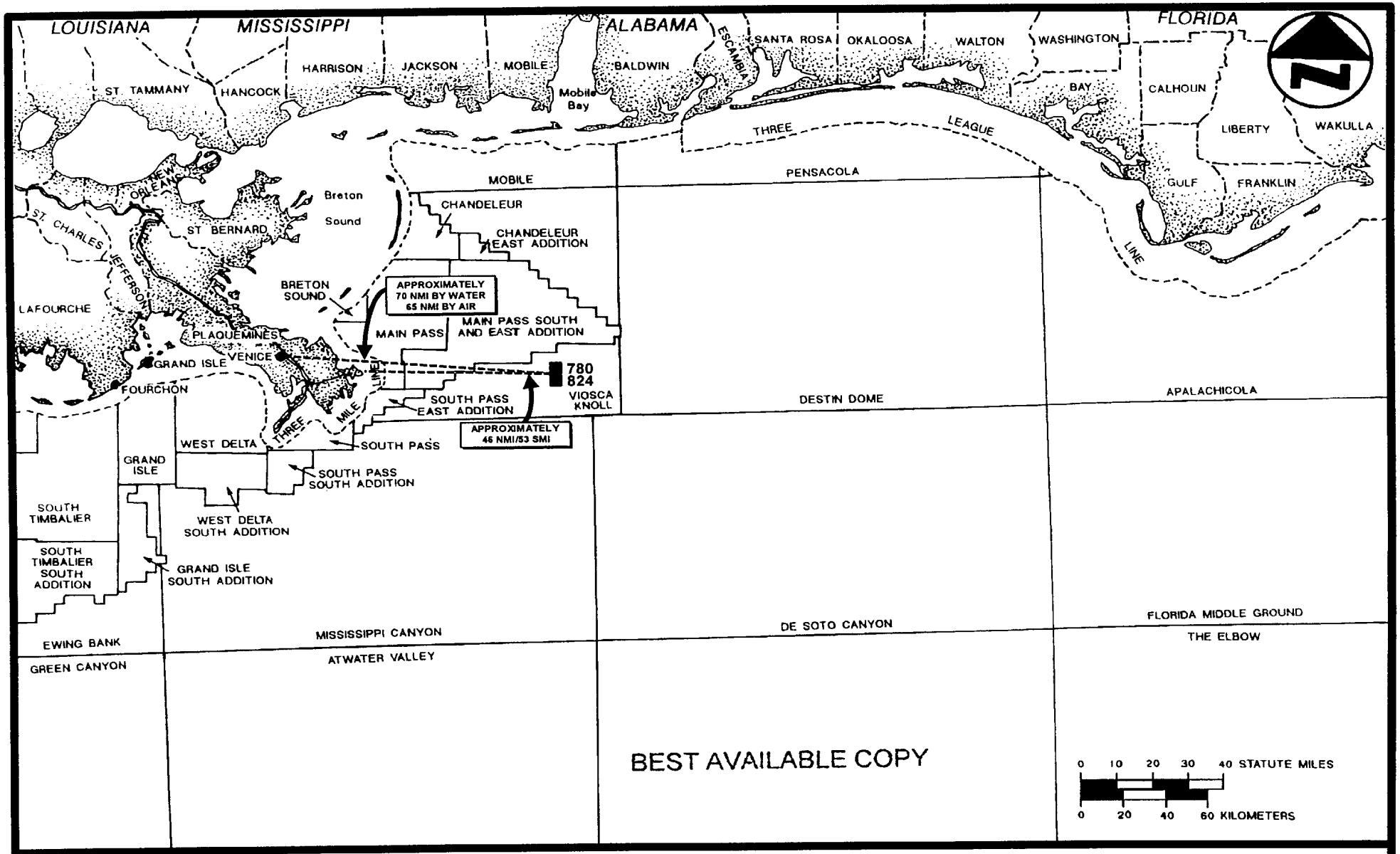

Figure 1. Location of Viosca Knoll Area Blocks 780 and 824 relative to the Alabama, Mississippi, and Louisiana coastal zones (Adapted from: USDOI, MMS, 1984).

2.f **FOR DEVELOPMENT OPERATIONS COORDINATION DOCUMENTS, THE MEANS PROPOSED TO TRANSPORT OIL AND GAS TO SHORE FROM THE LEASE AREA, THE ROUTES TO BE FOLLOWED AND THE ESTIMATED QUANTITIES OF OIL AND GAS TO BE MOVED ALONG SUCH ROUTES**

This Plan is exploratory. No oil or gas will be produced for sale from these proposed activities at this time.

3. DESCRIPTION OF THE AFFECTED ENVIRONMENT AND IMPACTS

3.a PHYSICAL AND ENVIRONMENTAL

3.a(1) Commercial Fishing

The proposed activities are located within some of the most productive fishing grounds in the Gulf of Mexico. National Marine Fisheries Service Zone 11, which includes the lease area, accounted for approximately 10% of the commercial fisheries harvest from the western and central Gulf of Mexico (U.S. Department of the Interior [USDOI], MMS, 1986a, Visual Nos. 2 and 2-E; U.S. Department of Commerce [USDOC], National Marine Fisheries Service [NMFS], 1991). Gulf waters account for 40% of the total annual U.S. fisheries harvest (USDOC, NMFS, 1989a).

The Gulf fishery is dominated by estuary-dependent species (USDOI, MMS, 1991a). Menhaden are the most important Gulf species in quantity landed, whereas shrimp represent the most important species in value (USDOC, NMFS, 1989a). Other significant Gulf commercial fisheries include oysters, blue crabs, and an assortment of finfish. Life history and fishery information for economically important species in the Gulf has been provided by the USDOI, MMS (1987a, 1990a).

A total of nine species of penaeid shrimp contribute to the Gulf of Mexico commercial shrimp fishery (USDOI, MMS, 1991a). Brown (*Penaeus aztecus*), white (*P. setiferus*), and pink (*P. duorarum*) shrimp constitute the bulk of the harvest (USDOI, MMS, 1991a) and are taken almost exclusively by trawls in depths ranging from approximately 2 to 73 m (6 to 240 ft). These shrimp are estuarine-dependent species which spawn in the open ocean, go through a series of larval phases in the plankton, migrate during the post-larval phase to the estuarine nursery areas, and then return to the open Gulf as adults. Royal red (*Pleoticus robustus*) and rock (*Sicyonia brevirostris*) shrimp are also commercially important species. The USDOI, MMS (1986a, Visual Nos. 2 and 2E) indicates the fishing grounds for each of these species. The lease area is located within the major shrimp spawning grounds and migratory routes in the northern Gulf (USDOI, MMS, 1986a, Visual No. 2). Planktonic eggs and larval stages of all commercially important shrimp species may occur periodically in the lease area (USDOI, MMS, 1991a).

The blue crab (*Callinectes sapidus*) makes up 98% of the crab harvest in the Gulf of Mexico (Riley, 1970) and 40% of the national total, valued at $31 million (USDOC, NMFS, 1989a). Its life cycle is similar to the shrimps' in that it has planktonic, estuarine, and open ocean phases. Adults spend most of their lives in the estuaries; thus, the blue crab harvest is taken primarily inshore of the lease area. Gravid females migrate to the open Gulf to release their eggs during spring and summer. Consequently, gravid females and planktonic larvae may occur seasonally in the lease area.

The proposed activities are located outside commercially important finfish fishing grounds (USDOI, MMS, 1986a, Visual No. 2-E). Three species of menhaden known from the Gulf make up the major finfish tonnage taken. These are *Brevoortia patronus*, *B. gunteri*, and *B. smithii*. *Brevoortia patronus* constitutes most of the Gulf catch. Purse seining is the major capture method used in this fishery (Lindall et al., 1972;

Vaughan, 1987). In addition to menhaden, at least 10 species of finfish are commercially significant. In decreasing order of value, they are yellowfin tuna, groupers, mullet, red snapper, swordfish, bluefin tuna, black drum, shark, spotted seatrout, and vermilion snapper (USDOC, NMFS, 1989a).

The yellowfin tuna (*Thunnus albacares*) is a fast-swimming oceanic fish, generally taken with hook-and-line within deep waters south of the central and western Gulf area. Yellowfin tuna exhibits schooling behavior, and seasonally moves into the northern Gulf as water temperatures rise (USDOC, 1985; Taniguchi, 1987; Power and May, 1991).

The red snapper (*Lutjanus campechanus*), vermilion snapper (*Rhomboplites aurorubens*), and various species of grouper are taken over irregular bottom areas or reefs in depths of 2 to 305 m (5 to 1,000 ft) (TerEco Corporation, 1976). Historically, red snapper has been the most valuable species in the Gulf reef fish fishery, but its relative importance has declined. This has been offset by the growth of the grouper fishery (Waters, 1988; South Atlantic Fishery Management Council [SAFMC], 1991).

The striped, or black mullet (*Mugil cephalus*) is generally found in nearshore areas such as harbors, estuaries, bays, and along beaches. It is a schooling fish and is generally taken with seines and gill nets.

The swordfish (*Xiphias gladius*) is a pelagic and widely distributed billfish. It is apparently solitary, except when spawning, and is taken on longline (Palko et al., 1981; SAFMC, 1985).

The bluefin tuna (*Thunnus thynnus*) ranges worldwide in temperate and subtropical seas. It is a schooling species, seeking prey throughout the water column, and undergoes trans-oceanic migrations. It is generally taken on longline (USDOC, 1985).

Black drum (*Pogonias cromis*) occurs within estuaries and nearshore waters. It is generally taken with gill nets (Beckman et al., 1990).

Several species of sharks are harvested commercially as a by-catch of the longline fishery. Catches are marketed for food, hides, and other by-products (USDOC, NMFS, 1989b; Anderson, 1990).

Seatrouts, including the spotted (*Cynoscion nebulosus*), the silver (*C. nothus*), and the sand (*C. arenarius*), are important to the bottom fish fisheries in the northern Gulf (Lindall et al., 1972; Lassuy, 1983; Sutter and McIlwain, 1987). They are usually taken in offshore areas with bottom trawls.

TerEco Corporation (1976) describes some additional fish species of the northern Gulf which are important to commercial and/or sport fishermen. Most of the northern Gulf fishes are temperate, with some incursions from Caribbean fauna. They exhibit seasonal distribution and abundance fluctuations related to oceanographic conditions (USDOI, MMS, 1984). The life history of estuary-dependent species (e.g., the croaker, *Micropogonias undulatus*) involves spawning on the continental shelf; transport of eggs, larvae, or juveniles to the estuarine nursery grounds; growth and maturation in

the estuary; and migration of the young adults back to the shelf for spawning. After spawning, the adult individuals generally remain on the continental shelf (Darnell, 1988). Rogers (1977) postulated a net inshore-offshore movement for many demersal shelf fish species. Thus, it is probable that many of these species may occur in the lease area at some phase of their life cycles.

Eggs and larvae (ichthyoplankton) of various commercially important fish species are present in the lease area on occasion (USDOI, MMS, 1991a). Larvae of approximately 200 coastal and oceanic fishes from 61 families were recorded from unpublished plankton surveys and other published studies from throughout the northern Gulf of Mexico (Ditty et al., 1988). The 16 most abundant families of larval fishes (ranked on number of individuals collected) include the Engraulidae (anchovies), Gobiidae (gobies), Bregmacerotidae (codlets), Clupeidae (herrings), Sciaenidae (croakers), Carangidae (jacks), Bothidae (lefteye flounders), Synodontidae (lizardfishes), Myctophidae (lanternfishes), Serranidae (sea basses), Cynoglossidae (tonguefishes), Scombridae (mackerels and tuna), Ophidiidae (cusk-eels), Labridae (wrasses), Gonostomatidae (lightfishes), and Mugilidae (mullets) (Ditty et al., 1988). Because ichthyoplankton are at the mercy of water movements, their distributions vary considerably with space and time. The primary factors influencing ichthyoplankton in the northern Gulf are the Loop Current, the Mississippi River, and local runoff. Ichthyoplankton samples collected about the Mississippi River plume were found to be greater by a factor of 10, and sometimes by several orders of magnitude, at the plume front than they were within or outside of the plume (Govoni et al., 1989; Grimes and Finucane, 1991). Due to patchiness in distributions, presence and abundance of ichthyoplankton at any given instance cannot be predicted.

Environmental impacts of proposed oil and gas activities have been analyzed in detail in various MMS Environmental Impact Statements for the Central and Western Gulf of Mexico Planning Areas (e.g., USDOI, MMS, 1990a, 1991a). The conclusion of the MMS has been that future activities resulting from lease sales would not have a significant impact on the marine or coastal environments.

The National Research Council (1983) conducted a comprehensive study of the fate and effect of drilling discharges in the marine environment. Based upon this authoritative report, the USDOI, MMS (1990a) concluded that drilling fluids used on the OCS are unlikely to cause any significant ecological damage beyond 1,000 m from the discharge point either in the short term or long term. The proposed activities probably will temporarily degrade the water quality in the immediate vicinity of the drillsite due to discharges of drilling muds and cuttings. This may cause certain fish species to avoid the area temporarily. The situation should revert to normal as soon as drilling is completed. Effects on the commercial fishing industry should be at a low level.

Wetlands in the Gulf of Mexico occur as swamps, marshes, and seagrass beds throughout the coastal zone. Because coastal wetlands serve as nursery habitat for many shelf fishery species, damage to these habitats could eventually be reflected in the fisheries biology of the continental shelf (Darnell and Phillips, 1988). Wetland loss has been attributed to several factors, including natural succession, sediment deprivation, erosion, subsidence, sea-level rise, hydrologic changes, residential-commercial development, and construction of pipeline and navigation canals through wetlands (Turner and Cahoon, 1988; USDOI, MMS, 1991a). Impact producing factors resulting from OCS

oil and gas activities that could adversely affect wetlands include oil spills, pipeline placements, dredging of new navigation channels, maintenance dredging, and vessel usage of existing navigation channels, and construction of onshore facilities in wetlands areas. The level of impact to coastal wetlands within the potentially affected area is expected to be very low (USDOI, MMS, 1991a).

An oil spill would temporarily degrade water quality and introduce toxins into the water. Ichthyoplankton could be killed or functionally impaired. However, most adult fishes encountering a spill probably would exhibit avoidance behavior (Patten, 1977; Davis et al., 1984). This effect would be temporary and fishes should return to the area after dispersal of the spill. No significant or persistent direct effects from an oil spill on fish populations would be expected. Recruitment from surrounding areas should replenish any affected ichthyoplankton populations once the spill was dispersed.

An oil spill that reaches the seafloor could conceivably kill benthic organisms such as shrimp or cause a variety of sublethal effects. Effects may include smothering, acute toxicity, and chronic and sublethal effects (behavioral, morphological, cellular, and histopathological abnormalities). No effects on benthos were detected on the South Texas shelf in the aftermath of the Ixtoc-I blowout (Boehm, 1982).

Oil spills rarely occur during exploratory drilling. From 1971 through 1985, over 15,000 new wells were drilled on the U.S. OCS, with only 61 drilling blowouts (USDOI, MMS, 1987b). None of the 33 blowouts during exploratory drilling from 1971 through 1985 resulted in a spill of crude oil or condensate. If a spill did occur in the lease area, it would be handled according to an oil spill contingency plan approved by the MMS.

The MMS Environmental Studies Program has sponsored a series of studies where OCS oil and gas activities have occurred in the past or may occur in the future. These studies have demonstrated that the impacts resulting from the operations are localized and, except in areas where there are extreme concentrations of activity, are unlikely to have regional significance (NRC, 1985; Boesch and Rabalais, 1987). While most research results agree that the acute impacts from operational discharges from OCS oil and gas facilities are minor or resolvable, there is less certainty regarding any chronic, sublethal effects (Boesch et al., 1987; Aurand, 1988). With these concerns the MMS Environmental Studies Program has now shifted its focus to studies of the chronic, sublethal environmental stresses which may be associated with offshore oil and gas activities (Aurand, 1988; Ahlfeld, 1990; Kendall, 1990). The MMS Gulf of Mexico Offshore Operations Monitoring Experiment (GOOMEX) is intended to elucidate and assess the effects of any chronic, sublethal perturbations which may be associated with long-term OCS production sites in the Gulf of Mexico, particularly in highly developed OCS areas (USDOI, MMS, 1991b).

Cumulative impacts refer to the impacts on the environment which result from the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions regardless of what agency (Federal or non-Federal) or person undertakes such other actions. Cumulative impacts can result from individually minor, but collectively significant, actions taking place over a period of time. Cumulative impacts for oil and gas activities in the Central and Western Gulf of Mexico Planning Areas have been discussed in detail by the USDOI, MMS (1991a). The proposed activities are

generally short-term in nature and are not expected to contribute significantly to the cumulative impacts from previous, ongoing, or reasonably anticipated future human activities in the area.

Cumulative effects of increasing oil and gas activities off the northern Gulf coast on annual fish catches are unknown. Recent data analyses indicate a major change in characteristics of the finfishery during the interval from 1981 through 1987 (Linton, 1988). The number of commercial species landed increased significantly from 27 in 1981 to 82 in 1987. In addition, the number of species with a value over $1 million has tripled from 3 in 1981 to 9 in 1987. The vast majority of this catch is harvested from the north-central and northwestern Gulf, where hard substrate added by numerous offshore petroleum platforms which serve as artificial reefs is thought to be a positive contributing factor (Linton, 1988).

3.a(2) Shipping

Growth of offshore oil and gas activities has led to the establishment of a series of safety fairways or vessel traffic separation schemes, and anchorages to provide unobstructed approach for vessels using U.S. ports (USDOI, MMS, 1990b, Visual No. 2). Shipping safety fairways are lanes or corridors in which no fixed structure, whether temporary or permanent, is permitted. Fairway anchorages are areas contiguous to and associated with a fairway, in which fixed structures may be permitted within certain spacing limitations (33 CFR 166). All offshore structures are required to be adequately marked and lighted. After a structure is in place, it often becomes a landmark and an aid to navigation for vessels that operate in the area on a regular basis (USDOI, MMS, 1990a).

The proposed activities are located approximately 34 km (18 nmi) southwest of a fairway (USDOI, MMS, 1990b, Visual No. 2). The offshore structure will be equipped with all safety equipment required by the U.S. Coast Guard and the MMS to alert ships of its presence in all weather conditions.

Most oil and gas resources discovered in the Gulf of Mexico will be transported via pipelines to shore (USDOI, MMS, 1991a). The majority of pipeline spills of domestic oil have occurred due to anchor damage. In contrast, accidental spills from tankers normally result from collisions or groundings. Less than 1% of the oil produced in the Central Gulf of Mexico Planning Area and 11% in the Western Gulf of Mexico Planning Area will be transported by tankers. However, one of the most significant contributions of marine transportation to cumulative impacts in the Gulf of Mexico is from tankering of imported crude oil and refined products into the Gulf. The USDOI, MMS (1991a) reported spill rates (1,000 bbl or greater per billion bbl produced and transported) from OCS operations. The spill rate from tankers (1.30) was approximately twice the spill rate from platforms (0.60) and pipelines (0.67). Reduced spill rates for platforms and pipelines were attributed to improved safety practices in the oil industry (USDOI, MMS, 1991a). Additional information indicates that for every 100,000 bbl of oil produced on the OCS, only 3 bbl are spilled, whereas for every 100,000 bbl of oil transported by foreign tanker, 17 bbl are spilled (Offshore, 1992). Studies have shown that 45% of ocean hydrocarbon pollution comes from tankers, while 1.5% comes from OCS production worldwide (Offshore, 1992).

3.a(3) Small Craft Pleasure Boating, Sport Fishing, and Recreation

The major recreational activity occurring on the OCS is offshore marine recreational fishing and diving. A substantial recreational fishery, including scuba diving, is directly associated with oil and gas production platforms, and stems from the fact that platforms beneficially function as high-profile, artificial reefs that attract fish. Witzig (1986) indicates that a majority of the offshore recreational fishing in the Central Gulf of Mexico Planning Area is directly associated with oil and gas structures. At least 46 different fish species are caught by recreational anglers fishing near oil and gas platforms in the central Gulf of Mexico (Stanley and Wilson, 1990). Interest is high throughout the Gulf of Mexico region to acquire, relocate, and retain selected oil and gas structures in the marine environment to be used as dedicated artificial reefs to enhance marine fisheries when the structures are no longer useful for oil and gas production (Reggio, 1989).

Negative effects of the presence of offshore oil and gas structures are the increased probability of vessel collisions with structures in inclement weather, and the risk of overfishing of some reef fish stocks, particularly red snapper (*Lutjanus campechanus*), as a result of the concentrated fishing effort (Gallaway et al., 1981).

Ditton and Graefe (1978) determined that oil and gas structures are the most popular offshore recreation destination areas, attracting 87% of the boats that fished offshore in their study area. Certain pleasure boats (i.e., sailboats, pleasure yachts, and/or open ocean racing power boats) may be slightly inconvenienced by having to maneuver around the offshore structure and its support vessels. This inconvenience is considered minor as offshore structures can be avoided and ample maneuvering room is available.

Any sport fishing which might occur in the lease area could be temporarily affected by degradation of water quality during drilling. Such a change in water quality could cause some desirable species to avoid the immediate lease area. However, any such effects are expected to be temporary and localized and should not affect any fishery potential in the area as a whole. Populations should return to normal once drilling is completed.

3.a(4) Cultural Resources

Archaeological resources are any objects or features that are man-made or modified by human activity, and classified as historic or prehistoric. Most historic archaeological resources on the OCS are shipwrecks. A resource baseline study for the northern Gulf of Mexico (Coastal Environments, Inc., 1977) indicates that less than 2% of pre-20th century ships reported lost in the Gulf have known locations. Texas A&M University completed a study for the MMS that upgraded and expanded the list of historic shipwrecks developed by Coastal Environments, Inc. (Garrison et al., 1989). This recent investigation identified nearly 3,500 potential shipwreck locations in the Gulf, nearly 1,500 of which occur on the OCS.

According to the sea level curve proposed for the northern Gulf by Coastal Environments, Inc. (1982), sea level would have been approximately 45 m (148 ft) below the present sea level at 12,000 B.P. Therefore, the continental shelf shoreward of the 45-m (148-ft) bathymetric contour would possess potential for prehistoric sites dating

subsequent to 12,000 B.P. Although many specific areas in the Gulf have been identified through lease block surveys as having high potential for prehistoric sites, these areas generally have been avoided by oil and gas development rather than investigated (USDOI, MMS, 1990a).

The proposed activities are located outside the Historic and Prehistoric Cultural Resources High Probability Lines (USDOI, MMS, 1989, Visual No. 1) and therefore are in a large offshore area where historic and prehistoric resources are unlikely to be found. An Archaeological Survey was not required for this lease area.

3.a(5) Ecologically Sensitive Features

Several areas of environmental concern are located onshore of the lease area. Alabama, Mississippi, and Louisiana have developed Coastal Zone Management Programs to regulate the significant land and water activities between the outer limit of each State's coastal waters and land up to the Intracoastal Waterway and/or the 3-m (10-ft) contour. Land uses which are regulated are those that have a direct and significant impact on the coastal areas requiring a State permit, and those which are required by Federal law to be consistent with the management programs (USDOC and ACAB, 1979; USDOC and LDNR, 1980; Mississippi Department of Wildlife Conservation [MDWC] and USDOC, 1980). The programs provide for the protection of beaches, dunes, wetlands, submerged grass beds, barrier islands, oyster reefs, cultural resources, water quality, air quality, biological resources, and wildlife habitat. Unique ecological features include zoological, botanical, and geological formations characteristic of coastal processes (Burk and Associates, Inc., 1975; USDOC and ACAB, 1979; MDWC and USDOC, 1980; USDOC and LDNR, 1980). Biologically sensitive areas of the north-central Gulf area include estuarine and coastal ecosystems consisting of salt marshes, oyster beds, grass beds, barrier beaches, and dunes (Coastal Environments, Inc., 1980). These coastal ecosystems contain nursery areas for many species of economic importance as well as habitat, rookeries, major overwintering sites, and nesting areas for many endangered and threatened species, such as the southern bald eagle, brown pelican, golden eagle, osprey, red cockaded woodpecker, American peregrine falcon, and various marine turtles (USDOC and ACAB, 1979; USDOI, MMS, 1986a, Visual No. 2; Coastal Environments, Inc., 1980; MDWC and USDOC, 1980; USDOC and LDNR, 1980).

Alabama has designated two types of "Special Management Areas": 1) geographic areas of particular concern; and 2) areas for preservation and restoration (USDOC and ACAB, 1979). Current Alabama "Special Management Areas" are listed below:

Geographic Areas of Particular Concern	Areas for Protection and Restoration
Part of Mobile	Point aux Pins Wetland System
Mobile-Tensaw River Delta	National Audubon Society Wildlife Sanctuary (Dauphin Island)

None of the proposed activities in these blocks should have any effect upon these "Special Management Areas."

Conspicuous areas of environmental concern for Alabama are depicted by the USDOI, MMS (1990b, Visual No. 2; 1989, Visual No. 1), and the USDOC and ACAB (1979).

There are two existing "Special Management Areas" designated by the Louisiana Coastal Management Program (USDOC and LDNR, 1980). These areas are the "Louisiana Offshore Oil Port" (LOOP or Superport) and the "Marsh Island Wildlife Refuge and Game Preserve." The lease area is located away from both of these areas (USDOI, MMS, 1990b, Visual No. 2). None of the proposed activities in the lease area should have any effect upon either area.

Mississippi designated three types of areas as current or proposed Special Management Areas: (1) industrial and port areas, (2) shorefront access areas, and (3) urban waterfront (MDWC and USDOC, 1980). Current Mississippi Special Management areas are depicted by the MDWC and USDOC (1980).

Conspicuous areas of environmental concern for Louisiana and Mississippi are noted by the USDOI, MMS (1990b, Visual No. 2; 1989, Visual No. 1), the MDWC and USDOC (1980), and the USDOC and LDNR (1980).

The coastal zone area is also of recreational importance to residents and tourists. Most recreational activities focus on the area's water resources, which include beaches, boating areas, and fishing areas. Offshore terrestrial areas of particular ecological significance to Alabama, Mississippi, and/or Louisiana are Bon Secour National Wildlife Refuge, Dauphin Island Sanctuary, the barrier islands of Breton National Wildlife Refuge, and Gulf Island National Seashore. Submerged areas of critical concern are the extensive oyster grounds off Plaquemines and St. Bernard Parishes, the artificial fishing reefs located off Mobile Bay (USDOI, MMS, 1986c, Visual No. 3), and the remnant coastal banks, which are located off Mobile, Alabama (USDOI, MMS, 1986b, Visual No. 4; 1986d, Visual No. 5).

Accidental discharge of oil can occur during almost any stage of exploration, development, or production on the OCS. Of the various potential spill sources, the great majority of accidental discharges have resulted from production activities (NRC, 1985; USDOI, MMS, 1986e). Oil fouling in any coastal area could directly or indirectly affect a variety of species, including threatened or endangered species or species important to commercial and sport fisheries. Although effects on benthic organisms of the open shelf may occur, none were detected on the south Texas shelf following the Ixtoc-I well blowout (Boehm, 1982). The main concern is for oiling of beaches and coastal wetlands. Effects may include smothering, acute toxicity, and chronic and sublethal effects (behavioral, morphological, cellular, and histopathological abnormalities). Damage or alterations to coastal habitats could result in effects on continental shelf populations and communities, as estuarine areas function as nursery habitat for many shelf species (Darnell and Phillips, 1988).

Oil fouling of the coastal area could also have adverse socioeconomic effects. Tourism is an important part of Gulf coast economies. Removal of beach or other coastal areas from recreational use by significant oil fouling could decrease tourism in the affected area, causing loss of income and a variety of ripple effects in local economies.

Any spill would be handled according to an oil spill contingency plan approved by the MMS. If a spill did occur during operations, it is unlikely that it would affect any nearshore or onshore areas or resources.

3.a(6) Existing Pipelines and Cables

There are no existing pipelines or cables in the lease area (USDOI, MMS, 1989, Visual No. 1).

3.a(7) Other Mineral Uses

Other than potential oil and gas reserves, there are no known mineral resources in the lease area.

3.a(8) Ocean Dumping Activities

The proposed activities are not located in an area designated for ocean dumping activities (USDOI, MMS, 1990b, Visual No. 2).

3.a(9) Endangered or Threatened Species

The USDOI, MMS (1990a, 1991a) considers possible impacts on endangered and threatened species. It has been determined that the direct and indirect proposed activities are unlikely to jeopardize the continued existence of endangered and threatened species or to result in the destruction or adverse modification of their critical habitats. Onshore facilities are located in a previously developed area and pose no new or additional threat to endangered or threatened species.

Six endangered species of whales have been reported in the Gulf of Mexico. They are the blue whale (*Balaenoptera musculus*), fin whale (*Balaenoptera physalus*), humpback whale (*Megaptera novaeangliae*), right whale (*Eubalaena glacialis*), sei whale (*Balaenoptera borealis*), and sperm whale (*Physeter catodon*). Generally, most of these larger cetaceans occur in continental slope and deep oceanic waters. The population, distribution, and migratory patterns of these species in the Gulf of Mexico are unknown (J. Lehman, 1992, personal communication, USDOI, MMS, Gulf of Mexico OCS Office, Metairie, LA), although healthy individuals or small pods are occasionally sighted nearshore (Schmidly, 1981; Lohoefener, 1988).

Several endangered or threatened species of sea turtles, including the Kemp's ridley (*Lepidochelys kempi*), hawksbill (*Eretmochelys imbricata*), leatherback (*Dermochelys coriacea*), loggerhead (*Caretta caretta*), and green (*Chelonia mydas*), may occasionally visit the lease area. A number of potential effects on sea turtles are of concern. Oil spills can affect the turtles by coating, toxicity, and reduction of food supplies. Many species prefer shallow, coastal waters, which increase their vulnerability to dredging activities, boat collisions, and pollution -- especially oil spills (Fritts et al., 1983). Explosions during platform removal may result in mortality, injury, or behavioral interference. Solid and semi-solid debris may result in mortality through ingestion and entanglement (Darnell and Phillips, 1988).

3.b SOCIOECONOMIC

The initial OCS Socioeconomic Data Base Report will be developed after the MMS and the States of Alabama, Louisiana, and Mississippi have identified the specific parameters to be addressed in these semiannual reports. No new personnel will be needed for the proposed activities.

4. UNAVOIDABLE ADVERSE IMPACTS

4.a SUMMARY OF THE UNAVOIDABLE ADVERSE IMPACTS

Offshore structures will result in minimal navigational interference to ships using established fairways. However, during times of reduced visibility, vessels have the greatest potential to deviate from established fairways and impact offshore structures. Discharge of drilling muds and cuttings and air emissions during drilling operations will adversely affect marine organisms, water and air quality, and commercial fishing as described by the USDOI, MMS (1991a). These impacts are temporary, however, and will be limited to a small area. During the exploratory operations, all discharges will comply with all applicable MMS and Environmental Protection Agency requirements. No significant adverse impacts are expected. The proposed activities covered by this Plan should not result in unavoidable impacts on wetlands, cultural resources, recreational activities, shoreline aesthetics, or other land uses.

4.b STATEMENT CONCERNING THE UNAVOIDABLE ADVERSE IMPACTS

None of the environmental consequences expected during normal operations should produce significant or cumulative adverse environmental effects. The effects of a possible oil spill should have no overall cumulative or long-term effect on the environment, except in the possible event of contamination of endangered marine species. A spill would be handled according to an oil spill contingency plan approved by the MMS. Thus, it is unlikely that a spill would occur during operations and affect any nearshore or onshore areas or resources. The proposed activities should have no significant impact on endangered species or critical habitat. The information presented in this Environmental Report indicates no clear or present reason not to proceed with the proposed activities. Withdrawal of the Plan would result in the loss of potential hydrocarbon production from this area.

5. REFERENCES

Ahlfeld, T. E. 1990. Changing emphases in OCS studies, pp. 11-13. In: Carney, R. S. (ed.), Northern Gulf of Mexico Environmental Studies Planning Workshop. Proceeding of a Workshop held in New Orleans, Lousiana, 15-17 August 1989. Prepared by Geo-Marine, Inc. OCS Study MMS 90-0018. U.S. Dept. of the Interior. Minerals Management Service, New Orleans, LA. 156 pp.

Anderson, E. D. 1990. Estimates of large shark catches in the Western Atlantic and Gulf of Mexico, 1960-1986, pp. 445-454. In: H. L. Pratt, Jr., S. H. Gruber, and T. Taniuchi (eds.), Elasmobranchs as Living Resources: Advances in the Biology, Ecology, Systematics, and the Status of the Fisheries. Proceedings of the second United States - Japan workshop, 9-14 December, 1987, Honolulu, HI. U.S. Dept. of Commerce, National Oceanic and Atmospheric Administration, National Marine Fisheries Service. NOAA Tech. Rep. NMFS 90.

Aurand, D. V. 1988. The future of the Department of the Interior OCS studies program. Oceans '88. Proceedings of a conference sponsored by the Marine Technology Society and IEEE. Vol I. IEE catalog number 88-CH2585-8. Baltimore, Md.

Beckman, D. W., A. L. Stanley, J. H. Render, and C. A. Wilson. 1990. Age and growth of black drum in Louisiana waters of the Gulf of Mexico. Trans. Am. Fish. Soc. 119:537-544.

Boehm, P. D. 1982. Ixtoc oil spill assessment final report. A report by ERCO/Energy Resources Company, Inc. for the Bureau of Land Management, Washington, D.C. Contract No. AA851-CTO-71. NTIS Nos. PB82-197773, PB82-197779, and PB82-197781. 3 vols.

Boesch, D. F. and N. N. Rabalais (eds.). 1987. Long-term environmental effects of offshore oil and gas development. Elsevier Applied Science, New York, NY. 708 pp.

Boesch, D. F., J. N. Butler, D. A. Cacchione, J. R. Geraci, J. M. Neff, J. P. Ray, and J. M. Teal. 1987. An assessment of the long-term effects of U.S. offshore oil and gas development activities: future research needs, pp. 1-53. In: D.F. Boesch and N.N. Rabalais (eds.), Long-term Environmental Effects of Offshore Oil and Gas Development. Elsevier Applied Science, New York, NY.

Burk and Associates, Inc. 1975. Louisiana Coastal Resources Inventory. Vol. I, Geographic areas of particular concern. New Orleans, LA.

Coastal Environments, Inc. 1977. Cultural resources evaluation of the northern Gulf of Mexico continental shelf. Prepared for Interagency Archaeological Services, Office of Archaeology and Historic Preservation, National Park Service, U.S. Department of the Interior. Baton Rouge, LA. 4 vols.

Coastal Environments, Inc. 1980. CPA-2, Offshore Mississippi-Alabama-Florida, biologically sensitive areas. Baton Rouge, LA.

Coastal Environments, Inc. 1982. Sedimentary studies of prehistoric archaeological sites. Prepared for Division of State Plans and Grants, National Park Service, U.S. Dept. of the Interior. Baton Rouge, LA.

Darnell, R. M. 1988. Marine biology, pp. 203-338. In: N. W. Phillips and B. M. James (eds.), Offshore Texas and Louisiana Marine Ecosystems Data Synthesis, Vol. II: Synthesis Report. OCS Study MMS 88-0067. U.S. Department of the Interior, Minerals Management Service, Gulf of Mexico OCS Region, New Orleans, LA.

Darnell, R. M. and N. W. Phillips. 1988. Conceptual modeling, pp. 353-412. In: N. W. Phillips and B. M. James (eds.), Offshore Texas and Louisiana Marine Ecosystems Data Synthesis, Vol. II: Synthesis Report. OCS Study MMS 88-0067. U.S. Department of the Interior, Minerals Management Service, Gulf of Mexico OCS Region, New Orleans, LA.

Davis, W. P., D. E. Hoss, G. I. Scott, and P. F. Sheridan. 1984. Fisheries resource impacts from spills of oil or hazardous substances, pp. 157-172. In: J. Cairns and A. L. Buikema (eds.), Restoration of Habitats Impacted by Oil Spills. Butterworth Publishers, Boston, MA.

Ditton, R. B. and A. R. Graefe. 1978. Recreational Fishery Use of Artificial Reefs on the Texas Coast. Department of Recreational Parks, Texas A&M University. 155 pp.

Ditty, J. G., G. G. Zieske, and R. F. Shaw. 1988. Seasonality and depth distribution of larval fishes in the northern Gulf of Mexico above latitude 26°00'N. Fish. Bull. 86(4):811-823.

Fritts, T. H., A. B. Irvine, R. D. Jennings, L. A. Collum, W. Hoffman, and M. A. McGehee. 1983. Turtles, birds, and mammals in the northern Gulf of Mexico and nearby Atlantic waters. U.S. Fish and Wildlife Service, Division of Biological Sciences, Washington, D.C. FWS/OBS-82/65. 455 pp.

Gallaway, B. J., L. R. Martin, R. L. Howard, G. S. Boland, and G. S. Dennis. 1981. Effects on artificial reef and demersal fish and macro-crustacean communities, pp. 237-299. In: B.S. Middleditch (ed.), Environmental effects of offshore oil production. The Buccaneer Gas and Oil Field Study. Plenum Press, New York. 446 pp.

Garrison, E. G., C. P. Giammona, F. J. Kelly, A. R. Tripp, and G. A. Wolff. 1989. Historic shipwrecks and magnetic anomalies of the norther Gulf of Mexico: reevaluation of archaeological resource management zone 1. U.S. Dept. of the Interior, Minerals Management Service, Gulf of Mexico OCS Region, New Orleans, LA. 3 vols. OCS Study MMS 89-0023, 89-0024, and 89-0025.

Govoni, J. J., D. E. Hoss, and D. R. Colby. 1989. The spatial distribution of larval fishes about the Mississippi River plume. Limnol. Oceanogr. 34(1):178-187.

Grimes, C. B. and J. H. Finucane. 1991. Spatial distribution and abundance of larval and juvenile fish, chlorophyll and macrozooplankton around the Mississippi River discharge plume, and the role of the plume in fish recruitment. Mar. Ecol. Prog. Ser. 75:109-119.

Kendall, J. J. 1990. Detection of effects at long-term production sites, pp. 23-28. In: Carney, R. S. (ed.), Northern Gulf of Mexico Environmental Studies Planning Workshop. Proceeding of a Workshop held in New Orleans, Louisiana, 15-17 August 1989. Prepared by Geo-Marine, Inc. OCS Study MMS 90-0018. U.S. Dept. of the Interior. Minerals Management Service, New Orleans, LA. 156 pp.

Lassuy, D. R. 1983. Species profiles: life histories and environmental requirements (Gulf of Mexico). Spotted seatrout. U.S. Fish and Wildlife Service, National Coastal Ecosystems Team. Slidell, LA. FWS/OBS-82/11.4.

Lindall, W. N., Jr., J. R. Hall, J. E. Sykes, and E. L. Arnold, Jr. 1972. Louisiana Coastal Zone: Analyses of Resources and Resource Development Needs in Connection with Estuarine Ecology. Sections 10 and 13, Fishery Resources and Their Needs. A report for the U.S. Army Corps of Engineers, New Orleans, LA. Contribution No. 14-17-002-430. 323 pp.

Linton, T. L. 1988. Socioeconomics, pp. 327-351. In: N. W. Phillips and R. M. Darnell (eds.), Offshore Texas and Louisiana Marine Ecosystems Data Synthesis, Vol. II: Synthesis Report. U.S. Department of the Interior, Minerals Management Service, New Orleans, LA. OCS Study MMS 88-0067.

Lohoefener, R. 1988. The relationship between sea turtles and oil platform areas: monthly report and flight report. Miami, FL. U.S. Dept. of Commerce, National Marine Fisheries Service, Southeast Fisheries Center.

Mississippi Department of Wildlife Conservation and U.S. Department of Commerce. 1980. Mississippi Coastal Program. NOAA Office of Coastal Zone Management, Washington, D.C.

National Research Council. 1983. Drilling discharges in the marine environment. Washington, DC: National Academy Press. 180 pp.

National Research Council. 1985. Oil in the sea: inputs, fates, and effects. Washington, D.C.: National Academy Press. 601 pp.

Offshore. 1992. May take embargo to wake up US, MMS Director says. Offshore 52(1):26-27.

Palko, B. J., G. L. Beardsley, and W. J. Richards. 1981. Synopsis of the biology of the swordfish, *Xiphias gladius* Linnaeus. FAO Fisheries Synopsis No. 127. U.S. Dept. of Commerce, National Oceanic and Atmospheric Administration, National Marine Fisheries Service. NOAA Technical Report NMFS Circular 441. 21 pp.

Patten, B. J. 1977. Sublethal biological effects of petroleum hydrocarbon exposures: fish, pp. 319-335. In: D. C. Malins (ed.), Effects of Petroleum on Arctic and Subarctic Marine Environments and Organisms. Volume II. Biological Effects. Academic Press, NY.

Power, J. H. and L. N. May, Jr. 1991. Satellite observed sea-surface temperatures and yellowfin tuna catch and effort in the Gulf of Mexico. Fish. Bull. 89:429-439.

Reggio, V. C., Jr. 1989. Petroleum structures as artificial reefs: a compendium. Fourth International Conference on Artificial Habitats for Fisheries, Rigs-to-Reefs Special Session, November 4, 1987, Miami, FL. OCS Study MMS 89-0021. 176 pp.

Riley, F. 1970. Fisheries of the United States, 1969. U.S. Department the Interior, Bureau of Commercial Fisheries. C.F.S. No. 5300. 87 pp.

Rogers, R. M., Jr. 1977. Trophic interrelationships of selected fishes on the continental shelf of the northern Gulf of Mexico. Ph.D. dissertation, Texas A&M University. 229 pp.

Schmidly, D. J. 1981. Marine Mammals of the Southeastern United States Coast and the Gulf of Mexico. FWS/OBS-80/41.

South Atlantic Fishery Management Council. 1985. Fishery management plan, regulatory impact review, initial regulatory flexibility analysis, and final environmental impact statement for Atlantic swordfish. Charleston, SC. 169 pp.

South Atlantic Fishery Management Council. 1991. Amendment number 4, regulatory impact review, initial regulatory flexibility analysis and environmental assessment for the fishery management plan for the snapper grouper fishery of the south Atlantic region. 87 pp.

Stanley, D. R. and C. A. Wilson. 1990. A fishery-dependent based study of fish species composition and associated catch rates around oil and gas structures off Louisiana. Fish. Bull. 88:719-730.

Sutter, F. D. and T. D. McIlwain. 1987. Species profiles: life histories and environmental requirements of coastal fishes and invertebrates (Gulf of Mexico). Sand seatrout and silver seatrout. Gulf Coast Research Laboratory, Fisheries Research and Development, Ocean Springs, MS. Biological Report 82(11.72). TR EL-82-4.

Taniguchi, A. K. 1987. A survey of the domestic tuna longline fishery along the U.S. east coast, Gulf of Mexico, and Caribbean Sea. A report prepared for South Atlantic Fishery Management Council. Tech. Rept. No. 4. SAFMC Contribution No. 9. 50 pp.

TerEco Corporation. 1976. Ecological Aspects of the Upper Continental Slope of the Gulf of Mexico. A report for the U.S. Department of the Interior, Bureau of Land Management Gulf of Mexico OCS Office, New Orleans, LA. Contract No. 08550-CT4-12.

Turner, R. E. and D. R. Cahoon (eds.). 1987. Causes of Wetland Loss in the Coastal Central Gulf of Mexico. Volume I: Executive Summary. Final report submitted to Minerals Management Service, New Orleans, LA. Contract No. 14-12-0001-30252. OCS Study/MMS 87-0119. 32 pp.

U.S. Department of Commerce. 1985. Gulf of Mexico coastal and ocean zones, strategic assessment data atlas. National Oceanic and Atmospheric Administration and National Ocean Service, Washington, DC.

U.S. Department of Commerce and Alabama Coastal Area Board. 1979. The Alabama Coastal Area Management Program and Final Environmental Impact Statement. 264 pp.

U.S. Department of Commerce, National Marine Fisheries Service. 1989a. Fisheries of the United States, 1988. Current fisheries statistics no. 8800. Washington, DC.

U.S. Department of Commerce, National Marine Fisheries Service. 1989b. Draft secretarial shark fishery management plan for the Atlantic Ocean. Includes regulatory impact review and proposed regulations. U.S. Department of Commerce, National Oceanic and Atmospheric Administration. 116 pp.

U.S. Department of Commerce, National Marine Fisheries Service. 1991. Landings data, January 1989 through December 1989. Unpublished data prepared 28 February 1991 as Report LDG 340LA.

U.S. Department of Commerce and Louisiana Department of Natural Resources. 1980. Louisiana Coastal Resources Program Final Environmental Impact Statement. Louisiana Department of Natural Resources, Baton Rouge, LA.

U.S. Department of the Interior, Minerals Management Service. 1984. Final Environmental Impact Statement. Proposed Oil and Gas Lease Sales 94, 98, and 102. Gulf of Mexico. 752 pp.

U.S. Department of the Interior, Minerals Management Service. 1986a. Visual Nos. 2 and 2E (Commercial Fisheries and Endangered and Threatened Species). Gulf of Mexico Regional OCS Office, Metairie, LA.

U.S. Department of the Interior, Minerals Management Service. 1986b. Visual No. 4 (Bottom Sediments and Vegetation). Gulf of Mexico Regional OCS Office, Metairie, LA.

U.S. Department of the Interior, Minerals Management Service. 1986c. Visual Nos. 3 and 3E (Recreation and Areas of Multiple Use). Gulf of Mexico Regional OCS Office, Metairie, LA.

U.S. Department of the Interior, Minerals Management Service. 1986d. Visual No. 5 (Geologic and Geomorphic Features). Gulf of Mexico Regional OCS Office, Metairie, LA.

U.S. Department of the Interior, Minerals Management Service. 1986e. Oil spills, 1976-85; statistical report. OCS Report MMS 86-0085.

U.S. Department of the Interior, Minerals Management Service. 1987a. Final Environmental Impact Statement. Proposed OCS oil and gas Lease Sales 113, 115, and 116 (Central, Western and Eastern Gulf of Mexico). New Orleans, LA. OCS EIS MMS 87-0077.

U.S. Department of the Interior, Minerals Management Service. 1987b. 5-Year leasing program, mid-1987 to mid-1992. Detailed decision documents. U.S. Government Printing Office, Washington, D.C.

U.S. Department of the Interior, Minerals Management Service. 1989. Visual No. 1 (Historic Leasing and Infrastructure). Gulf of Mexico Regional OCS Office, Metairie, LA.

U.S. Department of the Interior, Minerals Management Service. 1990a. Final Environmental Impact Statement. Gulf of Mexico Sales 131, 135, and 137: Central, Western, and Eastern Planning Areas. New Orleans, LA. OCS EIS/EA MMS 90-0042.

U.S. Department of the Interior, Minerals Management Service. 1990b. Visual No. 2 (Areas of Multiple Use). Gulf of Mexico Regional OCS Office, Metairie, LA.

U.S. Department of the Interior, Minerals Management Service. 1991a. Final Environmental Impact Statement. Gulf of Mexico Sales 139 and 141: Central and Western Planning Areas. Gulf of Mexico OCS Region, New Orleans, LA. OCS EIS/EA, MMS 91-0054.

U.S. Department of the Interior, Minerals Management Service. 1991b. Request for Proposals (RFP) No. 3582 "Gulf of Mexico Offshore Operations Monitoring Experiment, Phase I: Sublethal Responses to Contaminant Exposure". Washington, D.C.

Vaughan, D. S. 1987. Stock assessment of the gulf menhaden, *Brevoortia patronus*, fishery. NOAA Technical Report NMFS 58. 18 pp.

Waters, J. R. 1988. Review of the reef fish fisheries in the Gulf of Mexico. National Marine Fisheries Service, Southeast Fisheries Center. Beaufort Laboratory. Unpublished Report.

Witzig, J. 1986. Rig fishing in the Gulf of Mexico - 1984, marine recreational fishing survey results, pp. 103-105. In: Proceedings, sixth annual Gulf of Mexico information transfer meeting. Sponsored by Minerals Management Service, Gulf of Mexico OCS Region, October 22-24, 1985. New Orleans, LA. OCS Study MMS 86-0073.

6. FINAL STATEMENT

To the best of our knowledge, the set of findings included in the Environmental Report and DOCD indicates that each of the proposed activities, their associated facilities, and effects are all consistent with and comply with the provisions and guidelines of the Alabama, Mississippi, and Louisiana-approved Coastal Zone Management Programs. The proposed activities will be conducted in a manner consistent with the Coastal Zone Management Programs as outlined in USDOC and ACAB (1979), MDWC and USDOC (1980), and USDOC and LDNR (1980).

The proposed activities will be carried out and completed with the guarantee of the following items:

1) The best available and safest technologies will be utilized throughout the project. This includes meeting all applicable requirements for equipment types, general project layout, safety systems, and equipment and monitoring systems.

2) All operations will be covered by an oil spill contingency plan approved by the MMS.

3) All applicable Federal, State, and local requirements regarding air emissions, water quality, and discharge for the proposed activities, as well as any other permit conditions, will be complied with.