UNITED STATES GOVERNMENT
MEMORANDUM

September 19, 2003

To: Public Information (MS 5034)

From: Plan Coordinator, FO, Plans Section (MS 5231)

Subject: Public Information copy of plan

Control #	-	N-07910
Type	-	Initial Exploration Plan
Lease(s)	-	OCS-G23507 Block - 354 Desoto Canyon Area
Operator	-	Marathon Oil Company
Description	-	Wells A through D
Rig Type	-	DP SEMISUBMERSIBLE

Attached is a copy of the subject plan.

It has been deemed submitted as of this date and is under review for approval.

Robert Stringfellow
Plan Coordinator

Site Type/Name	Botm Lse/Area/Blk	Surface Location	Surf Lse/Area/Blk
WELL/A	G23507/DC/354	6563 FNL, 2143 FWL	G23507/DC/354
WELL/B	G23507/DC/354	7301 FNL, 2799 FWL	G23507/DC/354
WELL/C	G23507/DC/354	5586 FSL, 5166 FEL	G23507/DC/354
WELL/D	G23507/DC/354	665 FSL, 3444 FEL	G23507/DC/354

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NOTED - SCHEXNAILDRE

N-7910
RS

Gulf of Mexico Exploration
Worldwide Exploration

Marathon Oil Company

P.O. Box 3128
Houston, TX 77253-3128
Telephone 713/629-6600

CONTROL No. N-7910
REVIEWER: Robert Stringfellow
PHONE: (504) 736-2437

September 15, 2003

Mr. Donald C. Howard
Regional Supervisor, Office of Field Operations
U.S. Department of the Interior
Minerals Management Service
1201 Elmwood Park Boulevard
New Orleans, LA 70123-2394

MINERALS MANAGEMENT SERVICE
RECEIVED
SEP 18 2003
FIELD OPERATIONS
Plans Section, GOM OCS Region, New Orleans, LA

RE: Initial Exploration Plan for Lease OCS-G 23507
De Soto Canyon Area Block 354, OCS Federal Waters, Gulf of Mexico
Offshore, Alabama

Gentlemen:

In accordance with the provisions of Title 30 CFR 250.204 and Notice to Lessees (NTL 2003-G17), Marathon Oil Company (Marathon) hereby submits for your review and approval an Initial Exploration Plan for Lease OCS-G 23507, De Soto Canyon Area Block 354, Offshore, Alabama. Five (5) "Proprietary Information" copies and two (2) "Public Information" copies are initially being submitted for review. The remainder of the copies will be submitted upon determination of completeness.

Excluded from the Public Information copies are geological discussions, depth of wells, and structure maps.

Marathon anticipates activities will commence under this proposed Initial Exploration Plan on approximately, March 15, 2004.

Your earliest review and approval will be greatly appreciated. Should additional information be required, please contact our regulatory consultant in this matter, Jodie Connor, J. Connor Consulting, Inc. at (281) 578-3388.

Sincerely,

Joseph J. Schneider
Regulatory Compliance Representative

JJS:JAC;cjc
Enclosures

PUBLIC COPY
September 15, 2003

INITIAL EXPLORATION PLAN

Lease Number (s):	OCS-G 23507
Area/Block:	De Soto Canyon Block 354
Prospect Name:	Stegodon
Offshore:	Alabama

Submitted by:

Marathon Oil Company
P.O. Box 3128
Houston, Texas 77253-3128

Joseph J. Schneider
(713) 296-1927
JJSchneider@MarathonOil.com

Estimated start up date: March 15, 2004

Authorized Representative:
Jodie Connor
J. Connor Consulting, Inc.
16225 Park Ten Place, Suite 700
Houston, Texas 77084
(281) 578-3388
jodie.connor@jccteam.com

No. Copies Being Submitted:
Proprietary: 17
Public Info: 5

For MMS:
Plan No. _____
Assigned to: _____

MARATHON OIL COMPANY

INITIAL EXPLORATION PLAN

LEASE OCS-G 23507

DE SOTO CANYON BLOCK 354

APPENDIX A
CONTENTS OF PLAN

Marathon Oil Company (Marathon) is the designated operator of the subject oil and gas lease.

(A) DESCRIPTION, OBJECTIVES AND SCHEDULE

Appendix J contains a Plan Information Form, which provides a description of proposed activities, objectives and a tentative schedule.

This Exploration Plan provides for the drilling and abandonment of four (4) exploratory wells in De Soto Canyon Block 354. Marathon estimates the time to drill these wells at 56 days each with an estimated startup date of March 15, 2004, and an estimated completion date of April 22, 2005.

(B) LOCATION

Included as ***Attachment A-1*** is a map showing the locations of proposed wells. Water depths are also indicated on the map. Additional well information is included in Appendix J, on the Well Information Form.

(C) DRILLING UNIT

As shown in Appendix J, the Plan Information Form, the proposed wells will be drilled with a dynamically positioned (DP) drillship similar to the Transocean SedcoForex "Deepwater Millennium". For the purpose of preparing the air quality review, the MMS-defined maximum horsepower rating for a drillship has been used. When a rig is selected, the rig specifications will be made a part of the Application for Permit to Drill.

Safety features on the drillship will include well control, pollution prevention, welding procedure, and blowout prevention equipment as described in Title 30 CFR Part 250, Subparts C, D, E, and G; and as further clarified by MMS Notices to Lessees, and current policy making invoked by the MMS, Environmental Protection Agency and the U.S. Coast Guard. The appropriate life rafts, life jackets, ring buoys, etc., as prescribed by the U. S. Coast Guard will be maintained on the facility at all times.

In accordance with Title 30 CFR Part 250, Subpart O, Marathon will ensure Well Control Training is provided for personnel engaged in oil and gas operations in the OCS Gulf of Mexico.

Pollution prevention devices such as curbs, gutters, drip pans, and drains collect excess liquids, which may or may not contain oily substances. These devices are not designed to hold liquids. They are designed to immediately drain or dump liquids to holding tanks which are supported by oily water separators. All of these devices would be constructed out of heavy gauge steel and are not likely to be compromised or punctured. The rig maintains a Shipboard Oil Pollution Emergency Plan.

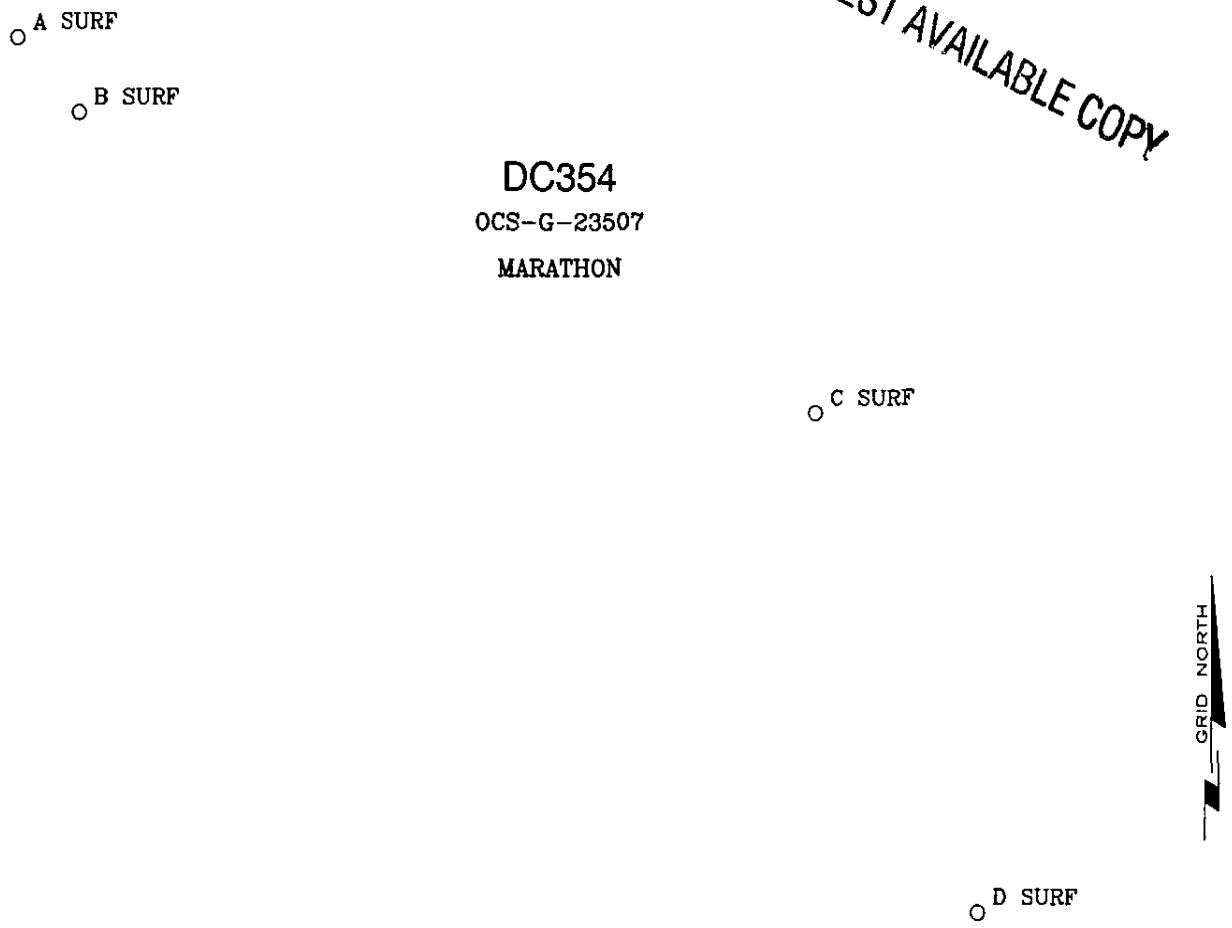
The rig is not set up for zero discharge. For example, most deck drains and some of the joints at the edge of the rig floor go overboard or into the moonpool, respectively. There is a dedicated drip pan under the rotary table. The pipe racks, mud pump room, sack store, and drill floor drains

all go to a holding tank which is served by a dedicated oily water separator. The well test area, engine room, and other major machinery spaces drains all go to slops tanks which are served by a large, general-service, oily-water separator. The containment devices are temporary. They are not meant for permanent storage of waste. On the rare occasion they contain wastes, they are pumped, mopped, or cleaned within a short period of time. The chances of damage to a containment structure during such time as it contains wastes are exceedingly small. The rig has a Shipboard Oil Pollution Emergency Plan (SOPEP) which is reviewed and approved annually by the American Bureau of Shipping (ABS). The rig carries sufficient materials to deal with a one-barrel oil spill.

Marathon proposes additional safety, pollution prevention, and early spill detection measures beyond those required by 30 CFR 250, as outlined in Section 6 of our Sub-regional Oil Spill Response Plan.

PROPOSED LOCATIONS

LOC'N	X COORDINATE	Y COORDINATE	LATITUDE	LONGITUDE	CALLS		WD	TVD
A SURF	1,364,383.60'	10,384,477.00'	28° 36' 45.372"N	87° 51' 38.111"W	6,563.00' FNL	2,143.60' FWL	-7,551'	16,000'
B SURF	1,365,039.76'	10,383,738.82'	28° 36' 38.108"N	87° 51' 30.688"W	7,301.18' FNL	2,799.76' FWL	-7,553'	16,000'
C SURF	1,372,913.68'	10,380,786.09'	28° 36' 09.416"N	87° 50' 02.092"W	5,586.09' FSL	5,166.32' FEL	-7,584'	16,000'
D SURF	1,374,636.10'	10,375,864.89'	28° 35' 20.795"N	87° 49' 42.381"W	664.89' FSL	3,443.90' FEL	-7,609'	16,000'



PUBLIC INFORMATION

ATTACHMENT A-1

Printed: 6/6/03

Marathon Oil Company

EXPLORATION PLAN
OCS-G-23507
BLOCK 354
DE SOTO CANYON AREA
GULF OF MEXICO

FUGRO CHANCE INC.
200 Dulles Dr. Lafayette, Louisiana 70506-3001 (337) 237-1300

GEODETIC DATUM: NAD27
PROJECTION: U.T.M. 16
GRID UNITS: US SURVEY FEET

SCALE IN FEET 0 2,000'

Job No.: 03-2010	Date: 6/6/03	Drwn: VAG	Chart: 1 Of: 1

Dwgfile: O:\CADBASE\WPERMIT\UTM16\DC\Permit\354EP

APPENDIX B
GENERAL INFORMATION

(A) CONTACT

Inquiries may be made to the following authorized representative:

Jodie Connor
J. Connor Consulting, Inc.
16225 Park Ten Place, Suite 700
Houston, Texas 77084
(281) 578-3388
E-mail address: jodie.connor@jccteam.com

(B) PROSPECT NAME: Stegodon

(C) NEW OR UNUSUAL TECHNOLOGY

Marathon does not propose to use any new or unusual technology to carry out the proposed exploration activities. New or unusual technology is defined as equipment and/or procedures that:

1. Function in a manner that potentially causes different impacts to the environment than the equipment or procedures did in the past;
2. Have not been used previously or extensively in an MMS OCS Region;
3. Have not been used previously under the anticipated operating conditions; or
4. Have operating characteristics that are outside the performance parameters established by 30 CFR 250.

(D) BONDING INFORMATION

The bond requirements for the activities and facilities proposed in this EP are satisfied by an area wide bond, furnished and maintained according to 30 CFR 256, subpart I; NTL No. 2000-G16, "Guidelines for General Lease Surety Bonds", dated September 7, 2000.

Marathon Oil Company (MMS No. 00724) has demonstrated oil spill financial responsibility for the facilities proposed in this EP according to 30 CFR 253, and National NTL No. 99-N01, "Guidelines for Oil Spill Financial Responsibility for Covered Offshore Facilities," dated January 1, 1999.

(E) ONSHORE BASE AND SUPPORT VESSELS

De Soto Canyon Block 354 is located approximately 80 miles from the Louisiana coastline, 111 miles from Alabama, and 117 miles from Florida. The block is located approximately 155 miles from the onshore support base in Port Fourchon, Louisiana. A Vicinity Map showing De Soto Canyon Block 354 relative to the Louisiana, Alabama and Florida shorelines and the onshore base is included as ***Attachment B-1.***

The existing onshore base provides 24-hour service, a radio tower with a phone patch, dock space, equipment and supply storage area, drinking and drill water, etc. The base serves as a loading point for tools, equipment, and machinery, and temporary storage for materials and

equipment. The base also supports crew change activities. The proposed operations do not require expansion or major modifications to the base. No future acquisitions or expansions of onshore facilities are anticipated.

During the proposed activities, support vessels/helicopters and travel frequency are as follows:

Type	Weekly Estimate (No.) of Roundtrips
(1) Crew Boat	3
(1) Supply Boat	4
(1) Helicopter	7

The crew boat will be used to carry smaller supplies such as groceries to the drillship. The supply boats will be used to carry casing and bulk supplies such as cement. The boats will normally move to De Soto Canyon Block 354 via the most direct route from Port Fourchon, Louisiana. The helicopter will be used for transporting personnel and small supplies and will normally take the most direct route of travel between the shorebase and De Soto Canyon Block 354 when air traffic and weather conditions permit. Personal vehicles will be the primary means of transportation to carry rig personnel from various locations to the Port Fourchon area.

(F) LEASE STIPULATIONS

Exploration activities are subject to the following stipulations attached to Lease OCS-G 23507 De Soto Canyon Block 354.

1. Stipulation No. 1 - Military Warning Area – Hold and Save Harmless, Electromagnetic Emissions, and Operational Restrictions

De Soto Canyon Block 354 (OCS-G 23507) is located within Eglin Water Test Area 1 (EWTA-1). The Department of the Air Force, 46 TW/CAX, Eglin Air Force Base, Florida, will be contacted in order to coordinate activities during the proposed operations.

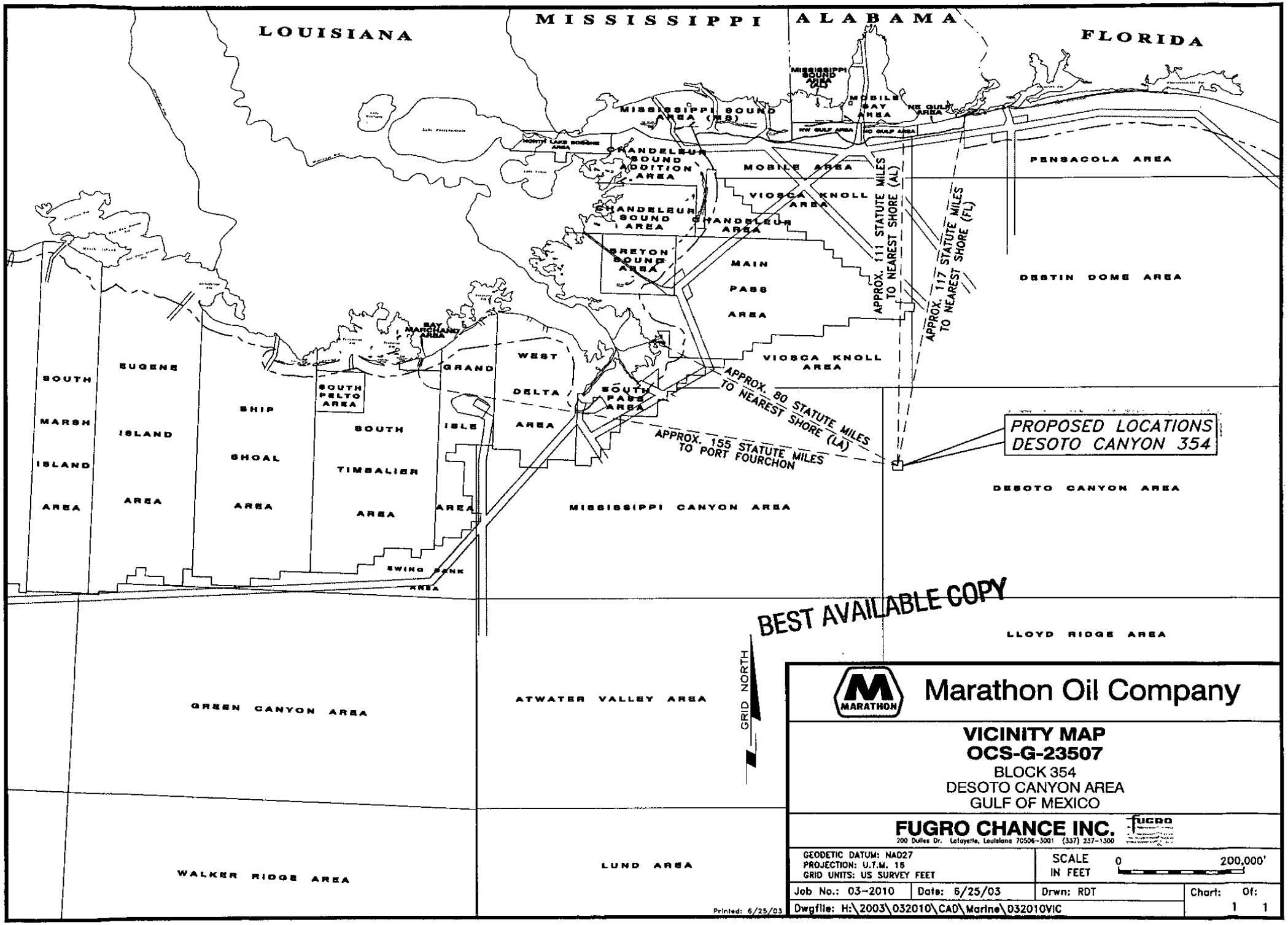
2. Stipulation No. 2 – Evacuation and Lease Stipulation No. 3 – Coordination

This stipulation provides for evacuation of personnel and shut-in of operations during any events conducted by the military that could pose a danger to ongoing operations. Marathon will notify the MMS and EWTA-1, prior to conducting operations, of the person to be notified to implement the terms of this stipulation.

3. Stipulation No. 4 Marine Protected Species

Lease Stipulation No. 4 is meant to reduce the potential taking of marine protected species. Marathon will operate in accordance with NTL No. 2003-G10, to minimize the risk of vessel strikes to protected species and report observations of injured or dead protected species. Marathon will operate in accordance with the Observer Training and Reporting Network Program when developed by MMS and NOAA Fisheries. Marathon will operate in accordance with NTL No. 2003-G11 to prevent intentional and/or accidental introduction of debris into the marine environment.

ATTACHMENT B-1



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Printed: 6/25/03

Marathon Oil Company

VICINITY MAP
OCS-G-23507

BLOCK 354
DESOTO CANYON AREA
GULF OF MEXICO

FUGRO CHANCE INC.
200 Dulles Dr. Lafayette, Louisiana 70506-3001 (337) 237-1300

GEODETIC DATUM: NAD27 PROJECTION: U.T.M. 16 GRID UNITS: US SURVEY FEET		SCALE IN FEET 0 200,000'	
Job No.: 03-2010	Date: 6/25/03	Drwn: RDT	Chart: 1 Of: 1
Dwgfile: H:\2003\032010\CAD\Marine\032010VIC			

APPENDIX C
GEOLOGICAL, GEOPHYSICAL, AND H_2S INFORMATION

(A) STRUCTURE CONTOUR MAPS
Proprietary Data

(B) INTERPRETED 3-D SEISMIC LINE(S)
Proprietary Data

(C) GEOLOGICAL STRUCTURE CROSS-SECTIONS
Proprietary Data

(D) SHALLOW HAZARDS REPORT
Proprietary Data

(E) SHALLOW HAZARDS ASSESSMENT
Utilizing the 3D seismic data, a shallow hazards analysis was prepared for each proposed surface location, evaluating seafloor and subsurface geologic and manmade features and conditions, and is included as ***Attachment C-5.***

(F) HIGH-RESOLUTION SEISMIC LINES
Proprietary Data

(G) STRATIGRAPHIC COLUMN
Proprietary Data

(H) TIME VS DEPTH TABLES
Proprietary Data

(I) HYDROGEN SULFIDE INFORMATION
Proprietary Data

(J) DEPTH TO GEOPRESSURE
Proprietary Data

SECTION 6: CONCLUSIONS AND RECOMMENDATIONS

Exploratory drilling within Federal Lease block 354 in DeSoto Canyon is feasible. There are no significant geologic conditions evident from the available data to suggest that drilling at the proposed well locations will encounter hazardous or constraining conditions. The relevant conditions in the area are as follows:

- The water depth varies from -7,346 to -7,835 ft.
- The seafloor slope in the project area is gentle, averaging 0.78° to the southeast.
- The shallow stratigraphy is composed of a series of channel-levee complexes, sheet sands, condensed sections of clays, and turbidite deposits.
- There are no indications of hard bottom conditions or active seep vents in the project area. There is no potential for encountering chemosynthetic communities in the study area.

APPENDIX D
BIOLOGICAL AND PHYSICAL INFORMATION

(A) CHEMOSYNTHETIC INFORMATION

Activities proposed in this plan could disturb seafloor areas in water depths of 400 meters (1312 feet) or greater, therefore, information for the potential of encountering chemosynthetic communities was evaluated. Marathon contracted Geoscience Earth & Marine Services, Inc. to use the proprietary 3D seismic exploration data to evaluate the potential for the presence of chemosynthetic communities. No evidence of seafloor faulting or expulsion features was detected in the area. Therefore, the potential for significant chemosynthetic communities in the blocks is very low.

Maps

Submitted under separate cover are maps prepared using 3-D seismic data to depict bathymetry, seafloor and shallow geological features, surface locations of each proposed well. No significant amplitude events exist at the seafloor within 1500' of the proposed locations.

Analysis

Using 3-D seismic information, all seafloor features and areas that could be disturbed by the activities proposed in this plan have been identified. The likelihood of these proposed activities disturbing these seafloor and shallow geologic features is discussed in the following summary statement:

No Associated Anchors – No Disturbances to Chemosynthetic Communities:
Features or areas that could support high-density chemosynthetic communities are not located within 1500 feet of each proposed muds and cuttings discharge location.

Marathon will utilize a dynamically positioned rig to conduct the proposed operations. There will be no associated anchors or disturbances to any chemosynthetic community.

(B) TOPOGRAPHIC FEATURES INFORMATION

The activities proposed in this plan will not take place within 500 feet of any identified topographic feature. Marathon will utilize a dynamically positioned rig to conduct the proposed operations. The activities proposed in this plan will not affect a topographic feature.

(C) LIVE BOTTOM INFORMATION

Certain leases in the northeastern Central Gulf of Mexico Planning Area and the Eastern Gulf of Mexico Planning Area are located in areas characterized by the existence of live bottoms. Live bottom areas are defined as seagrass communities; those areas (Pinnacle Trend) that contain biological assemblages consisting of sessile invertebrates living upon and attached to naturally occurring hard or rocky formations with rough, broken, or smooth topography; and areas where the lithotope favors the accumulation of turtles, fishes, or other fauna. This lease does not contain a Live Bottom (Pinnacle Trend) Stipulation.

(D) SPECIAL CONDITIONS

Pursuant to NTL No. 2003-G03, operators may be required to conduct remotely operated vehicle (ROV) surveys during pre-spudding and post-drilling operations for the purpose of biological and physical observations.

Marathon is familiar with the ROV survey and reporting provisions of NTL No. 2003-G03; and if required, will conduct a pre-spudding survey (performed from the drillship) and a post-drilling survey (prior to drillship removal), as follows:

Marathon will utilize a drillship based ROV equipped with video imaging capabilities. The survey pattern will consist of six transects centered on the well location with tracks extending approximately 100 meters away from the well on bearings of 30 degrees, 90 degrees, 150 degrees, 210 degrees, 270 degrees and 330 degrees. The seafloor will be videotaped continuously along each track.

Marathon will make biological and physical observations as described in the subject NTL and Form MMS-141 prior to commencing drilling operations and also following the completion of drilling operations, but prior to moving the rig off location. The observations will be documented using Form MMS-141 or a facsimile and submitted along with videotapes, and any other imagery obtained, to the MMS within 60 days after completion of the final ROV survey.

De Soto Canyon Block 354 is located within the boundaries of the Offshore Pascagoula No. 2 lightering zone.

According to the U.S. Coast Guard, Chevron/Texaco (Pascagoula) is the only company lightering in this zone. Their vessels average just over one (1) trip per month and stay in the lightering zone transferring cargo for 5-14 days per trip. According to the Inspections Department, U.S. Coast Guard, MSO Mobile, there are no additional navigational aids required for drilling rigs working in this zone. Marathon will advise Chevron/Texaco of our location and activities.

APPENDIX E
WASTES AND DISCHARGES INFORMATION

(A) DISCHARGES

All discharges associated with operations proposed in this Exploration Plan will be in accordance with regulations implemented by Minerals Management Service (MMS), U. S. Coast Guard (USCG) and the U.S. Environmental Protection Agency (EPA).

For discharges, the type and general characteristics of the waste, the amount to be discharged (volume or rate), the maximum discharge rate, a description of any treatment or storage and the discharge location and method for each type of discharge are provided in tabular format in ***Attachment E-1***. For purposes of this Appendix, the term discharges describe those wastes generated by the proposed activities that will be disposed of by releasing them into the waters of the Gulf of Mexico at the site where they are generated, usually after receiving some form of treatment before they are released, and in compliance with applicable NPDES permits.

For disposed wastes, the type and general characteristics of the wastes, the amount to be disposed of (volume, rate, or weight), the daily rate, the name and location of the disposal facility, a description of any treatment or storage, and the methods for transporting and final disposal are provided in tabular format in ***Attachment E-2.*** For purposes of this Appendix, disposed wastes describes those wastes generated by the proposed activities that are disposed of by means other than by releasing them in to the waters of the Gulf of Mexico at the site where they are generated. These wastes can be disposed of by offsite release, injection, encapsulation, or placement at either onshore or offshore permitted locations for the purpose of returning them back to the environment.

The types and volumes of chemical constituents of drilling muds Marathon anticipates using are provided as ***Attachment E-3***.

Discharges Table (Wastes to be discharged overboard)

Type of Waste Approximate Composition	Amount to be Discharged (volume or rate)	Maximum Discharge Rate	Treatment and/or Storage, Discharge Location* and Discharge Method
Water-based drilling fluids	13,600 bbl/well	1000 bbl/hr	DC 354, Discharge from surface processing equipment
Drill cuttings associated with water-based fluids	4150 bbl/well	1,000 bbl/hr	DC 354, Discharge from surface processing equipment
Muds, cuttings and cement at the seafloor	Gel-4,800 bbl/well WBM-7,000 bbl/well Cuttings-1,970 bbl/well Seawater and caustic 4,800 bbl/well	NA	DC 354 Discharge to seafloor through marine riser
Produced Water	NA	NA	NA
Sanitary wastes	140,000 gal/well	NA	DC 354 chlorinate and discharge
Domestic waste	140,000 gal/well	NA	DC 354 Remove floating solids and discharge
Deck Drainage	0-1,000 bbl/well Dependant upon rainfall	15 bbl per hour (maximum separator discharge)	DC 354 Remove oil and grease and discharge
Well treatment workover or completion fluids	NA	NA	NA
Uncontaminated fresh or seawater	NA	NA	NA
Desalinization Unit Water	48,720 bbl/well	NA	DC 354 Discharge overboard
Uncontaminated bilge water	NA	NA	NA
Uncontaminated ballast water	20,000 bbl	2,600 m^3/hr	DC 354 Discharge overboard
Misc. discharges to which treatment chemicals have been added.	500 bbl/well	NA	DC 354 Discharge overboard
Miscellaneous discharges (permitted under NPDES) (excess cement with cementing chemicals)	50 bbl/well	NA	DC 354 Discharge at seafloor without treatment

* Area, block, MMS facility ID (if available)

Disposal Table (Wastes to be disposed of, not discharged)

Type of Waste Approximate Composition	Amount*	Rate per Day	Name/Location of Disposal Facility	Treatment and/or Storage, Transport and Disposal Method
Spent synthetic-based drilling fluids and cuttings	16,400 bbl/well	NA	Chemical Waste Management, Carlyss, LA	Transport to Port Fourchon shore base in cuttings boxes on crew boat then to mud company for recycling
Waste Oil	200 bbl/well	0.5 bbl/day	ASCO – Bodin Oil Recovery, Abbeville, LA	Pack in drums and transport to an onshore Incineration site
Trash and debris	10 tons/well	NA	Riverbirch, Landfill, Avendale, LA	Transport in storage bins on crew boat to shorebase. Truck to landfill.
Chemical product wastes	100 bbl	2 bbl/day	Chemical Waste Management, Carlyss, LA	Transport in barrels on crew boat to shore location

Hidden expressed as a volume, weight, or rate

QUANTITIES OF DRILLING FLUIDS

WELL	WATER-BASED MUD (BBLS)	SYNTHETIC-BASED MUD (BBLS)
A	13600	12580
B	13600	12580
C	13600	12580
D	13600	12580

DRILLING FLUID ADDITIVES
PRODUCT CROSS REFERENCE

MILPARK	BAROID	M-I	DESCRIPTION
WEIGHT MATERIALS			
MIL-BAR	BAROID	M-I BAR	API bante, 4.2 specific gravity
DENSIMIX	BARODENSE	FER-OX	Macaceous nematite
W.O. 30	BARACARB	LO-WATE	Calcium carbonate
VISCOSIFIERS			
MILGEL	AQUAGEL	M-I GEL	API-grade Wyoming bentonite
MILGEL NT	AQUAGEL GOLD SEAL		Untreated Wyoming bentonite
SALTWATER GEL	ZEOGEL	SALT GEL	API-grade attapulgite
SUPER-COL	QUIK-GEL	KWIK-THIK	High-yield bentonite, treated
NEW-VIS			Organic polymer blend
XCD POLYMER	XCD POLYMER	XCD POLYMER	XC Dispersable
MIL-BEN	SHUR-GEL		Bentonite-OCMA Spec. DFCP4
DEFLOCCULANTS			
MIL-TEMP	THERMA-THIN DP	MELANEX-T	High-temperature deflocculant
NEW-THIN	THERMA-THIN	TACKLE (Liquid)	Polymeric deflocculant
UNI-CAL	Q-BROXIN	SPERSENE	Chrome lignosulfonate
UNI-CAL CF	Q-B II	SPERSENE CF	Chrome-free lignosulfonate
MIL-KEM	LIGNOX	RD 2000	Lime mud thinner
SAPP	SAPP	SAPP	Sodium acid pyrophosphate
OILFOS	BARAFOS	PHOS	Sodium tetraphosphate
MIL-THIN	THERMA-THIN	THIN X (Liquid)	Anionic copolymer thinner
FILTRATION CONTROL AGENTS			
BIO-LOSE			Modified polysacchande
CHEMTROL X	DURENEX	RESINEX	Polymer blend, high-temperature
FILTREX	BARANEX	RESINEX	Polyanionic lignin resin
LIGCO	CARBONOX	TANNATHIN	Lignite
LIGCON	CC-16	CAUSTILIG	Causticized lignite
MILSTARCH	IMPERMEX	MY-LO-GEL	Pregelatinized starch
NEW-TROL	POLYAC	SP-101	Sodium polyacrylate
PERMA-LOSE HT	DEXTRID	POLY-SAL	Nonfermenting starch, high-temp.
PYRO-TROL	THERMA-CHEK	POLY RX	Polymeric, high-temperature
KEM-SEAL	THERMA-CHEK		Copolymer, high-temperature
MIL-PAC	PAC R	POLYPAC	Polyanionic cellulose
MIL-PAC LV	PAC L	POLYPAC	Low-viscosity polyanionic cellulose
MILPARK CMC HV	CELLEX (High Vis)	CMC HV	Sodium carboxymethycellulose
MILPARK CMC LV	CELLEX	CMC LV	Sodium carboxymethycellulose
CORROSION CONTROL CHEMICALS			
MIL-GARD	NO-SULF	SULF-X	Basic zinc carbonate
MIL-GARD R	BARASCAV-L	SULF-X ES	Chelated zinc
NOXYGEN	COAT-888 BARACOR 113	OXYGEN SCAVENGER	Oxygen scavenger
SCALE-BAN	SURFLO-H35 BARACOR 129	SI-1000	Scale inhibitor
AMI-TEC	BARA FILM BARACOR 300 COAT-B1400 COAT-C1815	CONQOR 202 CONQOR 101 CONQOR 303	Film-forming amine
CARBO-DRILL OIL MUD ADDITIVES			
CARBO-MUL	INVERMUL NT VERSACOAT	VERSAWET	Emulsifier (and wetting agent) primarily
CARBO-MUL HT	EZ MUL NT		High-temperature emulsifier and wetting agent
CARBO-TEC	INVERMUL	VERSAMUL	Emulsifier
CARBO-GEL	GELTONE II	VERSAGEL	Organophilic clay nectonte
CARBO-VIS	GELTONE II	VERSAMOD	Organophilic clay
CARBO-TROL		VERSATROL	Filtration control agent
CARBO-TROL A-9	DURATONE HT	VERSALIG	Nonasphaltic filtration control, high-temperature
SURF-COTE	DRILTREAT or OMC	VERSAWET	Oil wetting agent for oil muds
CARBO-MIX	DRILTREAT		Nonionic emulsifier, high-activity
CARBO-TEC HW			HW oil mud emulsifier

DRILLING FLUID ADDITIVES
PRODUCT CROSS REFERENCE

MILPARK	BAROID	M-I	DESCRIPTION
SHALE CONTROL ADDITIVES			
ALPLEX			Aluminum complex
BIO-DRILL 1402			Oil mud alternative
NEW-DRILL	EZ MUD	POLY-PLUS	PHPA liquid
NEW-DRILL HP			Powdered PHPA
NEW-DRILL PLUS	EZ MUD DP		Powdered PHPA
SHALE-BOND	SHALE-BAN	HOLECOAT	Resinous shale stabilizer
PROTECTOMAGIC			Oil-soluble blown asphalt
PROTECTOMAGIC M	AK-70	STABIL-HOLE	Water-dispersants, Blown asphalt
SPOTTING FLUIDS			
BLACK MAGIC			Oil-base spotting fluid
BLACK MAGIC LT	EX SPOT		Low toxicity oil-base spotting fluid
BLACK MAGIC SFT		OIL-FAZE	Oil-base spotting fluid concentrate
MIL-FREE	SCOT-FREE/ ENVIRO-SPOT	PIPE-LAX	Liquid spotting fluid
BIO-SPOT	ENVIRO-SPOT		Nontoxic water-base spotting fluid
BIO-SPOT II			Nontoxic water-base spotting fluid
MIL-SPOT 2	SCOT-FREE	PIPE-LAX W	Weighted (oil-base) spotting fluid concentrate
LUBRICANTS			
AQUA-MAGIC			Low-toxicity lubricant
LUBRI-FILM	EP MUDLUBE	E.P. LUBE	Extreme-pressure lubricant
MIL-LUBE		LUBE-106	General lubricant
DETERGENTS/FOAMERS			
AMPLI-FOAM	DRILFOAM	FOAMER 80	Mist and stiff foaming agent
MIL CLEAN	BAROID RIG WASH BARA-KLEAN	KLEEN-UP	Biodegradeable detergent
MILPARK MD	CON-DET	DD	Drilling detergent
DEFOAMING AGENTS			
LD-8	BARA DEFOAM	DEFOAM-X	Hydrocarbon-base defoamer
W.O. DEFOAM	BARA BRINE DEFOAM	DEFOAM-A	Alcohol-base, saltwater muds
ALUMINUM STEARATE	Aluminum Stearate	Aluminum Stearate	Aluminum Stearate
LOST CIRCULATION MATERIALS			
CHEK-LOSS			Seepage loss control differential sticking preventative
MIL-CEDAR FIBER	PLUG-GIT	M-I CEDAR FIBER	Cedar fiber
MIL-FIBER	FIBERTEX	M-I FIBER	Fiber blend
MILFLAKE	JELFLAKE	FLAKE	Shredded cellophane flake
MILMICA	MICATEX	MICA	(Muscovite) mica graded
MIL-PLUG		NUT PLUG	Ground pecan shells
MIL-SEAL	BARO-SEAL	KWIK SEAL	Blended lost-circualtion material
COTTONSEED HULLS	Cottonseed Hulls	Cottonseed Hulls	Cottonseed Hulls
PAPER			Ground paper
WALNUT SHELLS	WALL-NUT		Ground walnut shells
MAGNE-SET			Acid-soluble cement
WORKOVER AND COMPLETION FLUID ADDITIVES			
MUD-PAC	COAT-44 & 45	CONQOR 404 X-CORE	Corrosion (packer fluid) inhibitor
BRINE-PAC	BARACOR-A		Corrosion inhibitor clean brine fluids
W.O. 21L	LIQUI-VIS	VIS-L	Liquid HEC polymer
PRESERVATIVES			
DRYOCIDE			Dry (biodegradable) biocide
X-CIDE 207	BARA B466	BACBAN II & III	Biocide

APPENDIX F
OIL SPILL INFORMATION

(A) SUB-REGIONAL OIL SPILL REPONSE PLAN

Marathon is the only entity covered under the Gulf of Mexico Eastern Planning Area Sub-Regional Oil Spill Response Plan (Eastern Sub-Regional OSRP) approved by the Minerals Management Service on July 29, 2002. Activities proposed in this EP will be covered by the Eastern Sub-Regional OSRP (Informational updates to include De Soto Canyon Block 354 (OCS-G 23507) are being submitted under separate cover).

(B) OSRO INFORMATION

Marathon Oil Company's primary equipment provider is the National Response Corporation (NRCC) which is supported by the Independent Contractor Network (ICN) to provide closest available personnel to operate the equipment. In the event of a spill, mechanical response equipment located in NRCC bases located in Cameron and Cocodrie, Louisiana and Theodore, Alabama would be activated (see Figure F.3).

(C) WORST-CASE SCENARIO COMPARISON

Activities proposed in this EP are considered far-shore, (>10 miles from the shoreline). The worst case discharge (WCD) proposed in this EP is calculated at 600 barrels of 40° condensate for a blowout of an exploratory well, or 13,812 barrels of 32.4° diesel from the largest single diesel storage tank rupture of the drillship.

Category	Proposed Activity WCD	Current Eastern Sub-Regional OSRP WCD	Proposed Activity WCD	Current Eastern Sub-Regional OSRP WCD
Type of Activity	Drilling **(Blowout)**	Drilling **(Blowout)**	Drilling **(Storage Tanks)**	Drilling **(Storage Tanks)**
Spill Location (Area/Block)	DC 354	DC 491	DC 354	DC 491
Facility Designation	Drillship	Drillship	Drillship	Drillship
Distance to Nearest Shoreline (miles)	80	92	80	92
Volume (barrels)	600	10,000	13,812	13,812
Type of Oil (crude, condensate, diesel)	Condensate	Crude	Diesel	Diesel
API Gravity	40°	34.5°	32.4°	32.4°

Trajectory of a spill and the probability of it impacting a land segment have been projected utilizing information in the MMS Oil Spill Risk Analysis Model (OSRAM) for the Eastern Gulf of Mexico as described in "Oil-Spill Risk Analysis: Gulf of Mexico Outer Continental Shelf (OCS), in Support of the Environmental Impact Statement (EIS) for Proposed Lease Sale 181" (OCS Report MMS 2001-007).

Since Marathon has the capability to respond to the worst-case spill scenario included in our Eastern Sub-Regional OSRP approved on July 29, 2002, and since the worst-case scenario determined for this EP does not replace the worst-case scenario in our Eastern Sub-Regional OSRP, I hereby certify that Marathon has the capability to respond, to the maximum extent practicable, to a worst-case discharge, or a substantial threat of such a discharge, resulting from the activities proposed in this EP.

(D) FACILITY TANKS & PRODUCTION VESSELS

There are no production vessels associated with the activities in this EP. All facility tanks are associated with the drillship as follows:

Type Storage Tank	Largest Tank Capacity (bbls)	Number of Tanks	Total Capacity (bbls)	Fluid Gravity (API)
Fuel Oil (Marine Diesel)	13,812	11	37,896	32.4°
Oil Based Mud	NA			

(E) DIESEL OIL SUPPLY VESSELS

Fuel for the drilling unit will be transported via a supply vessel as follows:

a.	Size of fuel supply vessel:	240'
b.	Carrying capacity of fuel supply vessel:	309,270 gallons
c.	Frequency that fuel supply vessel will visit the facilities:	1 per week
d.	Routes that the fuel supply vessel will use to travel between the onshore support base and proposed facility:	6 mi from Port Fourchon to mouth of Bayou Lafourche, then approximately 155 miles direct route through the open Gulf to DC 354

(F) SUPPORT VESSEL FUEL TANKS

The estimated total storage capacity (maximum per class of vessel in the field at any given time) of fuel tanks on the vessels supporting activities in this EP are as follows:

a.	Supply Boats	Included in 309,270 gallon capacity in #b above.
b.	Crew Boats	35,000 gallons

The total number of support vessels in the field simultaneously would be two (one supply vessel and one crew boat).

(G) PRODUCED LIQUID HYDROCARBONS TRANSPORTATION VESSELS

Marathon does not propose well testing operations and/or transfer of stored production under this EP.

(H) OIL- AND SYNTHETIC-BASED DRILLING FLUIDS

Marathon does not propose use of oil-based drilling fluids for this EP. Quantities of synthetic-based drilling fluids (should they be used) are given in ***Attachment 12.***

(I) BLOWOUT SCENARIO

Potential Blowout Scenarios

1. Flow up tubulars within wellbore directly to seafloor:

A blowout of this nature on DC 354 would require loss of primary well control (fluid hydrostatic) and secondary well control (failure of the BOP system, the subsea wellhead equipment, or the wellbore tubulars near the seafloor).

For this water depth, subsea BOP equipment with multiplex control systems will be utilized from dynamically positioned drilling vessels (technology may enable a moored vessel, but the majority of the options will involve dynamic positioning). These systems are equipped with multiple rams to seal on the workstring(s) utilized, at least one ram designed to severe the workstring and secure the wellbore, redundant control systems, emergency disconnect sequence(s) to secure the well in the event that loss of communication from the control systems is pending, a sequence to secure the well in the event control communication is lost without warning, and a subsea intervention panel to enable certain functions on the BOP stack to be operated with the ROV in emergency situations. The wellhead and structural pipe are designed to not be the weak point under extreme bending loads. The wellbore tubulars are designed to handle large influx volumes and bending loads.

2. Underground blowout that broaches the seafloor:

A blowout of this nature would involve either a cross-flow within the open hole or a cross-flow into worn or ruptured casing that broaches the seafloor.

During the planning stages, casing wear, strength and formation integrity are included in the design of the well. The requirements and design criteria are subsequently monitored as the well is constructed. For example, this may include initial casing pressure tests, formation strengths (Leak Off or Formation Integrity Tests), subsequent 30 day casing pressure tests, and other inspections of the tubulars.

Estimated Spill Flowrate, Volume and Timeframe

A 600 barrel blowout volume is based on the nodal analysis flowrate prediction reducing and bridging off over a 2 day period. Experience suggests that blowouts of this magnitude are extremely rare due to potential flow restrictions and the bridging tendencies of the Gulf of Mexico formations.

Potential for Well to Bridge Over

Based on extensive experience with highly unconsolidated sands in the Gulf of Mexico, it seems extremely likely that a DC 354 well would bridge off during an uncontrolled flow event. For example, such wells completed in the WD79 and SP89 fields have typically been restricted to producing at drawdowns less than 500 psi to prevent failure. Even such restrictions have met with mixed success in preventing sand production and bridging within the wellbore.

Surface Intervention to Stop Blowout

Effectiveness of surface intervention is obviously highly dependent on the situation, the ability to safely remain on location, and materials on hand. Under relatively low flowrates (leak or underground blowout that broaches the seafloor which provides a restriction), a dynamic kill with heavy weight drilling fluid is an effective method to regain control of the well. The ROV can be utilized to close select functions on the subsea BOP stack in the unlikely event the redundant and/or automatic control systems fail to operate as intended. Additionally, the possibility of running a bridge plug or retainer may exist under certain circumstances.

Relief Well Options

1. **Availability of a rig to drill a relief well:** There are over 20 deepwater rigs rated and equipped to drill in water depths greater than 7500'. Since the vast majority of the vessels capable of drilling in ultra deepwater are dynamically positioned, potential transit times to the prospect location are greatly reduced. Marathon currently utilizes a third party broker, as well as numerous contractor and operator contacts, to monitor the location and contract status of the deepwater rig fleet.

2. **Rig package constraints:** The primary rig related issue for this prospect location is water depth capability. The vessel must be rated and equipped for the water depths surrounding the prospect location. The majority of the vessels meeting this criteria are recent new builds, and most of these have a very large variable deck load and mud storage capacity.

3. **Time to drill a relief well:** Estimated time to drill a relief well for DC 354 is 50 – 70 days, which includes rig acquisition. Numerous considerations go into a relief well plan, such as:

   Relief Well Targets

   The relief well target selection is dependent upon a number of factors, which include the number and depths of the formations contributing to the blowout, as well as the blowout wellbore configuration.

   Positioning the Relief Well

   The safety of the personnel involved in the effort is the number one consideration. Several variables dictate the placement of the relief well, such as seafloor bathymetry, optimum approach path, projected currents, and shallow hazards.

Intercept Point Selection

The industry standard and most common approach for relief wells is known as a bottom intercept. The trajectory required for interception strongly influences well placement and involves complex decisions that are based on the anticipated ability to achieve the prescribed directional drilling program.

Relief Well Trajectory

It is important that the relief well come within close enough proximity of the blowout in order to be able to accurately determine the distance and direction from the relief well to the blowout well. This is accomplished by the use of "ranging" or "proximity" logging tools.

In addition to the surface location and target, there are many factors that influence the trajectory of the relief well. Some of the more important factors are:

- The desired depth of the *initial* "ranging" point
- The cones of uncertainty for the blowout and relief wells
- Formation lithology
- The risk associated with accidental early intercept
- The directional profile of the blowout well

Modeling programs for "anti-collision" will be utilized to reduce risks within this area.

Casing Design Program

Casing selection and setting depths for relief wells have additional considerations, which include the potential for charged or depleted zones, ranging tool design and operation, hole stability limitations, and high volume pumping requirements.

Killing Equipment

High pressure pumping systems will be designed to accommodate dynamic kill rate requirements. These may be mounted on the drilling vessel, mounted on stimulation type vessels that are capable of holding station next to the drilling vessel, or both.

(J) CHEMICAL PRODUCTS

Marathon does not propose well testing and/or transfer of stored production. Marathon does not propose to handle, store, or transport to or from the production or host facility any chemicals in quantities greater than Reportable Quantities as defined in Title 40 CFR Part 302.

(K) SPILL RESPONSE DISCUSSION FOR NEPA ANALYSIS

For the purpose of NEPA analysis, the largest spill response originating from the proposed activity would be the loss of the largest diesel fuel storage tank from the drillship, or 13,812 barrels of diesel fuel with an API gravity of 32.4°. A discussion of a blowout scenario from this proposed activity is included in Marathon's Sub-Regional OSRP.

Land Segment and Resource Identification

Trajectory of a spill and the probability of it impacting a land segment have been projected utilizing information in the MMS Oil Spill Risk Analysis Model (OSRAM) for the Eastern Gulf of Mexico as described in "Oil-Spill Risk Analysis: Gulf of Mexico Outer Continental Shelf (OCS), in Support of the Environmental Impact Statement (EIS) for Proposed Lease Sale 181" (OCS Report MMS 2001-007), using the average conditional probability for 3, 10, and 30 day impacts. Seasonal impacts were also considered. De Soto Canyon Block 354 (OCS-G 23507) is located within Launch Area 6 of the OSRAM analysis. The results are shown in Table F-2.

The MMS OSRAM identifies a number of resources potentially affected by a spill occurring in De Soto Canyon Block 354 (OCS-G 23507). For purposes of discussion, these resources are divided into three groups: offshore biological resources, coastal environments, and endangered and threatened species. These resources are identified in Marathon's Eastern Planning Area Sub-Regional Oil Spill Response Plan (Eastern Sub-Regional OSRP).

Response

Marathon will make every effort to respond to the Worst Case Discharge as effectively as possible. A description of the response equipment available to contain and recover the Worst Case Discharge is shown in Figure F-3. The list estimates individual times needed for procurement, load out, travel time to the site and deployment.

For the purpose of response scenario discussion, the loss of the largest single tank on the drillship is assumed to be an instantaneous release. The estimated chemical and physical characteristics of diesel fuel is included in Figure F-1. An ADIOS model was run on a similar product (from the ADIOS oil catalog, a No. 2 Fuel oil with an API gravity of 32.4°). The results indicate 45% of the product would be evaporated/dispersed (14% evaporated and 31% dispersed) within 12 hours. By 24 hours, 89% of the product would be evaporated/dispersed (23% evaporated and 66% dispersed), leaving approximately 1,519 barrels on the water.

Marathon would activate their Emergency Management Team and equipment resources as described in their Eastern Sub-Regional OSRP and provide continuous support for the duration of the event. Response resources are activated and supplemented according to need. These resources would remain engaged in the response until the incident is deemed complete or until released by Unified Command.

The worst case scenario for De Soto Canyon 354 (based on a one-day blowout volume as set forth in 30 CFR Part 254) is 600 barrels of condensate with an API gravity of 40°. For the purpose of scenario development, it was assumed that the well is blowing out at a continuous rate, or approximately 25 barrels per hour. An Adios model was run on a similar product (from the ADIOS oil library, a 40° API gravity High Island Condensate). Assuming a continuous blowout rate, the ADIOS model indicates an initial evaporation/natural dispersion rate of approximately 54% within the first 12 hours. From a mass balance perspective, this would result in approximately 324 barrels of oil released every 12 hours, with approximately 276 barrels of this volume remaining on the water surface. The oil would continue to evaporate at a much slower rate, reaching a rate of approximately 66% after 4 days of weathering.

Considering a blowout scenario with a continuous 30 day spill, Marathon's contingency plan for dealing with this worst case discharge would be to activate their response team and equipment resources (as described in their Sub-Regional Oil Spill Response Plan) and provide continuous support for the duration of the event. Response resources are activated and supplemented according to need. These resources would remain engaged in the response until the incident is deemed complete and are released by Unified Command.

The following strategies may be employed:

1. Evacuate personnel if necessary. Deploy Emergency Responders in an effort to preserve human life (if necessary).

2. Assess the damage and attempt to stop the source (if safe to do so) to reduce the amount of oil discharged.

3. Notify agencies.

4. Assess the amount of oil that has been spilled; calculate additional potential. A continuous aerial surveillance program would be used to assess the growth of the slick and the volume of oil on the water. Observations of the size of the slick on the water, combined with observations at the source, would be used to continually update the mass balance calculations. It is likely that the release rate would decrease with time, and that the well would eventually bridge-off before 30 days. Operations and Unified Command continue to assess the adequacy of response equipment capacities based on this continually updated mass balance.

5. Convene Emergency Management Team. Organize Unified Command and establish objectives and priorities.

6. Monitor the oil spill with aerial surveillance and obtain trajectories. If oil is seaward bound, away from land, discuss additional strategies with Unified Command.

7. Deploy offshore mechanical oil containment and recovery equipment. Attempt to recover as much oil at sea as possible utilizing:

    a. NRCC's Response Barge *Defender*, positioned in a stationary mode, down-wind and down-current from location for long-duration, high-volume skimming. Based on average travel times, the Defender (which includes on-board storage capacity of 16,500 barrels) would arrive at the spill location within approximately 38 hours after the initial release. Once in place, the *Defender* can work continuously directly down-current from the release. The de-rated skimming capacity of the *Defender* is more than enough to recover 100% of the volume of oil released (10,768 barrels per day vs. 10,000 barrels of estimated oil released). However, only the oil encountered by a skimmer can be recovered. In order to maximize oil encounter rate, ocean boom is deployed in a V-configuration in front of the *Defender* to funnel oil to the skimmers. Temporary barges are activated to

support continuous skimming operations (these barges arrive on-site at approximately the same time as the *Defender*). For an on-going release, multiple barges are deployed to provide for continuous off-loading of skimmer storage vessels and shuttling of recovered oil to an on-shore waste handling facility. Sufficient barges are available to provide enough temporary storage for continuous recovery operations.

b. NRCC's ID Boats arrive on-scene between 12 and 37 hours of the initial release. These skimmers operate downstream of the *Defender* barge and are used to recover pockets and streamers of oil that may move past the *Defender*. Each ID Boat has 101 barrels of on-board storage. Request approval to decant water after gravity separation, through a hose forward of the skimmer, to optimize temporary storage capacity. Utilize 43" Expandi-Boom to concentrate oil so that it is thick enough to be skimmed.

8. The ID Boats would work daylight hours only. The *Defender* can operate continuously, including night operations. All response vessels are designed to be able to remain offshore continuously throughout the response. Even if sea conditions prohibit effective skimming, these resources would remain offshore until skimming operations could be commenced again. Safety would remain first priority.

9. Prepare Site-Specific Waste Management Plan, Site Safety Plan, Decontamination Plans, Communications and Medical Plans.

10. If oil becomes a threat to any shoreline, use data from the aerial surveillance, weather reports, and trajectories, to direct onshore teams to deploy protection/containment boom, as written in Area Contingency Plans and as discussed with State and Federal On-scene Coordinators.
    a. Implement pre-designated strategies.
    b. Identify resources at risk in spill vicinity.
    c. Develop/implement appropriate protection tactics.

11. Establish site-specific Wildlife Rescue and Rehabilitation Plan

FIGURE F-1
WORST CASE DISCHARGE CALCULATION ***(Based on Fuel Storage Tank Rupture)***

Calculations for On-Board Fuel Storage > 10 miles from shore:		**BLOCK DC 354**
i.	Type of Storage Tanks	Diesel Fuel
ii.	Number of Tanks:	11
iii.	Total Capacity, All Tanks	37,896 bbls
iv.	Largest Single Tank	13,812 bbls
v.	**WCD Total for Drilling Operations (> 10 miles from shore) =**	**13,812 BBL**

FIGURE F-2

TRAJECTORY BY LAND SEGMENT

Trajectory of a spill and the probability of it impacting a land segment have been projected utilizing Marathon's WCD and information in the MMS Oil Spill Risk Analysis Model (OSRAM) in support of the Environmental Impact Statement (EIS) for Proposed Lease Sale 181 (OCS Report MMS 2001-007) using the average conditional probability for a 3, 10, and 30 day impacts. The highest average probability for any season (spring in all cases) is given in parentheses. The results are tabulated below.

Area/Block	OCS-G	Launch Area	Land Segment and/or Resource	Conditional Probability (%) 3 days/10 days/30 days
DC 354	23507	LA06	U.S. Shorelines	- / 18 (27) / 43 (58)
exploratory drilling		Eastern Planning Area	LOUISIANA/MISSISSIPPI/ALABAMA	
(80 miles from shore)			Alabama State Offshore Waters	- / 4 (5) / 6 (8)
			Central Winter Menhaden Spawning Grounds	- / 1 / 1
			Chandeleur Islands	- / 6 (9) / 9 (11)
			Flower Garden Banks	- / - / -
			Western Louisiana State Offshore Waters	- / 5 / 7 (8)
			Eastern Louisiana State Offshore Waters	- / 12 (17) / 17 (21)
			Mississippi State Offshore Waters	- / 1 (2) / 3 (4)
			Mobile Bay	- / 1 / 2
			Land Segment 16	- / - / 1
			Land Segment 17	- / - (1) / 1
			Land Segment 19	- / 3 / 4
			Land Segment 20	- / 1 (2) / 2
			Land Segment 21	- / 3 (5) / 6 (8)
			Land Segment 22	- / 2 (4) / 5 (6)
			Land Segment 23	- / 2 (3) / 4 (5)
			Land Segment 24	- / 2 (3) / 5
			FLORIDA	
			Big Bend Seagrass	- / - / 4 (7)
			Florida Gulf Island National Seashore	- / 2 (3) / 4 (5)
			Florida Keys National Marine Sanctuary	- / - / 1 (2)
			Florida Middle Ground	- / - / 1 (3)
			Florida Panhandle State Offshore Waters	- / 5 (8) / 13 (19)
			Florida Peninsula State Offshore Waters	- / - / 4 (7)
			Madison and Swanson Special Management Area	- / 1 (2) / 2 (4)
			Steamboat Lumps Special Management Area	- / - / 1 (2)
			Land Segment 25	- / 2 (3) / 3 (5)
			Land Segment 26	- / 1 / 3
			Land Segment 27	- / 1 / 2 (4)
			Land Segment 28	- / - (1) / 2 (3)
			Land Segment 29	- / - / 1 (2)
			Land Segment 32	- / - / 1
			Land Segment 33	- / - / 1
			Land Segment 34	(-) / (-) / (1)
			Land Segment 35	(-) / (-) / (1)
			Land Segment 36	(-) / (-) / (1)

FIGURE F-3 (continued)

WCD Scenario Exploratory Drilling – BASED ON A BLOWOUT (80 miles from shore)
DP Drillship, De Soto Canyon 354
600 bbls of Condensate, API Gravity 40°

FIGURE H.3 - Equipment Response Time to: DE SOTO Canyon 354

	EQUIPMENT TYPE	Derated Capacity (BBLS)	Storage (BBLS)	No. of Units	Owner/ Location	Staging	PROCUREMENT TIME (Hours) Assemble Equipment	Personnel	Vessel	TOTAL Time to Procure (1)	Time to Load Out (2)	TOTAL Travel Time (3)	Time to Deploy (4)	TOTAL Estimated Response Time
A	Boom			–										
	Ocean Boom – 43"	--	--	2,500 ft	NRCC/Theodore, AL	Theodore	1	0	0					
	Sweep Boom – 43"	--	--	200 ft	NRCC/Theodore, AL	Theodore	1	0	0					
	Kvichak BHSS 103 (28 ft boom boat)	--	--	1	NRCC/Theodore, AL	Theodore	1	1	0	1	1	13	1	16
B	ID Response Vessels													
	Mertie G	1,954	101	1	NRCC/SP60	SP60	All NRCC ID Response Vessels will respond to a call-out from their field locations;"Total Travel Time" includes 2 hours for equipment & personnel load-out.					12	1	13
	Mark G	1,954	101	1	NRCC/Cocodrie	Cocodrie						15	1	16
	Austin G	1,954	101	1	NRCC/WD	WD						14	1	15
	Janson G	1,954	101	1	NRCC/Cameron	Cameron						36	1	37
C	Offshore Response Barge													
	NRCC Defender	--	16,500	1	NRCC/Theodore, AL	Theodore	1	1	0	1	1	24	1	27
	Skimmers													
	Belt Mode	10,768	--	1	NRCC/Theodore, AL	Theodore	1	1	0	1	1		1	
	Vikoma Cascade	5,465	--	1	NRCC/Theodore, AL	Theodore	1	1	0	1	1		1	
	OSRV (Jill G)	1,954	101	1	NRCC/Tampa	Tampa	1	1	0	1	1	35	1	38
D	Initial Support:													
	Spotter Helo	--	--	1	PHI/Port Fourchon	Spill Site	1	1	0	1	0	1	0	2
	Surveillance Helo	--	--	1	PHI/Port Fourchon	Spill Site	1	1	0	1	0	1	0	2
	Ocean-going Barge	--	20,000	1	Cenac Towing./ Houma, LA	Spill Site	2	2	4	4	0	26	1	31
	Portable Storage Tanks	--	2,850 (total)	58	Venice, LA	Spill Site	0	0	2	2	2	6.4-9.1	0	10.4-13.1
	TOTAL	26,003	39,855								TOTAL	26,003	39,855	

WCD Scenario Exploratory Drilling – BASED ON A SINGLE STORAGE TANK RUPTURE (80 miles from shore)
DP Drillship, De Soto Canyon 354
13,812 bbls of diesel fuel oil, API Gravity 32.4°

FIGURE H.3 - Equipment Response Time to: : De Soto Canyon 354

	EQUIPMENT TYPE	Derated Capacity (BBLS)	Storage (BBLS)	No. of Units	Owner/ Location	Staging	PROCUREMENT TIME (Hours) Assemble Equipment	Personnel*	Vessel	TOTAL Time to Procure (1)	Time to Load Out (2)	TOTAL Travel Time (3)	Time to Deploy (4)	TOTAL Estimated Response Time
A	Boom			--										
	Ocean Boom – 43"	--	--	2,500 ft	NRCC/Theodore, AL	Theodore	1	0	0					
	Sweep Boom – 43"	--	--	200 ft		Theodore	1	0	0					
	Kvichak BHSS 103 (28 ft boom boat)	--	--	1	NRCC/Theodore, AL NRCC/Theodore, AL	Theodore	1	1	0	1	1	13	1	16
B	ID Response Vessels													
	Mertie G	1,954	101	1	NRCC/SP60	SP60	All NRCC ID Response Vessels will respond to a call-out from their field locations; "Total Travel Time" includes 2 hours for equipment & personnel load-out.					12	1	13
	Mark G	1,954	101	1	NRCC/Cocodrie	Cocodrie						15	1	16
	Austin G	1,954	101	1	NRCC/WD	WD						14	1	15
	Janson G	1,954	101	1	NRCC/Cameron	Cameron						36	1	37
C	Offshore Response Barge													
	NRCC Defender	--	16,500	1	NRCC/Theodore, AL	Theodore	1	1	0	1	1	24	1	27
	Skimmers													
	Marco XI C – Weir	24,000	--	1		Theodore	1	1	0	1	1		1	
	Vikoma Cascade	5,465	--	1	NRCC/Theodore, AL	Theodore	1	1	0	1	1		1	
	OSRV (Jill G)	1,954	101	1	NRCC/Theodore, AL NRCCA/Tampa	Tampa	1	1	0	1	1	35	1	38
D	Initial Support:													
	Spotter Helo	--	--	1	PHI/Port Fourchon	Spill Site	1	1	0	1	0	1	0	2
	Surveillance Helo	--	--	1	PHI/Port Fourchon	Spill Site	1	1	0	1	0	1	0	2
	TOTAL	39,235	17,005											

* ICN – NRCC will call out the Independent Contractor Network Responders

OPERATIONAL LIMITATIONS OF RESPONSE EQUIPMENT	
OSRB Defender	7 foot seas
Skimmers	7 foot seas
Expandi Boom	6 foot seas, 20 knot winds

The following types of additional support may be required for a blowout lasting 30 days:

- Additional OSRO personnel to relieve equipment operators
- Vessels for supporting offshore operations
- Field safety personnel
- Continued surveillance and monitoring of oil movement
- Helicopter, video cameras
- Infa red (night time spill tracking) capabilities
- Logistics needed to support equipment
  - Parts trailers and mechanics to maintain skimmers and boom
  - Staging areas
  - Fueling facilities
  - Decontamination stations
  - Communications equipment and technicians
- Logistics needed to support responder personnel
  - Food
  - Berthing
  - Additional clothing/safety supplies
  - Decontamination stations
- Medical aid stations
- Safety Personnel

(L) POLLUTION PREVENTION MEASURES

Best management practices for safety, pollution prevention, and early spill detection measures are discussed in Section 6 of the Eastern Sub-Regional ORSP.

In the event of a spill, response personnel, vessels and equipment will work out of a staging area in Venice, Louisiana.

APPENDIX G
AIR EMISSIONS INFORMATION

(A) AIR EMISSIONS

Screen Procedures for EP's	Yes	No
Is any calculated Complex Total (CT) Emission amount (tons) associated with your proposed exploration activities more than 90% of the amounts calculated using the following formulas: CT = $3400D^{2/3}$ for CO, and CT = 33.3D for the other air pollutants (where D = distance to shore in miles)?		X
Do your emission calculations include any emission reduction measures or modified emission factors?		X
Are your proposed exploration activities located east of 87.5° W longitude?		X
Do you expect to encounter H_2S at concentrations greater than 20 parts per million (ppm)?		X
Do you propose to flare or vent natural gas for more than 48 continuous hours from any proposed well?		X
Do you propose to burn produced hydrocarbon liquids?		X

Summary Information

There are no existing facilities or activities co-located with the currently proposed activities, therefore the Complex Total Emissions are the same as the Plan Emissions and are provided in the table below.

Air Pollutant	Plan Emission Amounts[1] (tons)	Calculated Exemption Amounts[2] (tons)	Calculated Complex Total Emission Amounts[3] (tons)
Particular matter (PM)	59.21	2664.00	59.21
Sulphur dioxide (SO_2)	271.61	2664.00	271.61
Nitrogen oxides (NO_x)	2035.21	2664.00	2035.21
Volatile organic compounds (VOC)	61.06	2664.00	61.06
Carbon Monoxide (CO)	444.05	2664.00	444.05

[1]For activities proposed in your EP, list the projected emissions calculated from the worksheets.
[2]List the exemption amounts for your proposed activities calculated by using the formulas in 30 CFR 250.303(d).
[3]List the complex total emissions associated with your proposed activities calculated from the worksheets.

This information was calculated by: Jodie Connor
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Based on this data, emissions from the proposed activities will not cause any significant effect on onshore air quality.

APPENDIX H
ENVIRONMENTAL IMPACT ANALYSIS (EIA)

De Soto Canyon Block 354

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1.0 Introduction

Marathon Oil Company (Marathon) proposes to drill up to four exploratory wells in De Soto Canyon Block 354 (DC 354), Lease OCS-G 23507. Each well is estimated to take approximately 56 days. This Environmental Impact Assessment (EIA) provides an evaluation of the potential direct and indirect environmental impacts of the proposed operations.

DC 354 is located approximately 80 miles from Louisiana, 111 miles from Alabama and 117 miles from Florida **(Attachment B-1 of EP)** The coordinates and lease line calls for each surface location of the proposed well sites are shown in Table 1 and **Attachment A-1 of EP**. Water depths at the proposed well sites range from 7,344 to 7,835 ft.

Table 1
Surface Locations of Exploration Well Sites

Proposed Well Site Designation	Geodetic Coordinates (deg., min., sec.)		Cartesian Coordinates (ft.) (UTM Zone 16, NAD27)		Block Calls (ft.)	
	Latitude	Longitude	X	Y		
A	28° 36' 45.37"	87° 51' 38.11"	1,364,384	10,384,477	13,696 FEL	9,277 FSL
B	28° 36' 38.11"	87° 51' 30.69"	1,365,040	10,383,739	13,040 FEL	8,539 FSL
C	28° 36' 09.42"	87° 50' 02.09"	1,372,914	10,380,786	5,166 FEL	5,586 FSL
D	28° 35' 20.80"	87° 49' 42.38"	1,374,636	10,375,865	3,444 FEL	665 FSL

Marathon will use existing shorebase facilities in Port Fourchon, Louisiana as port of debarkation for the crew boat(s) and supply boat(s). DC 354 is located approximately 155 miles from Port Fourchon. No onshore expansion or construction is anticipated with respect to the proposed activities. This base is capable of providing the services necessary for the proposed activities. The Port Fourchon base has 24-hour service, a radio tower with a phone patch, dock space, equipment and supply storage base, drinking and drill water, etc. Support vessels and travel frequency during drilling are included in **Table 2:**

Table 2
Support Vessels and Travel Frequencies

Craft	Number	Round Trips/Week
Crew Boat	1	3
Supply Boat	1	4
Helicopter	1	7

The crew boats will be used to carry smaller supplies such as groceries to the drillship. The supply boat will be used to carry casing and bulk supplies such as cement. The boats will

normally move to DC 354 through the most direct route from Port Fourchon, Louisiana. The helicopter will be used for transporting personnel and small supplies and will normally take the most direct route of travel between Port Fourchon and DC 354 when air traffic and weather conditions permit. Personal vehicles will be the main means of transport to carry rig personnel from various onshore locations to the Port Fourchon shorebase.

2.0 Regulatory Applicability

This Environmental Impact Analysis (EIA) provides an analysis of the potential direct and indirect environmental impacts of Marathon's proposed activities as required under 30 Code of Federal Regulations (CFR) 250, Subpart B regulations. The EIA follows Appendix H of Notice to Lessees (NTL) No. 2002-G08.

3.0 Impact-Producing Factors

A matrix of impact-producing factors (IPFs) provided by Minerals Management Service (MMS) is included as **Table 3.**

An "X" in a particular table cell indicates that an IPF could affect a certain resource, while a blank space indicates that an IPF would not impact a certain environmental resource. Where there may be an effect, an analysis has been provided in **Section 4.0.** For table cells that are footnoted, statements have been provided as to the applicability of the proposed operations.

Table 3
Impact Producing Factors (IPF) Matrix

Environmental Resources	Impact Producing Factors (IPFs)—Categories and Examples					
	Emissions (air, noise, light, etc.)	Effluents (muds, cutting, other discharges to the water column or seafloor)	Physical disturbances to the seafloor (rig or anchor emplacements, etc.)	Wastes sent to shore for treatment or disposal	Accidents (e.g., oil spills, chemical spills, H_2S releases)	Other IPFs (trash, debris)
Site-specific at Offshore Location						
Designated topographic features		(1)	(1)		(1)	
Pinnacle Trend area live bottoms		(2)	(2)		(2)	
Eastern Gulf live bottoms		(3)	(3)		(3)	
Chemosynthetic communities			(4)			
Water quality		X			X	
Fisheries		X			X	
Marine Mammals	X (8)	X			X (8)	X
Sea Turtles	X (8)	X			X (8)	X
Air quality	X (9)					
Shipwreck sites (known or potential)			(7)			
Prehistoric archaeological sites			(7)			
Vicinity of Offshore Location						
Essential fish habitat		X	X		X (6)	
Marine and pelagic birds	X				X	X
Public health and safety					(5)	
Coastal and Onshore						
Beaches					X (6)	X
Wetlands					X (6)	
Shore birds and coastal nesting birds					X (6)	X
Coastal wildlife refuges					X	
Wilderness areas					X	
Other Resources You Identify						
Submerged Aquatic Vegetation					X	
Benthic Communities		X			X	
Gulf Sturgeon						
Endangered Mice/Vole						
Military Use Areas						
Recreation/Tourism						

Table 3 (continued)
Footnotes for Impact Producing Factors Matrix

1) Activities that may affect a marine sanctuary or topographic feature. Specifically, if the well or platform site or any anchors will be on the seafloor within the:
   a) 4 mile (mi) zone of the Flower Garden Banks, or the 3 mi zone of Stetson Bank;
   b) 1000 meter (m), 1-mi or 3-mi zone of any topographic feature (submarine bank) protected by the Topographic Features Stipulation attached to an OCS lease;
   c) Essential Fish Habitat (EFH) criteria of 500 feet (ft.) from any no-activity zone; or
   d) Proximity of any submarine bank (500 ft. buffer zone) with relief greater than 2 meters (m) that is not protected by the Topographic Features Stipulation attached to an OCS lease.
2) Activities with any bottom disturbance within an OCS lease block protected through the Live Bottom (Pinnacle Trend) Stipulation attached to an OCS lease.
3) Activities within any Eastern Gulf OCS block where seafloor habitats are protected by the Live Bottom (Low-Relief) Stipulation attached to an OCS lease.
4) Activities on blocks designated by the MMS as being in water depths 400 m or greater.
5) Exploration or production activities where H_2S concentrations greater than 500 ppm might be encountered.
6) All activities that could result in an accidental spill of produced liquid hydrocarbons or diesel fuel that you determine would impact these environmental resources. If the proposed action is located a sufficient distance from a resource that no impact would occur, the EIA can note that in a sentence or two.
7) All activities that involve seafloor disturbances, including anchor emplacements, in any OCS block designated by the MMS as having high-probability for the occurrence of shipwrecks or prehistoric sites, including such blocks that will be affected that are adjacent to the lease block in which your planned activity will occur. If the proposed activities are located a sufficient distance from a shipwreck or prehistoric site that no impact would occur, the EIA can note that in a sentence or two.
8) All activities that you determine might have an adverse effect on endangered or threatened marine mammals or sea turtles or their critical habitats.
9) Production activities that involve transportation of produced fluids to shore using shuttle tankers or barges.

3.1 Emissions

Marathon plans to drill the proposed wells with a dynamically positioned (DP) drillship similar to the Transocean SedcoForex "Deepwater Millennium". Offshore air emissions result mainly from the drilling rig, helicopters, and service vessels. "Air Emissions Information," regarding the peak year emissions for Plan Emissions was prepared in accordance with NTL No. 2002-G08 and is contained in **Appendix G** of the EP. When calculating emissions, the maximum horsepower rating for a drillship was used. Based on this data, emissions from the proposed activities will not cause any significant effect on onshore air quality. Additional air emissions may result from incidents, such as an oil spill or a well control event.

3.2 Effluents

The major discharges from offshore oil and gas exploration activities include drilling fluids and cuttings, ballast water, and uncontaminated seawater. Minor discharges include sanitary and domestic wastes.

Levels of contaminants in drilling fluids and cuttings, sanitary and domestic waste, deck drainage and runoff, their associated discharge-rate restrictions, and monitoring and toxicity testing are regulated by EPA NPDES General Permit GMG280000 and/or an Individual NPDES Permit, thereby eliminating many significant biological or ecological effects. Marathon will request coverage under the NPDES General Permit and will submit a request for an Individual NPDES Permit. The types of discharges included in these permit applications are listed below. The estimated average flow volumes are included in **Appendix E** of the EP.

Drilling Fluids

Although WBF are generally recycled, excess mud is sometimes discharged overboard. The volume and rate of discharge depends upon downhole conditions. Volume is estimated from either pump rate or length of time, or from tank capacity, if a bulk discharge occurs.

The discharge of water-based drilling fluids (WBF) is classified as intermittent, and estimated at 13,600 bbl per well. Synthetic drilling fluids (SBF), if used, will be recovered and transported to shore for recycling.

Drill Cuttings

Drill cuttings are separated from the mud through the use of solids control equipment. Cuttings discharge rates and volumes will vary during the duration of the well, and are measured by estimating the volume of hole drilled. Constituents of drill cuttings include sand, shale, and limestone from the wellbore. The discharge of drill cuttings is classified as intermittent, estimated at 4,150 bbl per well for cuttings associated with WBF. If an Individual NPDES Permit is obtained, synthetic cuttings will be discharged in accordance with the EPA permit. The cuttings will be dried utilizing "best available technology" (BAT) as defined by EPA to reduce the quantity of retained synthetic fluid discharged on cuttings to below the proposed 6.9% wet weight EPA limit.

Excess Cement

Occasionally, excess slurry will be generated while cementing casing strings. The volume of cement discharged is calculated by subtracting the volume inside the well from the total volume pumped downhole.

Sanitary and Domestic Waste

The discharge of sanitary and domestic waste is classified as intermittent. Sanitary waste discharges are estimated to be 140,000 gal per well, and domestic waste discharges are estimated to be 140,000 gal per well.

Deck Drainage

Deck drainage includes rainwater and wash water with no free oil. The volume of deck drainage is calculated by multiplying average rainfall by exposed deck area and adding average wash water. This volume is estimated to be 1,000 bbl per well, or less (dependant on rainfall).

Uncontaminated Water

Uncontaminated water includes ballast water, non-contact cooling water, discharges from the firewater system, and freshwater maker blowdown. These discharges are classified as miscellaneous discharges in the NPDES permit application.

Operational discharges are not expected to cause significant adverse impacts to water quality.

3.3 Physical Disturbances to the Seafloor

A dynamically positioned drillship will be used, with no anchoring or rig emplacement on the seafloor. Physical disturbances will be limited to the drill hole and riser placement.

3.4 Wastes Sent to Shore for Treatment or Disposal

Oil and gas operations on the OCS generate solid waste materials made of paper, plastic, wood, glass and metal. Regulations prohibit the disposal of any trash and debris into the marine environment, require development of waste management plans, and require precautions to prevent careless loss of solid waste or debris from offshore facilities during transport. Generally, galley, operational, and household wastes are collected and stored on the lower deck near the loading dock in large covered containers. Service vessels transport these containers to shore for disposal of the wastes in approved landfills. Food wastes are allowed to be ground up into small pieces and disposed of overboard

Marathon will operate under the following stipulations in accordance with NTL No. 2003-G11:

- Marine Trash and Debris Placards will be placed on all mobile drilling units engaged in oil and gas operations in the GOM OCS.
- All offshore employees and those contractors engaged in offshore operations will have completed marine trash and debris awareness training at least once. Thereafter, all such personnel will complete this training annually.
- Marathon must develop and use a marine trash and debris awareness training and certification process that reasonably assures that the employees and contractors specified above are in fact trained.
- Marathon will provide the MMS with an annual report signed by a company official that describes the marine trash and debris awareness training process and certifies that the training process has been followed for the previous calendar year.

3.5 Accidents

3.5.1 H_2S Releases

In accordance with 30 CFR 250.203 (a)(5) and NTL No. 2002-G08, Marathon requested (**Appendix C** of EP) MMS classify DC 354 as an area where the absence of hydrogen sulfide has been confirmed, based on offset well data that supported this interpretation.

3.5.2 Oil and Chemical Spills

Oil Spill

While the potential exists for unexpected fluid releases, such complications are becoming less common due to greater technological knowledge with deepwater drilling practices and implementation of measures to prevent incident occurrences (MMS 2000b). Marathon has policies and procedures in place for preventing the unexpected release of discharges while drilling (well control, or release from a diesel fuel tank on the drilling rig).

Worst Case Discharge Calculations

Activities proposed in this EP are considered far-shore, (>10 miles from the shoreline). The worst case discharge (WCD) is calculated at 600 barrels of 40° condensate for a blowout of an exploratory well, or 13,812 barrels of 32.4° diesel from the largest single diesel storage tank rupture of the drillship. Chemical product information for diesel fuel and data on the chemical and physical characteristics of expected reservoir fluids is provided in **Appendix F** of the EP.

Preparedness

Marathon prepared a Sub-Regional Oil Spill Response Plan (Sub-Regional OSRP) covering the proposed operations to assist the Spill Management Team (SMT) to respond quickly and safely to a hydrocarbon discharge or threat of such a discharge. The specific objectives of the Sub-Regional OSRP are to:

- Define notification, activation and mobilization procedures to be followed when a spill or threat of a spill occurs
- Describe positions on the SMT including organizational structure and lines of responsibility to be adhered to during a response effort

Trajectories

Trajectories of a spill and the probability of it impacting a land segment have been projected utilizing information in the MMS Oil Spill Risk Analysis Model (OSRAM) for the Eastern Gulf of Mexico as described in "Oil-Spill Risk Analysis: Gulf of Mexico Outer Continental Shelf (OCS), in Support of the Environmental Impact Statement (EIS) for Proposed Lease Sale 181" (OCS Report MMS 2001-007), using the average conditional probability of a spill reaching specific resources within 3, 10, or 30 days. The results as shown in **Figure H.2** of Marathon's

Sub-Regional OSRP indicate there would be no impact to a shoreline, coastal waters of any state, or any resource modeled within three days. Because of rapid weathering and spill response measures defined in Marathon's Sub-Regional OSRP, a diesel or condensate spill is unlikely to persist long enough to reach these resources.

Weathering

Oil is comprised of different hydrocarbon compounds which begin reacting with the environment immediately upon being spilled. Following an oil spill, a number of physical, chemical, and biological processes, collectively called weathering, interact to change the physical and chemical properties of the oil. This results in the original mass spilled being partitioned to the sea surface, the atmosphere, the water column and the bottom sediments. The most important weathering processes include spreading, evaporation, dissolution, dispersion into the water column, formation of water-in-oil emulsions, photochemical oxidation, microbial degradation, adsorption to suspended particulate matter, and stranding on shore or sedimentation to the seafloor (MMS, 2003a). The most toxic fractions (soluble aromatic hydrocarbons) are lost relatively quickly (first several days) through evaporation into the air and dissolution into the water. Other components are lost more gradually over time by the action of bacteria and sunlight. Resources contacted within three days are much more likely to be subject to toxic hydrocarbon fractions than those contacted at 10 days. Impacts on resources contacted after extensive weathering are likely to be much less due to the reduced volume of the oil and the degree of physical and biological degradation which has occurred (MMS, 2001a).

Weathering is considered in each of the worst case scenarios considered for the proposed activity. The worst case scenario resulting from a rupture of the largest fuel tank on the drillship is 13,812 barrels of 32.4° gravity diesel fuel. A weathering profile was run using the ADIOS model, assuming an instantaneous release of the entire tank volume (from the ADIOS oil catalog, a No. 2 Fuel oil with an API gravity of 32.4°). The results indicate 45% of the product would be evaporated/dispersed (14% evaporated and 31% dispersed) within 12 hours. By 24 hours, 89% of the product would be evaporated/dispersed (23% evaporated and 66% dispersed), leaving approximately 1,519 barrels on the water.

The second worst case scenario for De Soto Canyon 354 (based on a one-day blowout volume as set forth in 30 CFR Part 254) is 600 barrels of condensate with an API gravity of 40°. For the purpose of scenario development, it was assumed that the well is blowing out at a continuous rate, or approximately 25 barrels per hour. An Adios model was run on a similar product (from the ADIOS oil library, a 40° API gravity High Island Condensate). Assuming a continuous blowout rate, the ADIOS model indicates an initial evaporation/natural dispersion rate of approximately 54% within the first 12 hours. From a mass balance perspective, this would result in approximately 324 barrels of oil released every 12 hours, with approximately 276 barrels of this volume remaining on the water surface. The oil would continue to evaporate at a much slower rate, reaching a rate of approximately 66% after 4 days of weathering.

Chemical Spill

Chemicals used during drilling, including drilling mud supplies, are stored on board the drillship. Supplies are renewed on a regular basis by transfer in containers from supply boats. Marathon

does not intend to handle, store, or transport any chemicals to or from the drilling unit in volumes greater than the Reportable Quantities of Title 40 CFR Part 302. The only chemicals on that list that are likely to be found on or transported to the rig are copper (primarily wiring and drill pipe dope), ethylene glycol (blowout prevention control fluid, closed cooling loops for crane and main engines & brake coolers), hydrogen sulfide gas (H_2S system test canisters), lead (solid blocks for retaining drive pins in mooring type connections and pipe dope), saccharin (food use and some drilling fluids), and sodium hypochlorite (dilute, used as laundry bleach and disinfectant).

3.6 Other IPFs Identified

Other Impact Producing Factors were considered and identified with applicable environmental resources.

4.0 Analysis

4.1 Site-Specific at Offshore Location

The MMS has published Visual 3, Offshore Regulatory Features Map (MMS, 2001b), which was used to analyze impacts to environmental resources.

4.1.1 Designated Topographic Features

There are no IPFs associated with the proposed operations that would affect designated topographic features.

Based on a review of Visual 3, Offshore Regulatory Features Map (MMS, 2001b), the nearest designated Topographic Features Stipulation Block (Sackett Bank), is 98 miles from DC 354. The emplacement of a drilling rig (physical disturbance to the seafloor) in DC 354 would not affect a designated topographic feature.

Topographic features occurring in the northern Gulf are at least 10 m below the sea surface. Due to their depths and the distance from drilling operations, neither effluents associated with drilling fluids, drill cuttings or other discharges, nor accidental oil spills would affect a designated topographic feature.

4.1.2 Pinnacle Trend Area Live Bottoms

There are no IPFs associated with the proposed operations that would affect Pinnacle Trend Area Live Bottoms.

The Pinnacle Trend area occurs along the shelf edge, approximately 43 miles landward of DC 354. Based on a review of Visual 3, Regulatory Features Map (MMS 2001b), DC 354 is not covered by the Pinnacle Trend Area Live Bottom Stipulation. Based on the Geographic and Stratigraphic Assessment by GEMS, Inc., there are no hard bottom features in DC 354. The emplacement (physical disturbance to the seafloor) of a drillship in DC 354 would not affect a pinnacle feature.

The crests of pinnacle features are more than 50 m below the sea surface. Due to these depths and the distance from drilling operations, drilling fluids, drill cutting or other discharges, including any accidental oil spill are not expected to impact the sessile biota associated with the pinnacles.

4.1.3 Eastern Gulf Live Bottoms

There are no IPFs associated with the proposed operations that would affect Eastern Gulf Live Bottoms.

The Live Bottom (Low-Relief) Stipulation applies to Eastern Planning Area leases in water depths of 100 m or less; therefore, DC 354 is not covered by this stipulation. Based on a review of Visual 3, Offshore Regulatory Features Map (MMS, 2001b), the nearest live bottom areas are located 43 miles from DC 354. The emplacement (physical disturbance to the seafloor) of a drillship in DC 354 would not affect Eastern Gulf Live Bottoms.

Due to the distance from drilling operations, drilling fluids, drill cutting or other discharges, including any accidental oil spill are not expected to impact these structures or the biological communities associated with low-relief live bottoms.

4.1.4 Chemosynthetic Communities

There are no IPFs associated with the proposed operations that would affect chemosynthetic communities.

DC 354 is located in water depths greater than 400 m. Based on a review of Visual 3, Offshore Regulatory Features Map (MMS, 2001b), there are no previously surveyed chemosynthetic communities in DC 354. The MMS identifies two known "significant" chemosynthetic communities east of the Green Canyon Area in the Gulf of Mexico. One is in Mississippi Canyon Block 969, located 129 miles west of DC 354. The other is Viosca Knoll Block 826, located 36 miles north of DC 354. There are reported chemosynthetic communities along the Florida Escarpment, specifically in Vernon Basin Block 945, located 249 miles to the southeast. Chemosynthetic communities have not been reported in the De SotoCanyon area (GEMS, 2003).

The Geologic and Stratigraphic Assessment completed by Geoscience Earth & Marine Services, Inc. (GEMS), and submitted under separate cover, indicates no significant amplitude events at the seafloor within 1,500 ft of the proposed well locations and no seafloor features have been identified that could support high-density chemosynthetic communities. There is no evidence in the data set to suggest the presence of hydrocarbon seeps, authigenic carbonates, hydrates, or ironstone pavements. The GEMS Report concludes that the potential for significant chemosynthetic communities is minimal and remote. In addition, no anchoring or rig emplacement on the seafloor is proposed.

A surface oil spill would not affect chemosynthetic communities due to water depths associated with these resources. Subsurface oil spills rise in the water column and therefore would not likely affect sensitive underwater features beyond a few hundred meters from the well site.

4.1.5 Water Quality

IPFs from the proposed operations that could affect water quality include effluents and accidents.

Effluents

The primary sources of discharges from drilling operations are drilling fluids (also known as drilling muds) and cuttings. Marathon plans to use both water-based drilling fluids (WBFs) and synthetic based fluids (SBFs). Marathon will request coverage under the NPDES General Permit for the discharge of WBFs and drill cuttings, sanitary and domestic waste, deck drainage, and other miscellaneous discharges. Marathon will submit a request for an Individual NPDES Permit for the discharge of drill cuttings associated with SBFs. SBFs will be sent to the shorebase for recycling. The types of discharges included in these permit applications and the estimated average flow volumes are included in **Appendix E** of the EP.

EPA's information to date, including limited seabed surveys in the Gulf of Mexico, indicate that the effect zone of the discharge of certain SBFs is within a few hundred meters of the discharge point. These surveys also indicate that the sea floor may significantly recover in one to two years. EPA believes that impacts are primarily due to smothering by the drill cuttings, changes in sediment grain size and composition (physical alteration of habitat), and anoxia (absence of oxygen) caused by the decomposition of the base fluid. The benthic smothering and changes in grain size and composition from the cuttings are effects that are also associated with the discharge of water-based drilling fluids (WBFs) and associated cuttings. Based on the record to date, EPA finds that these impacts, which are believed to be of limited duration, are less harmful to the environment than the non-water quality environmental impacts associated with the option of prohibiting the discharge of all SBF-wastes. Moreover, EPA prefers SBFs over OBFs as there are operational accidents that lead to spills and loss of drilling fluid to the environment (EPA, 2000).

Drilling fluid returning from the well is laden with drill cuttings. The drill cuttings range in size from large particles, which are on the order of a centimeter or more in size to small particles (i.e., fines or "low gravity solids") which are fractions of a millimeter in size. Standard or current practice solids control systems employ primary and secondary shale shakers in series with a "fines removal unit" (i.e., decanting centrifuge or mud cleaner). The drilling fluid and drill cuttings from the well are first passed through primary shale shakers. These shakers remove the largest cuttings, which are approximately 1 to 5 millimeters in size. The drilling fluid recovered from the primary shakers is then passed over secondary shale shakers to remove smaller drill cuttings. Using an improved solids control technology process the cuttings are discarded from the primary and secondary shale shakers through a "cuttings dryer" (e.g., vertical or horizontal centrifuge, squeeze press mud recovery unit, High-G linear shaker). The cuttings from the cuttings dryer are discharged and the recovered SBF is sent to the fines removal unit. The advantage of the cuttings dryer is that more SBF is recovered for re-use and less SBF is

discharged into the ocean. This, consequently, will reduce the quantity of retained synthetic fluid discharged on cuttings to below the proposed 6.9% wet weight EPA limit.

Cuttings discharge rates and volumes will vary during the duration of the well, and are measured by estimating the volume of hole drilled. The discharge of drill cuttings is classified as intermittent, estimated at 1,900 bbl per well for cuttings associated with water-based fluids with the EPA permit. The use of solids control equipment considered to be the best available technology recommended by the EPA, would ensure maximum fluids during drilling operations. Supervisory and well control personnel onboard the facility would be familiar with the effluent limitations and guidelines for overboard discharges as specified by the NPDES permit conditions. As such, operational discharges are not expected to cause significant adverse impacts to water quality.

Accidents

The effect on water quality from oil spills is determined by the amount of oil that resides within the contacted water body. Degradation of open water quality is directly proportional to the aerial extent, the volume, and the residence time of the oil in the water column. Most oil spills impact offshore water quality during the life of the spill and only for a short time afterwards. A number of weathering processes act to remove the oil from the surface of the water and water column within several months.

A large diesel spill in offshore waters would produce a slick on the water and temporarily increase hydrocarbon concentrations. While most crude oil components are not soluble in water and have densities less than seawater, diesel fuel contains lighter hydrocarbon fractions that dissolve in seawater. Therefore, while spilled oil and spilled diesel fuel tend to float and undergo weathering at the sea surface (National Research Council, 1985), the dissolution of diesel fuel into the water column will be greater. Small spills are not expected to cause significant degradation of water quality, marine sediments or marine organisms. One potential effect of continuous small oil spills in the immediate area would be the potential for promotion of the growth of natural flora capable of degrading crude oil.

A small chemical spill could produce short-term, localized impacts on water quality. Depending upon the chemical spilled and its solubility in seawater, chemicals will either be diluted, dissolved, or remain insoluble and disperse once they reach the sea surface or come in contact with seawater. The consequence of a spill of any of the chemicals in the drillship chemical inventory would be dependent on the type and volume of chemicals released. A short-term, localized reduction in water quality might be expected in the spill zone around the drillship.

4.1.6 Fisheries

Commercial fishers in the United States landed over 9.6 billion pounds of edible and industrial fishery products in 1996. Approximately 1.5 billion pounds of fishery products were harvested from the Gulf of Mexico by commercial fishers. Although the quantity of commercial landings from deep water is comparatively small, these species are of high value.

Unlike fishing in shallower parts of the Gulf, fisheries in the deep waters of the Gulf are not distributed over large areas; not all deepwater areas hold enough of the economically important species to support a fishery. Perhaps for this reason there are a greater variety of fisheries in the deep waters of the Gulf. These fisheries include the following:

- bottom longlining for snapper, grouper, and tilefish by commercial fishermen and hook-and-line recreational fisheries for these same species;
- mid-water longlining for tunas, swordfish, and shark by commercial fishermen and hook-and-line recreational fisheries for these same species;
- bottom trawling for royal red shrimp and mid-water trawling for butterfish; and
- bottom trapping for golden and red crabs

Besides the Mississippi Delta area, other well-known underwater topographic features, such as the Mississippi and De Soto Canyons, and manmade structures, such as drilling rigs and production systems, attract target species and consequently attract recreational fishermen far offshore in pursuit.

The deep waters of the Gulf of Mexico appear to be a major spawning area for many of the fishery resources mentioned above. The complex currents of deep water critically affect the resultant offspring of all species above, but especially the highly migratory tunas and swordfish since they utilize the water column as a nursery ground. Information is limited about the early life histories of these species or of the many other species found in deepwater areas. Information on fish larvae from deepwater areas of the Gulf of Mexico is limited. In the vicinity of De Soto Canyon, ichthyoplankton surveys are available from only two seasons and two errant locales.

IPFs from the proposed operation that could affect fisheries include effluents and accidents.

Effluents

Effluents such as drilling fluids and cuttings discharges contain components and properties which are detrimental to fishery resources. Moderate petroleum and metal contamination of sediments and the water column can occur out to several hundred meters down-current from the discharge point. Offshore discharges are expected to disperse and dilute to very near background levels in the water column or on the seafloor within 3,000 m of the discharge point, and are expected to have negligible effect on fisheries.

Accidents

In the event of an accident all oil or chemical spill, the effects on adult finfish would likely be nonfatal and the extent of damage would be reduced due to the capability of adult fish to avoid a spill. Short term impacts may result from pelagic longlining activities being interrupted to respond to a spill.

Drillship presence is the only IPF that may have an impact on commercial fishing activity. There is a slight possibility of pelagic longlines becoming entangled in the drillship. However, longline

fishermen use radar and are aware of offshore structures and ships when placing their sets. Therefore, little or no impact on pelagic longlining is expected.

4.1.7 Marine Mammals

Marine mammals are protected by the Marine Mammal Protection Act. Occurrences of 28 cetacean (whale and dolphin) and one sirenian (manatee) have confirmed in the northern GOM. The two major suborders of cetaceans are Mysticeti (baleen whales) and Odontoceti (toothed whales). There are seven baleen whale species occurring in the gulf, five of which are listed as endangered or threatened. Of the 21 toothed whale species occurring in the gulf, only the sperm whale is endangered (MMS, 2001a, and 2003b).

GulfCet studies indicate that cetacean distribution in the Gulf is influenced by both bottom depth and by the presence of mesoscale hydrographic features (cold-core and warm-core rings and confluences). Cetaceans concentrate primarily along the upper continental slope in water depths ranging between 200 and 1,000 meters, and are less often observed in water depths exceeding 2,000 meters (MMS, 2003b; Davis et al. 1995). GulfCet II studies revealed that sperm whales were sighted most frequently at the mouth of the Mississippi River along the 1000 m isobath and showed an affiliation with edges of cyclonic and anticyclonic eddies. Most delphinids, with the exception of the bottlenose dolphin and the Atlantic spotted dolphin, also inhabit deep waters.

IPFs that could cause impacts to marine mammals as a result of the proposed operations in DC 354 include emissions, effluents, discarded trash and debris, and accidents.

Emissions (Noise) – Noises from drilling activities, support vessels and helicopters may elicit a startle reaction from marine mammals. This reaction may lead to disruption of marine mammals' normal activities. Stress may make them more vulnerable to parasites, disease, environmental contaminants, and/or predation (e.g., Majors and Myrick, 1990). There is little conclusive evidence for long-term displacements and population trends for marine mammals relative to noise.

Effluents – Drilling fluids and cuttings discharges contain components that may be detrimental to marine mammals. Most operational discharges are diluted and dispersed when released. Any potential impact from drilling fluids would be indirect, either as a result of impacts on prey items or possibly through ingestion in the food chain (API, 1989).

Discarded trash and debris - Both entanglement in, and ingestion of, debris have caused the death or serious injury of marine mammals (Laist, 1997, MMC, 1999). Operators are prohibited from deliberately discharging debris into the marine environment. Marathon will operate in accordance with the following stipulations in MMS NTL No. 2003-G11:

- Marine Trash and Debris Placards will be placed on all mobile drilling units engaged in oil and gas operations in the GOM OCS.
- All offshore employees and those contractors engaged in offshore operations will have completed marine trash and debris awareness training at least once. Thereafter, all such personnel will complete this training annually.

- Marathon must develop and use a marine trash and debris awareness training and certification process that reasonably assures that the employees and contractors specified above are in fact trained.
- Marathon will provide the MMS with an annual report signed by a company official that describes the marine trash and debris awareness training process and certifies that the training process has been followed for the previous calendar year.

Compliance and waste management practices are assumed to be effective in minimizing the possibility of plastic or other materials being lost overboard, thereby minimizing the potential for such impacts on marine mammals.

Accidents –Oil spills have the potential to cause sub-lethal oil-related injuries and spill-related deaths to marine mammals. However, it is unlikely that an accidental oil spill would occur from the proposed activities. Oil spill response activities may increase vessel traffic in the area, which could add to changes in cetacean behavior and/or distribution, thereby causing additional stress to the animals. The effect of oil dispersants on cetaceans is not known. The acute toxicity of oil dispersant chemicals included in Marathon's Sub-Regional OSRP is considered to be low when compared with the constituents and fractions of crude oils and diesel products.

Collisions between supply or crew boats and dolphins or small whales are unlikely. Most cetaceans are agile, powerful swimmers and are capable of avoiding moving vessels. Marathon will operate in accordance with the following stipulations in MMS NTL No. 2003-G10:

- Vessel crews will use an appropriate reference guide which helps them identify the 28 species of whales and dolphins, five species of sea turtles and the single species of manatee that might be encountered in the GOM OCS.
- Vessel operators and crews will take measures to avoid causing injury or death to marine mammals and sea turtles.
- Vessel crews will report sightings of any injured or dead protected species (marine mammals and sea turtles) immediately, regardless of whether the injury or death is caused by their vessel to the Marine Mammal and Sea Turtle Stranding Hotline at (800) 799-6637, the Marine Mammal Stranding Network at (305) 862-2850, Florida Marine Mammal Stranding Network at (800) 342-5367. In addition, if the injury or death was caused by a collision with the vessel, the operator must notify MMS within 24 hours of the strike by email to protectedspecies@mms.gov.

Compliance with this NTL should be effective in minimizing the possibility of vessel strikes.

4.1.8 Sea Turtles

Five species of sea turtles may be found in the NEGOM. The Kemp's Ripley (*Lepidochelys kempii*), leatherback turtle (*Dermochelys kempii*), and hawksbill turtle (*Eretmochelys imbricata*) are federally listed as endangered in both Florida and Alabama. The loggerhead turtle (*Caretta caretta*) is listed as threatened there, and the green turtle (*Chelonia mydas*) is endangered in Florida but threatened in Alabama. Leatherback, green, and loggerhead turtles nest in Florida.

Surveys in May-July showed that most sea turtles nesting in west Florida and Alabama were loggerheads and that numbers of nesting females of this species were low there compared to numbers on the southeast United States Atlantic Coast (Shoop et al., 1985). Loggerhead Turtles mate in waters offshore from nesting beaches (Nelson, 1988). They use their vision and sense of smell to find mates, and to find food. These senses are important in the turbid conditions of intercoastal and estuarine waters. Total suspended solids may exceed 60 mg/l in estuaries and 200 mg/l in rivers feeding estuaries (Ward and Armstrong, 1992). Loggerhead turtles feed on benthic invertebrates (Nelson, 1988). Leatherback turtles eat jellyfish and other transparent soft-bodied foods (Eisenberg and Frazier, 1983). Green turtles feed mostly on marine algae and on seagrasses, but jellyfish and other invertebrates are also taken; the invertebrates may be incidentally captured with plant food. Hawksbill turtles feed on hard- and soft-bodied invertebrates, including jellyfish (USFWS, 1980). Kemp's Ripley turtles feed on fish and on hard and soft invertebrates (including jellyfish) (Pritchard and Marquez, 1973).

IPFs that could cause impacts to sea turtles as a result of the proposed operations in DC 354 include emissions, effluents, discarded trash and debris, and accidents.

Emissions - Noise from drilling activities, support vessels, and helicopters may elicit a startle reaction from sea turtles, but this is a temporary disturbance.

Effluents - Drilling fluids and cuttings discharges are not known to be lethal to sea turtles. Most operational discharges are diluted and dispersed upon release. Any potential impact from drilling fluids would be indirect, either as a result of impacts on prey items or possibly through ingestion in the food chain (API, 1989).

Discarded trash and debris - Both entanglement in, and ingestion of, debris have caused the death or serious injury of sea turtles (Balazs, 1985). Operators are prohibited from deliberately discharging debris into the marine environment. Marathon will operate in accordance with the following stipulations in MMS NTL No. 2003-G11:
Marine Trash and Debris Placards will be placed on all mobile drilling units engaged in oil and gas operations in the GOM OCS.

- All offshore employees and those contractors engaged in offshore operations will have completed marine trash and debris awareness training at least once. Thereafter, all such personnel will complete this training annually.
- Marathon must develop and use a marine trash and debris awareness training and certification process that reasonably assures that the employees and contractors specified above are in fact trained.
- Marathon will provide the MMS with an annual report signed by a company official that describes the marine trash and debris awareness training process and certifies that the training process has been followed for the previous calendar year.

Compliance and waste management practices are assumed to be effective in minimizing the possibility of plastic or other materials being lost overboard, thereby minimizing the potential for such impacts on sea turtles.

Accidents – All sea turtle species and life stages are vulnerable to the harmful effects of oil through direct contact or by fouling of their food. Exposure to oil can be fatal, particularly to juvenile and hatchlings. Oil spill response activities may increase vessel traffic in the area, which could add to the possibility of collisions with sea turtles. The activities proposed in this plan will be covered by Marathon's Sub-Regional Oil Spill Response Plan (refer to information submitted in accordance with Appendix F).

Collisions between support vessels and sea turtles would be unusual events, however should one occur, death or injury to sea turtles is possible. Contract vessel operators can avoid sea turtles and reduce potential deaths by maintaining a vigilant watch for marine mammals and maintaining a safe distance when they are sighted. Marathon will operate in accordance with the following stipulations in MMS NTL No. 2003-G10:

- Vessel crews will use an appropriate reference guide which helps them identify the 28 species of whales and dolphins, five species of sea turtles and the single species of manatee that might be encountered in the GOM OCS.
- Vessel operators and crews will take measures to avoid causing injury or death to marine mammals and sea turtles.
- Vessel crews will report sightings of any injured or dead protected species (marine mammals and sea turtles) immediately, regardless of whether the injury or death is caused by their vessel to the Marine Mammal and Sea Turtle Stranding Hotline at (800) 799-6637, or the Marine Mammal Stranding Network at (305) 862-2850. In addition, if the injury or death was caused by a collision with the vessel, the operator must notify MMS within 24 hours of the strike by email to protectedspecies@mms.gov.

Compliance with this NTL should be effective in minimizing the possibility of vessel strikes.

4.1.9 Air Quality

As noted in the Sales 189 and 197 EIS (MMS, 2003b), OCS waters are unclassified because there is no provision in the Clean Air Act for waters outside the boundaries of State waters. The potential degrading effects on air quality from onshore and offshore operational activities are drilling activities during exploration and delineation, service vessel operation, and evaporation of volatile hydrocarbons from surface oil slicks.

Emissions from temporary sources are related to vessel and rig emissions involved in exploration activities. Although these activities are mobile and temporary in nature they can emit relatively large amounts of pollutants over relatively short periods of time. Emissions of pollutants into the atmosphere from OCS activities are predicted to have concentrations that should not change the air quality status.

Marathon plans to use a dynamically positioned drillship for the drilling of the proposed wells. Primary air pollutants associated with OCS activities are nitrogen oxides, carbon monoxide,

sulphur oxides, volatile organic compounds and suspended particulates. **Appendix G** of the EP provides the projected air emissions information prepared in accordance with NTL No. 2002-G08. Annual exemption levels are set by MMS based on the distance from shore. The projected annual emissions are below the exemption levels for all emitted substances, therefore no further analysis has been conducted.

4.1.10 Shipwreck Sites (known or potential)

Based on a review of Visual 3, Offshore Regulatory Features Map (MMS, 2001b), there are no previously surveyed shipwreck sites in the lease block. The Geologic and Stratigraphic Assessment completed by GEMS and submitted under separate cover, did not reveal the presence of any shallow hazards, or man-made debris which would indicate a potential shipwreck site. Also, no anchoring or rig emplacement on the seafloor is proposed, therefore the potential for impacting shipwreck sites is very low.

4.1.11 Prehistoric Archaeological Sites

Based on a review of Visual 3, Offshore Regulatory Features Map (MMS, 2001b), DC 354 is not located within the archaeological prehistoric high probability area. Also, the Geologic and Stratigraphic Assessment completed by GEMS and submitted under separate cover, did not reveal the presence of any shallow hazards, or man-made debris which would indicate a potential archaeological site. No anchoring or rig emplacement on the seafloor is proposed; therefore, the potential for impacting a prehistoric archaeological site is very low.

4.2 Vicinity of Offshore Location

4.2.1 Essential Fish Habitat

IPFs that could cause impacts to essential fish habitat as a result of the proposed operations in DC 354 include effluents, physical disturbances to the seafloor, and accidents. Essential fish habitat includes all estuarine and marine waters and substrates in the Gulf of Mexico.

Effluents - The Live Bottom Low Relief Stipulation, the Live Bottom (Pinnacle Trend) Stipulation, and the Eastern Gulf Pinnacle Trend Stipulation would prevent most of the potential impacts on live-bottom communities and EFH from operational waste discharges (drilling muds and cuttings and produced waters). Levels of contaminants in drilling muds and cuttings and produced-water discharges, discharge-rate restrictions, and monitoring and toxicity testing are regulated by the EPA NPDES permit, thereby eliminating many significant biological or ecological effects. Operational discharges are not expected to cause significant adverse impacts to EFH.

Physical disturbances to the seafloor –The Live Bottom Low Relief Stipulation, the Live Bottom (Pinnacle Trend) Stipulation, and the Eastern Gulf Pinnacle Trend Stipulation would prevent most of the potential impacts on live-bottom communities and EFH from bottom disturbing activities. No anchoring or rig emplacement on the seafloor is proposed, and the potential for impacting EFH is low.

Accident - An accidental oil spill has the potential to cause some detrimental effects on EFH. Oil spills that contact coastal bays and estuaries, as well as marine waters when pelagic eggs and larvae are present have the greatest potential to affect fisheries. However, it is unlikely that an oil spill would occur from the proposed activities The activities proposed in this plan will be covered by Marathon's Sub-Regional OSRP.

4.2.2 Marine and Pelagic Birds

Seabirds are a diverse group of birds that spend the majority of their lives on or over saltwater. Species diversity and overall abundance is highest in the spring and summer and the lowest in the fall and winter. Four ecological categories of seabirds have been documented in the deepwater areas of the GOM: summer migrants (e.g., shearwaters, storm petrels and boobies), summer residents that breed in the GOM (e.g., sooty, least and sandwich tern, and frigate birds), winter residents (e.g., gannets, gulls and jaegers), and permanent resident species (e.g. laughing gulls and royal and bridled terns) (MMS, 2003b).

IPFs that could impact marine birds as a result of the proposed activities include air emissions, accidental oil spills, and discarded trash and debris from vessels and the facilities.

Emissions - Emissions of pollutants into the atmosphere from these activities are far below concentrations which could harm coastal and marine birds.

Accidents - An oil spill would cause localized, low-level petroleum hydrocarbon contamination. However, it is unlikely that an oil spill would occur from the proposed activities. Marine and pelagic birds feeding at the spill location may experience chronic, nonfatal, physiological stress. It is expected that few, if any, coastal and marine birds would actually be affected to that extent. The activities proposed in this plan will be covered by Marathon's Regional OSRP.

Discarded trash and debris - Marine and pelagic birds could become entangled and snared in discarded trash and debris, or ingest small plastic debris, which can cause permanent injuries and death. Operators are prohibited from deliberately discharging debris as mandated by MARPOL-Annex V and the Marine Plastic Pollution Research and Control Act, and regulations imposed by various agencies including the United States Coast Guard (USCG) and the Environmental Protection Agency (EPA). Marathon will operate in accordance with the regulations and also avoid accidental loss of solid waste items by maintaining waste management plans, manifesting trash sent to shore, and using special precautions such as covering outside trash bins to prevent accidental loss of solid waste. Special caution will be exercised when handling and disposing of small items and packaging materials, particularly those made of non-biodegradable, environmentally persistent materials such as plastic or glass. Informational placards will be posted on all vessels and facilities having sleeping or food preparation capabilities. All offshore personnel, including contractors and other support services-related personnel (e.g. helicopter pilots, vessel captains and boat crews) will be indoctrinated on waste procedures, and will view the video, "All Washed Up: The Beach Litter Problem". Thereafter, all personnel will view the marine trash and debris training video annually. Debris, if any, from these proposed activities will seldom interact with marine and pelagic birds, and therefore, the effects will be negligible.

4.2.3 Public Health and Safety

The primary concern related to the public's health and safety with an offshore DP drillship is related to the accidental release of hydrogen sulfide (H_2S). The presence of H_2S within formation fluids occurs sporadically throughout the GOM. However, an H_2S release is not considered an IPF because the lessee is requesting that the MMS classify the lease block as "H_2S absent". As such, no impacts on public health and safety are expected.

4.3 Coastal and Onshore

4.3.1 Beaches

The Mississippi Sound barrier islands have formed over the last 3,000–4,000 years as a result of westward sand migration resulting in shoal and sand bar growth (Otvos, 1980). All islands within this setting are generally regressive or stable features with high beach ridges and prominent sand dunes. They are well vegetated, showing a southern maritime forest climax community of pine and palmetto. Although some of these islands may experience washover during major storms, washover channels are not common. Most of these islands show no trend toward erosion or thinning, although they do migrate westward in response to the westward moving longshore current. Dauphine Island is an exception to this generality in that the island is a long, narrow, transgressive sand deposit which is frequently overwashed by storms. The eastern end of the island is apparently migrating toward the mainland.

Barrier islands found along the Mississippi River Deltaic Plain were built and have been sustained by the series of overlapping river deltas that have extended onto the continental shelf over the last 6,000 years. Barrier island transgression or regression along the deltaic plain of the Mississippi River depends upon what stage of the cycle the nearby land mass is experiencing. If the nearby delta is in the expanding stage, the deposits being pushed out onto the shelf are regressive. Once the river channel changes, subsidence and sea-level rise begin to convert these sediments in transgressive deposits as waves and washover channels form and divide barrier islands.

The coast of Chenier Plain is composed of sand beaches and coastal mudflats. The extensive mudflats seen in this area are the result of fine particle deposition from both the Mississippi and the Atchafalaya Rivers, where mud and fine particles are carried westward by the prevailing coastal current. In some cases, this fluid-saturated mud extends several hundred meters seaward from the edge of the salt marsh communities found along the shore absorbing wave energy and helping to protect these areas. Beaches in the Chenier Plain area are thin sand deposits present along the seaward edge of the marsh. The coastline of the Chenier Plain is relatively stable at this time.

The barrier islands and mainland beaches of the Florida panhandle typically are stable, with broad, high-profile beaches backed with high dunes. These beaches are some of the most beautiful seen along the GOM and represent a major economic asset to the State of Florida and the region in general. Throughout the Big Bend area east of Cape San Blas, the coast curves

inward, away from the Gulf proper. The coastline in this area is one of the lowest energy coastlines in the world (CSA, Inc., and Martel Laboratories, Inc., 1985). Typical barrier islands and beaches are not seen along this coast, and forested wetlands occur down to the water's edge.

IPFs from the proposed activities that could cause impacts to coastal habitats include accidents (oil spills) and discarded trash and debris. Oil spills contacting beaches would have impacts on the use of recreational beaches and associated resources. Due to the distance from shore (approximately 80 miles from Louisiana, 111 miles from Alabama and 117 miles from Florida), the highly evaporative nature of the anticipated reservoir fluid and diesel fuel, and the response capabilities that would be implemented, no impacts are expected.

Trash on the beach is recognized as a major threat to the enjoyment and use of beaches. There will only be a limited amount of marine debris, if any, resulting from the proposed activities. Operators are prohibited from deliberately discharging debris as mandated by MARPOL-Annex V and the Marine Plastic Pollution Research and Control Act, and regulations imposed by various agencies including the United States Coast Guard (USCG) and the Environmental Protection Agency (EPA). Marathon will operate in accordance with the regulations and also avoid accidental loss of solid waste items by maintaining waste management plans, manifesting trash sent to shore, and using special precautions such as covering outside trash bins to prevent accidental loss of solid waste. Special caution will be exercised when handling and disposing of small items and packaging materials, particularly those made of non-biodegradable, environmentally persistent materials such as plastic or glass.

Informational placards will be posted on all vessels and facilities having sleeping or food preparation capabilities. All offshore personnel, including contractors and other support services-related personnel (e.g. helicopter pilots, vessel captains and boat crews) will be indoctrinated on waste procedures, and will view the video, "All Washed Up: The Beach Litter Problem". All personnel will view the marine trash and debris training video annually.

4.3.2 Wetlands

Wetland habitats along the coast and inshore consist of seagrass beds; mangroves; fresh, brackish, and salt marshes; mudflats; forested wetlands of hardwoods; and cypress-tupelogum swamps. Wetland habitats may occupy only narrow bands along the shore, or they may cover vast expanses of the coastline. Seagrass beds, if present, are seen offshore in shallow water, while mangroves and marshes interface between marine and terrestrial habitats, and forested wetlands are found inshore, away from direct contact with the water.

High organic productivity, high detritus production, and extensive nutrient recycling characterize coastal wetlands. The wetlands environment provides habitat for a vast number of invertebrate, fish, reptile, bird, and mammal species. Two-thirds of the high-value fishes caught in the GOM spend at least some portion of their life cycle in the nearshore seagrass beds or salt marshes (MMS, 1990).

Coastal marshes of Mississippi and Alabama occur primarily as discontinuous bands around bays, sounds, and streams. The most extensive wetlands in these areas occur in the Eastern Pearl River and Pascagoula River deltas in Mississippi; the Tensaw River delta in Alabama; and Grand Bay of Mississippi Sound, which stretches across the Mississippi-Alabama border. The coastal marshes of the Florida panhandle and Big Bend consist primarily of hardwood swamps, such as those associated with Pensacola, Choctawatchee, and St. Andrews bays. Estuarine marshes and mangroves are also predominant in the Florida coastal bend. The stable substrate from Florida to Mississippi Sound provides for generally more stable wetlands, as compared to Louisiana wetlands, which are suffering from coastal erosion.

IPFs from the proposed activities that could cause impacts to wetlands include accidents (oil spills). Oil spills contacting wetlands would have impacts on the habitat itself as well as the use of wetland as a habitat by marine resources. Due to the distance from shore (approximately 80 miles from Louisiana, 111 miles from Alabama and 117 miles from Florida), the highly evaporative nature of the anticipated reservoir fluid and diesel fuel, and the response capabilities that would be implemented, no impacts are expected.

4.3.3 Shore Birds and Coastal Nesting Birds

Bird species of concern include brown pelican, piping plover, southeastern snowy plover and bald eagle. Other endangered species are mentioned in the Sale 181 EIS but do not warrant further discussion: (1) the least tern, for which the endangered designation applies only to interior populations; and (2) the roseate tern, which is not normally found in the northern Gulf of Mexico.

Brown Pelican

The eastern brown pelican (*Pelecanus occidentalis*) inhabits coastal habitats and forages within coastal waters and waters of the inner continental shelf. Aerial and shipboard surveys including GulfCet and GulfCet II indicate that brown pelicans do not occur in deep, offshore waters (Fritts and Reynolds, 1981; Peake, 1996; Hess and Ribic, 2000). Subsequent to the ban of DDT pesticide, this species has successfully recolonized much of its former range. It has been de-listed from its endangered status in Alabama and Florida, through still listed as endangered in Louisiana and Mississippi (USFWS, 2002). Brown pelicans are also listed by Florida as a species of special concern.

Piping Plover

The piping plover (*Charadrius melodus*) is a migratory shorebird that overwinters along the southeastern U.S. and Gulf of Mexico coasts. Piping plovers inhabit coastal sandy beaches and mudflats. This species is currently in decline and listed as threatened as a result of historic hunting pressure, and habitat loss and degradation (Ehrlich et al., 1992). Critical habitat has been proposed, including coastal areas in Florida, Alabama, Mississippi, and Louisiana.

Southeastern Snowy Plover

The southeastern snowy plover (*Charadrius alexandrinus tenuirostris*) is a shorebird that nests within Gulf of Mexico coastal habitats such as dry sandy beaches and flats. Though not federally

listed as endangered or threatened (USFWS, 2002), it is listed as threatened by the State of Florida due to population declines resulting from habitat loss and degradation (Ehrlich et al., 1992). Nesting sites in the Florida Panhandle range from the Alabama border, eastward beyond Little St. George.

Bald Eagle

The southern bald eagle (*Haliaeetus leucocephalus*) is a terrestrial raptor that is widely distributed across the southern U.S., including coastal habitats along the Gulf of Mexico. The Gulf coast is inhabitated by both wintering migrant and resident bald eagles (Johnsgard, 1990; Ehrlich et al., 1992). Populations of southern bald eagles have increased in recent years as a result of the ban of DDT pesticide and the efforts of intense recovery programs. Populations in the lower 48 states are classified as threatened, but the USFWS has proposed to delist the species in the lower 48 states (USFWS, 2002).

Oil spills could cause impacts to shore birds and coastal nesting birds. However, given the distance from shore, the highly evaporative nature of the anticipated reservoir fluids, and response capabilities that would be implemented, no impacts are expected. The activities proposed in this plan will be covered by Marathon's Sub-Regional OSRP (refer to information submitted in Appendix F).

Coastal and marine birds are highly susceptible to entanglement in floating, submerged, and beached marine debris: specifically plastics. Operators are prohibited from deliberately discharging debris as mandated by MARPOL-Annex V and the Marine Plastic Pollution Research and Control Act, and regulations imposed by various agencies including the United States Coast Guard (USCG) and the Environmental Protection Agency (EPA). Marathon will operate in accordance with the regulations and also avoid accidental loss of solid waste items by maintaining waste management plans, manifesting trash sent to shore, and using special precautions such as covering outside trash bins to prevent accidental loss of solid waste. Special caution will be exercised when handling and disposing of small items and packaging materials, particularly those made of non-biodegradable, environmentally persistent materials such as plastic or glass.

4.3.4 Coastal Wildlife Refuges

The shoreline types along the Gulf coast include sand beaches, tidal mud flats and salt and brackish marshes. Important features found along these coastal environments include major estuaries, federal and state special management areas, and recreational beaches.

The tidal, sheltered waters of estuaries support a wide variety of wildlife, shore birds, fish, crabs, shrimp and other shellfish. Estuaries and coastal wetlands are critical habitats for tens of thousands of birds, mammals, fish and other wildlife, depending upon these habitats for places to live, feed, and reproduce. For example, Louisiana's coastal wetlands, which represent 40% of all the salt marshes in the contiguous United States, contribute 28% to the total volume of U.S. fisheries, provide winter habitat for one-half to two-thirds of the Mississippi Flyway waterfowl population and for many threatened and endangered species, and serve as the nursery ground for

fish and shellfish for much of the nation's seafood consumption, as well as 40% of the nation's fur harvest. They provide for 400 million tons each year of waterborne commerce, and support and protect the multi-billion dollar a year oil and gas industry.

These wetland areas support various functions and values, including commercial and recreational fishing, hunting, ecotourism, critical migratory butterfly, songbird and waterfowl habitat, endangered and threatened species habitat, and waterborne commerce. Several special management areas are located throughout the Gulf Coast. These areas are briefly described in **Table 4.**

Table 4
Special Management Areas

LOUISIANA	
Shell Keys National Wildlife Refuge	Shell reefs are present and serve as loafing areas for seabirds. Protected species include the brown pelican.
Atchafalaya Wildlife Management Area	Sensitive species include wading birds, raptors, shorebirds, waterfowl, brackish-water clams and various finfish. Protected species which can be found within the area boundaries include the bald eagle, pallid sturgeon, piping plover, brown pelican, American alligator, Kemp's ridley sea turtle, West Indian manatee and the Louisiana black bear.
Pointe Au Chien Wildlife Management Area	This 28,244 acre area serves as a refuge for migratory birds and various other wildlife. Protected species include the bald eagle and the American alligator.
Wisner Wildlife Management Area	Prevalent fish species include speckled trout, red fish, flounder, black drum, sheepshead and croaker; crab and shrimp are found in the waterways. Nutria, muskrat, mink, raccoon and otter are present. Protected species which frequent this WMA include the brown pelican.
Salvador Wildlife Management Area	Sensitive species include waterfowl, wading birds, shorebirds and finfish.
Pass-a-Loutre Wildlife Management Area	Freshwater fish, including bass, bream, catfish, crappie, watermouth, drum and garfish, flourish in the interior marsh ponds. Saltwater species include redfish, speckled trout and flounder. Alligators are fairly common in the marsh. Furbearers present include nutria, muskrat, mink, raccoon and otter. The protected brown pelican occasionally visits this area.
Delta National Wildlife Refuge	This region primarily serves as a winter sanctuary for migratory waterfowl such as snow geese and more than eighteen species of ducks. This area also serves as a habitat for numerous wading and shorebirds, finfish, crab, alligator and white-tailed deer.

Breton National Wildlife Refuge	The Chandeleur Islands make up the largest portion of this NWR. Shoals along the Chandeleur Sound side provide wintering habitat for nearly 20,000 redhead ducks. Seagrass is also abundant along the Sound side of the islands. Nesting colonies of thousands of birds are found on the islands in the summer, including sandwich terns, laughing gulls and black skimmers.
Biloxi Wildlife Management Area	This area includes 39,583 acres of marshland habitat. Sensitive species include waterfowl, shorebirds, wading birds and finfish.
MISSISSIPPI	
Gulf Island National Seashore	This recognized area includes coastal shores stretching from Alabama to Florida. Protected species include the brown pelican, least tern, American alligator, Peridido Key beach mouse and the gopher tortoise.
Mississippi Sandhill Crane National Wildlife Refuge	Protected species include the Mississippi sandhill crane and the red-cockaded woodpecker.
ALABAMA	
Bon Secour National Wildlife Refuge	This refuge, located on Dauphin Island in Pelican Bay, serves as a habitat for various shorebirds, herons, egrets and raptors. Protected species include the bald eagle, brown pelican and the American alligator.
Gulf State Park	Sensitive avians include shorebirds, gulls, terns, herons, various waterfowl, cormorants and gannets. The brown pelican, a protected species, can be found in the vicinity of the park.
FLORIDA	
Gulf Island National Seashore	This recognized area includes coastal shores stretching from Alabama to Florida. Protected species include the brown pelican, least tern, American alligator, Peridido Key beach mouse and the gopher tortoise.
Fort Pickens State Park Aquatic Preserve	Sensitive finfish include red snapper, cobia, king and Spanish mackerel, Atlantic bonito and gag.
Point Washington Wildlife Management Area	Wildlife present includes waterfowl, bobcat, white-tailed deer and various small mammals. Protected species include the Choctawhatchee beach mouse.
Saint Andrews State Recreation Area	This area serves as a habitat for wading birds, shorebirds, waterfowl, songbirds, small amphibians and terrestrial mammals. Protected species include the Choctawhatchee beach mouse.

Saint Joseph Bay Aquatic Preserve	Sensitive species include the sunray venus clam, bay scallop and both gorgonian and fire corals.
T. H. Stone Memorial—Saint Joseph Peninsula State Park	Shorebirds, wading birds, raptors, bobcat, deer, reptiles, amphibians and small mammals can be found in this area. Protected species include the least tern, brown pelican and bald eagle.
Saint Vincent National Wildlife Refuge, Apalachicola Bay Aquatic Preserve (AP), Apalachicola Bay National Estuarine Research Reserve (NERR)	These three overlapping, protected areas serve as habitats for wading birds, shorebirds, waterfowl, raptors and small mammals. Protected species include the bald eagle, brown pelican, piping plover, roseate tern, wood stork, red wolf, eastern indigo snake, American alligator, gopher tortoise, and both the loggerhead and leatherback sea turtles.
Alligator Harbor Aquatic Preserve	Sensitive species include the peregrine falcon, eastern oyster and various finfish. Seagrass is prevalent along the coastline.
Saint Marks National Wildlife Refuge	This 68,000 acre refuge is visited by waterfowl, various shorebirds, small mammals and the Florida black bear. Aquatic resources such as spotted seatrout, red drum and widemouth bass can be found in the surrounding waters. Protected species include the bald eagle and the red-cockaded woodpecker.
Big Bend Seagrasses Aquatic Preserve	This preserve consists mainly of a large, remote and undeveloped expanse of submerged seagrasses, spanning nearly 150 mi. of the Florida coastline. Protected species which frequent the area include the bald eagle, piping plover, wood stork, red-cockaded woodpecker, eastern indigo snake, gulf sturgeon, West Indian manatee and the Kemp's ridley, leatherback, loggerhead and green sea turtles.
Aucilla Wildlife Management Area	Sensitive species include turkey, blue crab, finfish, bobwhite, bobcat, white-tailed deer, feral hog and various small mammals. Seagrass is prevalent along the coastline. Sponge colonies are abundant off the coast of this WMA.
Tide Swamp Wildlife Management Area	Sensitive species include herons, egrets, waterfowl, osprey, turkey, bobwhite, bobcat, white-tailed deer and various small mammals. Seagrass is prevalent along the coastline. An eastern oyster bed is located off the coast of this WMA. Protected species include the bald eagle.
Steinhatchee Wildlife Management Area	Sensitive species include wading birds, shorebirds, turkey, bobcat, white-tailed deer, feral hog and small mammals. Seagrass is prevalent along the coastline. Protected species include the bald eagle and the West Indian manatee (along the Suwannee River).

Lower Suwannee National Wildlife Refuge	Numerous bird species, including wading and shore birds, as well as white-tailed deer, feral hog and various small mammals are abundant in the boundaries of this 52,000 acre refuge. Seagrass is prevalent along the coastline. Protected species include the bald eagle, Gulf sturgeon, eastern indigo snake, gopher tortoise, West Indian manatee and both green and loggerhead sea turtles.
Cedar Keys National Wildlife Refuge	This refuge is composed of 13 offshore islands which serve as a colonial bird nesting site, nurseries for finfish and shellfish and habitat for small mammals. Seagrass is prevalent along the coastline. Protected species include the brown pelican, sea turtles and the West Indian manatee.
Gulf Hammock Wildlife Management Area	Sensitive species include the great egret, waterfowl, turkey, bobwhite, bobcat, white-tailed deer, feral hog and various small mammals. Seagrass is prevalent along the coastline. Unique vegetation is located in this area.
Crystal River National Wildlife Refuge	Comprised of 20 islands and several parcels of land, this refuge and its surrounding waters provide habitat for 25% of the nation's endangered manatee population. Seagrass is prevalent along the coastline. Protected species include the West Indian manatee.
Saint Martins Marsh Aquatic Preserve	Sensitive species include the eastern oyster and various finfish. Seagrass is prevalent along the coastline. Protected species include the West Indian manatee.
Chassahowitzka National Wildlife Refuge	This 30,500 acre refuge provides habitat for waterfowl, shorebirds, wading birds, songbirds, eastern oyster, game animals and small mammals. Seagrass is prevalent along the coastline. Protected species include the bald eagle, brown pelican, least tern, red-cockaded woodpecker, wood stork, American alligator, eastern indigo snake, gopher tortoise, West Indian manatee and green, Kemp's ridley and loggerhead sea turtles.

Oil spills could cause impacts to all of the above noted coastal resources. However, given the distance from shore, the highly evaporative nature of the anticipated reservoir fluids and diesel fuel, and response capabilities that would be implemented, no impacts are expected. The activities proposed in this plan will be covered by Marathon's Sub-Regional OSRP (refer to information submitted in Appendix F).

4.3.5 Wilderness Areas

Certain barrier islands of the Gulf coast, including Horn and Betit Bois Islands, have been designated by Congress as Wilderness areas. An accidental oil spill from the proposed activities could cause impacts to wilderness areas. However, it is unlikely that an oil spill would occur from the proposed activities. Due to the distance from the nearest designated wilderness area (>100 miles) and the response capabilities that would be implemented, no significant adverse impacts are expected.

4.4 Other Resources

4.4.1 Submerged Aquatic Vegetation

Seagrasses grow on sand bottoms in shallow, relatively clear water in areas with low wave energy. There are over 7,413,000 acres of seagrass in the GOM, approximately 98.5% of which is on the west Florida shelf. The coastal waters of Mississippi and Alabama contain approximately 74,000 acres of seagrass growing along the inner edges of the barrier islands of the Mississippi Sound and along the shorelines of prominent bays (Shew et al., 1981; MMS, 2001a).

Seagrass beds are an extremely productive marine habitat and support a tremendously complex ecosystem, providing nursery grounds for vast numbers of commercially and recreationally important fisheries species, including shrimp, black drum, snappers, groupers, spotted sea trout, southern flounder, and many others.

In addition to this submerged aquatic vegetation, Big Bend, Northern Everglades, and Florida Bay all have extensive coastal wetland communities that front directly on the open waters of the Gulf. Plant communities dominating these wetlands range from salt marshes and coastal hardwoods in the north to mangrove forests in the south (CSA, Inc., and Martel Laboratories, Inc., 1985; CSA, Inc., 1990, 1991).

An oil spill from the proposed activities is not expected to produce either adverse or significant impacts on seagrass beds. Probabilities for spilled oil reaching seagrass beds are very low (refer to Figure H.2 in Marathon's Sub-Regional OSRP).

4.4.2 Benthic Communities

From a biological perspective, the northern Gulf of Mexico has become much better known in the last three decades. Two major studies were completed by a variety of researchers from Texas A & M University (Pequegnat, 1983), and LGL Ecological Research Associates and Texas A&M University (Gallaway et al., 1988) which included a total of 217 stations between depths of 300 and 3,800 m being sampled and photographed. An ongoing MMS study, *Deepwater Program: Northern Gulf of Mexico Continental Slope Habitats and Benthic Ecology Study* (Rowe and Kennicutt, 2002), includes additional sampling stations.

After their study, Gallaway et al., (1988) predicted, with a reasonable degree of certainty, the basic composition of the faunal communities on the northern Gulf of Mexico slope between 300 and 2,500 m water depth and between 85° and 94° W. longitude. Brief descriptions of each major group of benthic biological resources follow.

Microbiota

The microbiota are the "bottom" of the food chain. Microbiota are represented by the bacteria and protests, including benthic foraminifera. Their principal food source is thought to be dissolved organic matter, although particulate material can be directly utilized if the biota can produce exoenzymes to mobilize particles (Rowe and Kennicutt, 2002).

There has been limited research on bacteria in the deep Gulf of Mexico. Schmidt et al. (1998) suggest that sediment community bacterial abundance is relatively constant over a wide variety of geographic regions when direct bacterial counts are scaled to fluid volume (pore water) compared to the traditional dimension of dry sediment mass. The counts of bacteria in marine sediments center around 10^9 bacteria per ml fluid volume, or literally trillions per m^2.

Meiofauna

For most deepwater programs, meiofauna are defined as metazoans that are retained on a 63 micron sieve. Meiofauna include nematode worms, harpacticoid copepods, and several other taxa. Most meiofauna feed on small particles consisting of detritus, bacteria, other meiofauna, and small protozoa (Rowe and Kennicutt, 2002).

The density of meiofauna was reported as approximately two orders of magnitude greater than the density of macrofauna (invertebrates retained on a 300 micron sieve) throughout the depth range of the Gulf of Mexico continental slope (Gallaway et al., 1988). Overall mean abundance was 707 individuals per 10 cm^2 (707,000 per m^2) ranging from a low of 200 to a high of 1,100. Densities general decreased with increasing depth by a factor of three between 300 and 3,000 m. For the six stations in close proximity to the Tuscany prospect, these trends were also true.

Macrofauna

For most deepwater programs, macrofauna are defined as invertebrates that are retained on a 300 micron sieve. The principal organisms are polychaete worms (approx. 50%), bivalve mollusks, and crustaceans. Macrofauna consume microbiota, meiofauna and organic detritus. Macrofauna are preyed upon by megafauna and fishes (Rowe and Kennicutt, 2002).

Ninety percent of the 1,569 different taxa of macrofauna reported on the continental slope have been identified to the level of genus or species (Gallaway et al. 1988). Nearly all macrofaunal species were infaunal invertebrates considered nominally epifaunal or surface dwelling, although some taxa were normally found in surficial sediments. Overall, there was an approximate three-fold decrease in macrofaunal density with depth between 300 and 2,900 m (Pequegnat et al., 1990).

Megafauna

Megafauna are organisms which are routinely sampled by trawls with 2.5 cm stretch mesh or organisms that can be seen easily in bottom photographs, usually about 1 cm or more in diameter. They are mostly composed of decapod crustaceans and echinoderms. Cnidaria, such as sea pens, soft corals and anemones, are also common in the megafauna. Megafauna can be suspension feeders, predators, scavengers or deposit feeders. Unlike the previous groups of sediment-dwelling organisms considered immobile and unable to avoid disturbances caused by OCS activities, Megafauna can readily move over substantial distances (Rowe and Kennicutt, 2002).

Megafauna collections were made in depths between 300 and 2,882 m (Gallaway et al. 1988). Based on fish and invertebrates collected by trawling, invertebrates were 4-5 times more abundant than benthic fishes throughout all transects and designated depth zones. Other trends included higher densities of all megafauna in the study's eastern Gulf transect area (between 85

degrees 40'; and 85 degrees 15' W. longitude) and lowest in the central area (between 89 degrees 40' and 89 degrees 20' W. longitude), and a tendency of densities to decrease below a depth of 1,550 m. Also, benthic photography revealed substantially higher megafaunal density (not including fish) at the shallower stations compared to the deeper suite of stations at 850 m.

IPFs associated with routine project activities which could potentially impact benthic communities include effluents and accidents.

Effects of Effluents

The use of solids control equipment considered to be the best available technology recommended by the EPA, would ensure maximum fluids during drilling operations. Supervisory and well control personnel onboard the facility would be familiar with the effluent limitations and guidelines for overboard discharges as specified by the NPDES permit conditions.

The EPA received a report prepared for the MMS which provided a review of the scientific literature and seabed surveys to determine the environmental impacts of SBFs (Docket No. W-98-26, Record No. IV.F.1). The literature report confirms EPA's position that benthic communities will recover as SBF concentrations in sediments decrease and sediment oxygen concentrations increase. The report also confirms EPA's position that within three to five years of cessation of SBF-cuttings discharges, concentrations of SBFs in sediments will have fallen to low enough levels and oxygen concentrations will have increased enough throughout the previously affected area that complete recovery will be possible. As such, operational discharges are not expected to cause significant adverse impacts to benthic communities

Effects of Accidental Releases or Spills

A sub-surface blowout or large spill could affect benthic communities within a few hundred m of the well site. While some oil could initially adhere to the surface sediments surrounding the well site, resulting in smothering and/or toxicity to the benthic organisms, most of the oil is assumed to rise rapidly through the water column. A severe subsurface blowout could resuspend and disperse sediments within a 300-meter radius. While coarse sediments such as sand would probably settle at a rapid rate within 400 m from the blowout site, fine sediments such as clay and silts could be resuspended for more than 30 days and dispersed over a much wider area.

4.4.3 Gulf Sturgeon

Existing occurrences of Gulf sturgeon in 1996 extended from the Mississippi River to Charlotte Harbor in western Florida. Spawning has been documented in most of the major river system's of the fish's range. A Gulfwide genetic assessment of Gulf sturgeon was completed in 1995. The results indicate there are four and possibly five geographically distinct units of Gulf sturgeon possessing different genetic material (MMS, 2003b).

The adult Gulf sturgeon spends March through October in the rivers and November through February in estuarine or shelf waters. The offshore distribution of Gulf sturgeon during winter months is not known, but there have been no reported catches in Federal OCS waters (MMS,

2003b). There are no IPFs associated with routine project activities that are likely to affect gulf sturgeon.

4.4.4 Endangered Beach Mice and Florida Salt Marsh Vole

These mice are subspecies of the old field mouse (*Peromyscus polionotus*) that occupy the lee side of mature coastal dunes of Florida and Alabama. The Alabama, Choctawhatchee, and Perdido Key subspecies are listed as endangered (the Alabama subspecies in Alabama, the Perdido Key subspecies in both Alabama and Florida, and the Choctawhatchee subspecies in Florida). The range of these subspecies is listed in USDOI, MMS (1994). The St. Andrew subspecies and Santa Rosa subspecies are candidates for listing in Florida. Beach mouse diet, habits, and reasons for population decline are given in USDOI, MMS (1994).

There are no IPFs associated with routine project activities that could affect the endangered beach mouse or the Florida salt marsh vole due to the distance from shore and the lack of any onshore support activities near any area inhabited by these species.

4.4.5 Impacts Concerning Military Use

Marathon has contacted the Naval Air Station in Pensacola regarding the control of electromagnetic emission and operations of boats and/or aircraft into the designated Military Warning Area EWTA-1F in order to enter into an agreement with the military installation. This will minimize potential multiple use conflicts on the OCS. No environmental effects are anticipated from compliance with this lease stipulation.

4.4.6 Impacts on Recreation/Tourism

The proposed operations are located approximately 130 statute miles from Florida and are temporary in nature. Therefore, visual aesthetic impacts are expected to be insignificant. Impacts to recreational fisheries are also expected to be insignificant due to both distance from shore and the temporary nature of the activities.

5.0 Impacts on Proposed Activities

5.1 Geologic Hazards

The Geologic and Stratigraphic Assessment completed by GEMS, Inc. (submitted under separate cover), indicates a slightly hummocky seafloor in the southern portion of the project area, while the northern portion has a relatively smooth seafloor. The proposed wellsites are free of any major hazards to drilling. No faults will be encountered at any of the wellsites, and no seafloor or subsurface high-amplitude events will be penetrated by any of the wells. The potential for shallow water flow to occur in the study area is considered to be negligible to low.

5.2 General Weather Patterns

Storms and fog are the primary meteorological phenomena that can affect OCS offshore operations. Storms bring high winds, which can disrupt surface and air support and evacuation

traffic, and rough seas that can damage equipment and help traffic.

Tropical storms, hurricanes, and winter storms can disrupt operations and movements of crew or supply boats and helicopters. Careful monitoring of weather conditions usually results in ample warning to offshore operators and service vessel operators of approaching dangerous weather systems.

Additionally, areas are occasionally affected by fog, which can severely restrict visibility. This poses a danger of collision to offshore structures from moving traffic, and may bring support vessel traffic to a halt. Dense fog would seldom be expected to last long enough to cause major delays in OCS operations.

5.3 Physical Oceanography

Ocean currents, tides, waves, storm surges, and deep water are elements of physical oceanography that can affect offshore operations. Ocean currents produce a steady force against vessels and structures engaged in activities on the OCS. Currents are generally not strong enough to pose a threat to the physical integrity of drilling rigs or production platforms. Offshore structures are designed to withstand currents in excess of the maximum currents and waves.

Tides may disrupt support vessel traffic during period of low water. Waves and storm surges have the potential to disrupt service vessel traffic. Storms and associated waves may cause cessation of some activities on rigs because of the danger to personnel transferring from service boats, or the danger and potential spill hazards involved in off-loading fuel from vessels to rigs.

Deepwater ocean currents have been a topic of ongoing study with regard to oil and gas operations in deep waters. These are relatively strong currents which have been observed at depths of approximately 2,000 meters. These strong flows have serious implications for riser designs, and can affect MMS assessments of subsurface spills and other oil and gas operations.

In accordance with NTL 99-G01, Marathon has developed plans and procedures for regaining control of a well under emergency conditions. Such action may involve the drilling of a separate relief well to intercept the primary well at an intermediate depth to stop the uncontrolled flow of gasses and fluids. Marathon is logistically and financially able to carry out these responsibilities

6.0 Impacts on Socioeconomic Conditions

The project involves exploratory drilling with support from existing shorebase facilities in Louisiana. Due to the relatively low level of activity, and small number of personnel involved, the project will have a negligible impact on socioeconomic conditions including local population centers, employment, and industry.

Routine operations are not expected to have any socioeconomic impacts on the state of Florida. There will be no project-associated vessel or aircraft traffic in Florida state waters, and there will

be no purchases of supplies or equipment in Florida. In addition, the project is located more than 100 nautical miles offshore and will not be visible from Florida state waters.

7.0 Alternatives

There are no alternatives to conducting exploration activities on these leases.

Marathon has planned the exploration activities in such a way as to minimize environmental impacts. In developing the plans for exploration of the subject lease blocks, several operational decisions are made for which the outcome may have variable impacts on the environment. For example, the selection of a dynamically positioned drillship decreases the potential disturbance to the seabed floor (as these rigs do not require mooring to the seabed floor). Marathon has considered alternatives, in conjunction with the overall safety considerations of the operation, in the selection of the methods to be employed in the drilling of these wells.

8.0 Mitigation Measures

The proposed action does not involve any mitigation measures other than those required by laws and regulations, including all applicable federal, state, and local requirements concerning air emissions, discharges to water, and solid waste disposal, as well as any additional permit requirements. All project activities will be conducted under an MMS-approved, Sub-Regional OSRP, which is being submitted to the MMS under separate cover.

9.0 Consultation

Persons or agencies consulted during the preparation of this EIA include representatives of the US Minerals Management Service.

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APPENDIX I

COASTAL ZONE MANAGEMENT CONSISTENCY INFORMATION

Issues identified in the Louisiana Coastal Zone Management Program include the following: general coastal use guidelines, levees, linear facilities (pipelines); dredged soil deposition; shoreline modifications, surface alterations, hydrologic and sediment transport modifications; waste disposal; uses that result in the alteration of waters draining into coastal waters; oil, gas or other mineral activities; and air and water quality.

Issues identified in the Alabama Coastal Zone Management Program include the following: review of all coastal resource uses and activities that have a direct and significant effect on the coastal area. Uses subject to the Alabama's CZM program are divided into regulated and nonregulated categories. Regulated uses are those that have a direct and significant impact on the coastal areas. These uses either require a State permit or are required by Federal law to be consistent with the management program. Uses that require a State permit must receive a certificate of compliance. Nonregulated uses are those activities that have a direct and significant impact on the coastal areas that do not require a State permit or Federal consistency certification. Nonregulated uses must be consistent with the ACAMP and require local permits to be administered by ADEM.

Issues identified in the Florida Coastal Management Program include the following: The Florida Coastal Zone Management Act authorized the development of the coastal management program. A network of agencies comprises the coastal management agencies to represent a balanced statewide perspective including interests in coastal development, professional/academic coastal science, commercial fishing, environmental/coastal conservation, local government, coast/marine commerce, energy development, recreational fishing/boating, regional planning councils, water management districts, and environmental education. The purpose of the program is to protect historic and archaeological resources, freshwater fish, birds and both upland game and non-game animals, including endangered species; development, maintenance and protection of the transportation systems, and the saltwater fisheries and marine mammals.

CZM Consistency Certifications for Louisiana, Alabama and Florida are provided in this section.

COASTAL MANAGEMENT CONSISTENCY CERTIFICATION

INITIAL EXPLORATION PLAN

DE SOTO CANYON BLOCK 354

OCS-G 23507

The proposed activities described in detail in this OCS Plan comply with Louisiana's approved Coastal Management Program(s) and will be conducted in a manner consistent with such Program(s)

Marathon Oil Company

Lessee or Operator

Certifying Official

September 15, 2003

Date

ALABAMA COASTAL ZONE MANAGEMENT
CONSISTENCY CERTIFICATION
IEP – DE SOTO CANYON BLOCK 354

The OCS related oil and gas exploratory activities having potential impact on the Alabama Coastal Zone are based on the location of the proposed facilities, access to those sites, best practical techniques for drilling locations, drilling equipment guidelines for the prevention of adverse environmental effects, effective environmental protection, emergency plans and contingency plans. Alabama policies have been addressed below or are cross-referenced to the appropriate sections of the plan:

Topic	Cross Reference	Comments
Coastal Resource Use Policies		
Coastal Development		Dock and port facilities in LA will be used. There will be no new construction, dredging, or filling in Alabama state waters. There will be no new commercial development or capital improvements in Alabama's coastal zone, nor will there be any employment effects.
Mineral Resource Exploration and Extraction		Proposed exploration operations will take place 111 miles from Alabama's coastline.
Commercial Fishing	Appendix H	
Hazard Management	Appendix C	A Shallow Hazards Report has been prepared and submitted to MMS in order to identify and assess the seafloor and shallow geologic conditions in this block.
Shoreline Erosion	Appendix H	Proposed exploration operations will take place 111 miles from Alabama's coastline.
Recreation	Appendix H	
Transportation	Appendix B	
Natural Resource Protection Policies		
Biological Productivity	Appendix H	
Water Quality	Appendix H	
Water Resources	Appendix H	
Air Quality	Appendix G	
Wetlands and Submerged Grassbeds	Appendix H	
Beach and Dune Protection	Appendix H	
Wildlife Habitat Protection	Appendix H	
Endangered Species	Appendix H	
Cultural Resources Protection	Appendix D	This block does not lie within a high probability zone for historic shipwrecks, and thus does not require an archaeological report. As part of the Hazards Report, it was determined that no man-made facilities nor seafloor obstructions were located in this block(s)

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

Marathon Oil Company

Joseph J. Schneider
Regulatory Compliance Representative
September 15, 2003

CONSISTENCY CERTIFICATION
MARATHON OIL COMPANY INC.'S CERTIFICATION OF CONSISTENCY WITH THE STATE OF FLORIDA COASTAL MANAGEMENT PROGRAM

Introduction

This Consistency Certification is an evaluation by Marathon Oil Company. (Marathon) of its proposed Initial Exploration Plan (EP) in De Soto Canyon Block 354, for any reasonably foreseeable coastal effects on the land, water uses, or natural resources, of coastal zone of Florida, pursuant to the enforceable policies of the State of Florida's Coastal Management Program (CMP). The Initial EP is supported by numerous studies performed by government agencies, and the oil and gas industry, concerning impacts of oil and gas activities in the Gulf of Mexico and other offshore areas around the world. (For citations to these studies and agencies, please see Attachment 12, Environmental Report, References.)

Marathon plans to drill up to four (4) exploratory wells in De Soto Canyon Block 354. The activities proposed in the Initial EP will occur in outer continental shelf (OCS) waters, offshore Alabama, approximately 117 miles from the nearest Florida shoreline. Marathon believes that the planned activities will have little, if any effect beyond the area immediately adjacent to the proposed activity sites, and that the possibility of any impacts to Florida's coastal zone is remote. However, Marathon has undertaken this consistency evaluation, and believes that the proposed activities comply with the enforceable policies of Florida's CMP and will be conducted in a manner consistent with this Program.

The exploratory activities will be conducted in accordance with Minerals Management Service (MMS) and U.S. Environmental Protection Agency (USEPA) regulations, applicable Notices to Lessees (NTL's), conditions in the approved permits, and lease stipulations. All required Federal permits will be obtained and all activities will be conducted in compliance with such regulations, NTL's, conditions, and stipulations.

Consistency Analysis

Florida's CMP is authorized by the Florida Coastal Management Act, Chapter 380, Land and Water Management, Part II, Coastal Planning and Management, of the Florida Statutes. For this consistency certification, Marathon has analyzed the proposed action in relation to 16 chapters of the Florida Statutes identified by the State as "core enforceable policies" having specific applicability to offshore oil and gas activity:

(1) Chapter 161 - Beach and Shore Preservation
(2) Chapter 252 - Emergency Management
(3) Chapter 253 - State Lands
(4) Chapter 258 - State Parks and Preserves
(5) Chapter 259 - Land Acquisition for Conservation or Recreation
(6) Chapter 260 - Recreational Trail Systems
(7) Chapter 267 - Archives, History, and Records Management
(8) Chapter 288 - Commercial Development and Capital Improvements
(9) Chapter 370 - Saltwater Fisheries
(10) Chapter 372 - Wildlife
(11) Chapter 373 - Water Resources
(12) Chapter 375 - Outdoor Recreation and Conservation
(13) Chapter 376 - Pollution Discharge, Prevention and Removal
(14) Chapter 377 - Energy Resources

(15) Chapter 403 - Environmental Control
(16) Chapter 582 - Soil and Water Conservation

1. Chapter 161 – Beach and Shore Preservation

The enforceable policies in this chapter recognize that coastal areas are among the State's most valuable natural, aesthetic, and economic resources and that they protect and provide habitat for a variety of plant and animal life. The State is required to protect beach and dune systems from imprudent activities that could weaken, damage, or destroy the integrity of the system; manage coastal sediments to reduce erosion; and restore and maintain critically eroding beaches. The State also designates coastal areas used, or likely to be used, by sea turtles for nesting and prohibits the removal of vegetative cover that binds sand. This chapter includes Part I, Regulation of Construction, Reconstruction, and Other Physical Activity; Part II, Beach and Shore Preservation Districts; and Part III, Coastal Zone Protection.

As Marathon will be using the existing dock and port facilities in the Port Fourchon, Louisiana area during the proposed drilling operations, there will be no new construction, dredging, or filling on Florida's lands or waters that could weaken, damage, or destroy the integrity of the system or cause erosion of beaches. In addition, oil spill impacts on Florida beaches and other coastal areas are highly unlikely due to (1) the use of state-of-the-art equipment and technology for well control and blowout prevention, in order to prevent an oil spill; (2) the measures detailed in Marathon's SROSRP, which addresses procedures for containment, recovery, and removal of an oil spill; and (3) the distance from shore (approximately 117 miles). The precautions included in Marathon's plan are consistent with the core policies of protecting beach and dune systems. Therefore, the proposed activities are consistent with Chapter 161.

2. Chapter 252 – Emergency Management

The enforceable policies of this chapter direct the State to reduce the vulnerability of its people and property to natural and manmade disasters; prepare for, respond to, and reduce the impacts of natural and manmade disasters; and decrease the time and resources needed to recover from disasters. Disaster mitigation is necessary to ensure the common defense of Floridians' lives and to protect the public peace, health, and safety. The policies provide the means to assist in the prevention or mitigation of emergencies that may be caused or aggravated by the inadequate planning or regulation of facilities and land uses. State agencies are directed to keep land uses and facility construction under continuing study and identify areas that are particularly susceptible to natural or manmade catastrophic occurrences.

The proposed activities do not involve construction or operation of any facilities in the State of Florida. Therefore, a large oil spill is the only emergency that is considered relevant to this analysis. Marathon has developed a SROSRP that outlines response actions, inspection and maintenance of response equipment, required spill response drills, governmental notification procedures, inventories of response equipment, response team organization, spill movement monitoring, and contingency plans for oil spill containment, recovery and removal. An oil spill is highly unlikely to reach Florida waters or shorelines due to (1) the use of state-of-the-art equipment and technology for well control and blowout prevention, in order to prevent an oil spill; (2) the measures detailed in Marathon's SROSRP; and (3) the distance from shore (approximately 117 miles). The precautions included in Marathon's plan are consistent with the core policies of preparing for and responding to an oil spill and reducing the vulnerability of Florida's people and resources to impacts if such a spill occurred. Therefore, the proposed activities are consistent with Chapter 252.

3. Chapter 253 – State Lands

This chapter, in part, defines State-owned and State-managed lands and grants authority to acquire and lease lands and to grant rights-of-way and easements. The enforceable policies guide the management of State-owned and sovereign submerged lands and property by the Board of Trustees of the Internal Improvement Trust Fund (Trustees). Lands acquired for preservation, conservation, and recreation serve the public interest by contributing to the public health, welfare, and economy. In carrying out the requirements of this statute, the Trustees are directed to take necessary action to fully conserve and protect State lands, maintain natural conditions, protect and enhance natural areas and ecosystems, prevent damage and depredation, and preserve archaeological and historical resources. All submerged lands are considered single-use lands to be maintained in natural condition for the propagation of fish and wildlife and public recreation. Where multiple uses are permitted, ecosystem integrity, recreational benefits, and wildlife values are conserved and protected.

During the drilling operations in De Soto Canyon Block 354, Marathon will not seek to lease or acquire rights-of-way across Florida State lands. The proposed exploratory operations will be conducted offshore Alabama and at existing dock and port facilities located in the Port Fourchon, Louisiana area. There will be no pipeline construction or other activities requiring acquisition of rights-of-way or easements on Florida State lands. In addition, oil spill impacts on State-owned and managed lands are highly unlikely due to (1) the use of state-of-the-art equipment and technology for well control and blowout prevention, in order to prevent an oil spill; (2) the measures detailed in Marathon's SROSRP, which addresses procedures for containment, recovery, and removal of an oil spill; and (3) the distance from shore (approximately 117 miles). The precautions in Marathon's plan are consistent with the core policies to fully conserve and protect State lands and other natural areas and ecosystems. Therefore, the proposed activities are consistent with Chapter 253.

4. Chapter 258 – State Parks and Preserves

State parks, aquatic preserves, and recreation areas are acquired to exemplify the state's natural values and to ensure that these values are conserved for all time. Parks and preserves are managed for the non-depleting use, enjoyment, and benefit of Floridians and visitors and to contribute to the State's tourist appeal. Aquatic preserves are recognized as having exceptional biological, aesthetic, and scientific value and are set aside for the benefit of future generations. Disruptive physical activities and polluting discharges are highly restricted in aquatic preserves. State managed wild and scenic rivers possess exceptionally remarkable and unique ecological, fish and wildlife, and recreational values and are designated for permanent preservation and enhancement for both the present and future.

Chapter 258 specifies limitations on dredge-and-fill activities, discharges, erection of structures, and drilling for oil or gas within aquatic preserves. Marathon's proposed activities in the Initial EP for De Soto Canyon Block 354 are not within or adjacent to any State parks or aquatic preserves. All discharges for the proposed activity will be governed by the National Pollutant Discharge Elimination System (NPDES) General Permit or an Individual Permit; impacts will be localized in deep, offshore waters and will not have any effect on State parks, aquatic preserves, and recreation areas. Finally, oil spill impacts in these coastal areas are highly unlikely due to (1) the use of state-of-the-art equipment and technology for well control and blowout prevention, in order to prevent an oil spill; (2) the measures detailed in Marathon's SROSRP, which addresses procedures for containment, recovery, and removal of an oil spill; and (3) the distance from shore (approximately 117 miles). The precautions in Marathon's plan are consistent with the core policies of preserving and protecting the natural resources and aesthetic values of Florida's State parks, aquatic preserves, and recreation areas. Therefore, the proposed activities are consistent with Chapter 258.

5. Chapter 259 – Land Acquisition for Conservation or Recreation

This chapter discusses the "Land Conservation Act" and the acquisition of lands or water areas for preservation, conservation, and recreational purposes. The chapter indicates an area is of special importance to the State if it involves an endangered or natural resource in imminent danger of development, is of unique value to the State, will result in irreparable loss to the State, or will impair the State's ability to manage or protect other State-owned lands. The enforceable policies guide the acquisition and management of lands to conserve and maintain the State's unique natural resources, protect environmental quality, and provide recreation opportunities for the benefit of future generations. Florida's legislature and citizens have made a tremendous financial commitment to long-term land acquisitions that will preserve and restore unique ecosystems, habitats, water resources, and recreational lands.

Marathon will be using existing dock and port facilities in Port Fourchon, Louisiana during the proposed activities. Therefore, there will be no new development, construction, dredging, or filling on Florida's lands or waters. In addition, all discharges for the proposed activity will be governed by the NPDES General Permit or an Individual Permit; impacts will be localized in deep, offshore waters and will not have any effect on Florida lands being acquired or managed for preservation, conservation, or recreational purposes. Finally, oil spill impacts in these coastal areas are highly unlikely due to (1) the use of state-of-the-art equipment and technology for well control and blowout prevention, in order to prevent an oil spill; (2) the measures detailed in Marathon's SROSRP, which addresses procedures for containment, recovery, and removal of an oil spill; and (3) the distance from shore (approximately 117 miles). The precautions in Marathon's plan are consistent with the core policies of managing lands to conserve and maintain the State's unique natural resources, protect environmental quality, and provide recreation opportunities. Therefore, the proposed activities are consistent with Chapter 259.

6. Chapter 260 – Recreational Trails System

This chapter discusses the "Florida Greenways and Trails Act" and the State policies to conserve, develop, and use its natural resources for healthful and recreational purposes by the establishment of a "Florida Greenways and Trails System." The System serves to provide recreational opportunities, including, among others, canoeing, jogging, and historical and archeological interpretation, by acquiring designated lands and waterways for open space to benefit environmentally sensitive lands and wildlife.

As Marathon will be using existing dock and port facilities in the Port Fourchon, Louisiana area, there will be no new construction, dredging, or filling on Florida's lands or waters, and no motorized watercraft will conduct any operations within or adjacent to any defined canoe trail necessary to ensure the safe use of a water body for canoes. Therefore, the proposed activities are consistent with the core policies of Chapter 260.

7. Chapter 267 – Archives, History, and Records Management

This chapter discusses the "Florida Historical Resources Act," the State policy to locate, inventory, and evaluate historic properties, and the preservation by the Division of Historical Resources of the Department of State, of all historical property, including sunken or abandoned ships with intrinsic, historical, or archaeological value. The enforceable policies recognize the State's rich and unique heritage of historic resources and direct the State to locate, acquire, protect, preserve, operate, and interpret historic and archeological resources for the benefit of current and future generations of Floridians. Objects or artifacts with intrinsic historic or archeological value located on, or abandoned on, State-owned lands or State-owned submerged lands belong to the citizens of the State. The Act operates

in conjunction with the National Historic Preservation Act of 1966 to require State and Federal agencies to consider the effect of their direct or indirect actions on historic and archeological resources. These resources cannot be destroyed or altered unless no prudent alternative exists. Unavoidable impacts must be mitigated.

In compliance with MMS NTL 98-20, Marathon engaged Geoscience Earth & Marine Services, Inc. (GEMS) to evaluate 3-D seismic data in the preparation of a Shallow Hazards Report, in order to identify and assess the seafloor and shallow geologic conditions in De Soto Canyon Block 354.

De Soto Canyon Block 354 is not on the MMS list of blocks determined to have a high probability of either prehistoric or historic archaeological resources. Therefore, no archaeological survey or report is required under NTL 2002-G01. As part of the Shallow Hazards Report, GEMS reviewed its database of manmade facilities and seafloor obstructions, and determined that there were no listed facilities or obstructions. It is highly unlikely that objects or artifacts with intrinsic historic or archaeological value would be affected by Marathon's activities. Therefore, the proposed activities are consistent with the core policies of Chapter 267.

8. Chapter 288 – Commercial Development and Capital Improvements

Chapter 288 establishes enforceable policies that promote and develop the general business, trade, and tourism components of the State economy. The policies include requirements to protect and promote the natural, coastal, historical, and cultural tourism assets of the State; foster the development of nature-based tourism and recreation; and upgrade the image of Florida as a quality destination. Natural resource-based tourism and recreational activities are critical sectors of Florida's economy. The needs of the environment must be balanced with the need for growth and economic development.

As Marathon will be using existing dock and port facilities in the Port Fourchon, Louisiana area during the proposed drilling and completion operations, there will be no activities conducted in Florida that would affect the general business, trade, or tourism components of the State economy. There will be no project-associated vessel or aircraft traffic in Florida waters, and there are no plans to purchase supplies or equipment in Florida. The project area is approximately 117 miles from the nearest Florida shoreline, and activities will not be visible from the coast or Florida State waters. As discussed in the Environmental Report, water quality impacts of routine discharges will be localized in the vicinity of the drillsites and will not affect Florida lands or waters. Disposal of trash and debris into the ocean is strictly prohibited, and waste management practices required by MMS under NTL-98-27 and Lease Stipulation No. 4 will minimize the chance of trash or debris being lost overboard and subsequently washing up on beaches. Oil spill impacts in Florida coastal areas are highly unlikely due to (1) the use of state-of-the-art equipment and technology for well control and blowout prevention, in order to prevent an oil spill; (2) the measures detailed in Marathon's SROSRP, which addresses procedures for containment, recovery, and removal of an oil spill; and (3) the distance from shore (approximately 117 miles). The precautions in Marathon's plan are consistent with the core policies of protecting the natural, coastal, historical, and cultural tourism assets of the State and maintaining the image of Florida as a quality destination. Therefore, the proposed activities are consistent with Chapter 288.

9. Chapter 370 – Saltwater Fisheries

The enforceable policies of this chapter direct the State to conserve and manage its renewable marine fishery resources through the protection and management of marine habitat and saltwater fisheries. The paramount conservation and management objective is the continuing health and abundance of the resource. Best available information must be used to manage and protect the State's marine crustacean,

shell, and finfish resources and to regulate the commercial and recreational use of the State's saltwater fisheries to ensure optimum sustained benefits to the people of the State.

As discussed in the Environmental Report, liquid and solid wastes from project activities may temporarily affect water quality in the immediate vicinity of the drillsites in De Soto Canyon Block 354. All discharges will be in compliance with the standards imposed by the NPDES General Permit or an Individual Permit. Water quality is expected to quickly return to normal in the area after drilling or other operations have been completed. Due to the low toxicity and rapid dispersion of discharges, little or no impact on water column biota is likely, including fish larvae that recruit to nearshore nursery areas.

Discharged water-based drilling muds and cuttings may increase the sedimentation rate around the drillsite, possibly causing burying or smothering of some benthic organisms. Results of previous monitoring programs and modeling studies suggest that burial would most likely occur within an area of a few hectares around the drillsite. As described in the Environmental Report, recovery from these temporary impacts is expected over a period of months to years.

Other minor discharges in accordance with the NPDES General Permit or an Individual Permit, including sanitary and domestic waste, deck drainage, uncontaminated seawater for cooling machinery, and desalination brine, may cause localized, short-term impacts on water quality near the drillsite. There is a very low probability that a diesel spill may occur while conducting drilling operations. The potential impacts of these types of spills on Florida's coastal zone are discussed in the Environmental Report.

Marathon's SROSRP outlines response actions for specific hypothetical spill events. The SROSRP makes provisions for the use of a dispersant by boat or aerial application, but notes that before a dispersant can be applied, Federal and State authorities must grant permission. Additional items that are addressed in the plan include provisions for inspection and maintenance of response equipment, required spill response drills, procedures for spill notification to government agencies, inventories of locally and nationally available response equipment, hierarchy of response team organization, provisions for disposal of wastes, and procedures for monitoring and predicting spill movement.

Finally, Marathon will be using the most modern dynamically positioned drillship in its proposed activities, with state-of-the-art equipment and technology for well control and blowout prevention, in order to prevent an oil spill, and will be operating in compliance with the NPDES General Permit or an Individual Permit regarding authorized discharges. If an oil spill should occur, Marathon's SROSRP addresses plan and procedures for containment, recovery, and removal. The precautions in Marathon's plan are consistent with the core policies of conserving and protecting marine habitat and saltwater fisheries and maintaining the continuing health and abundance of the resource. Therefore, Marathon's proposed activities are consistent with Chapter 370.

10. Chapter 372 – Wildlife

This chapter discusses the "Florida Endangered and Threatened Species Act" and its implementation by the Fish and Wildlife Conservation Commission to conserve and protect the fish and wildlife resources of the State, particularly those species defined as endangered or threatened. The Fish and Wildlife Conservation Commission has established a Wildlife Habitat Program and a Conservation and Recreation Lands Program Trust Fund for acquiring and managing lands for the conservation of fish and wildlife. The enforceable policies direct the State to conserve its diverse fish and wildlife resources. Florida has more endangered or threatened species than any other continental State; therefore, the protection of species defined as endangered or threatened is emphasized. State lands that provide habitat needed by these species shall be maintained and enhanced for their value as fish and wildlife habitat. Substances thrown, spilled, drained, or discharged into fresh waters that injure or kill fish are expressly prohibited.

As Marathon will be using the existing dock and port facilities in the Port Fourchon, Louisiana area, there will be no new construction, dredging, or filling on Florida's lands or waters to affect wildlife habitats or recreational lands. As discussed in the Environmental Report, routine discharges will be localized in the vicinity of the drillsites and will not have any effects on Florida lands, waters, or wildlife. Disposal of trash and debris into the ocean is strictly prohibited, and waste management practices required by MMS under NTL 98-27 and Lease Stipulation No. 4 will minimize the chance of trash or debris being lost overboard and subsequently endangering Florida wildlife. Oil spill impacts in Florida coastal areas are highly unlikely due to (1) the use of state-of-the-art equipment and technology for well control and blowout prevention, in order to prevent an oil spill; (2) the measures detailed in Marathon's SROSRP, which addresses procedures for containment, recovery, and removal of an oil spill; and (3) the distance from shore (approximately 117 miles). The precautions in Marathon's plan are consistent with the core policies of conserving Florida's fish and wildlife resources, including endangered or threatened species. Therefore, the proposed activities are consistent with Chapter 372.

11. Chapter 373 – Water Resources

This chapter establishes enforceable policies that guide the management and protection of water resources, water quality and environmental quality. The policies address the conservation of surface and ground waters for full beneficial use; sustainable water management; preservation of natural resources, fish, and wildlife; protecting public land; and promoting the health and general welfare of Floridians. The State manages and conserves water and related natural resources by determining whether activities will unreasonably consume water, degrade water quality, or adversely affect environmental values such as protected species habitat, recreational pursuits, and marine productivity.

As Marathon will be using the existing dock and port facilities in the Port Fourchon, Louisiana area, there will be no usage of Florida water resources and no new construction, dredging, or filling on Florida's lands or waters to affect water quality, protected habitat, recreational pursuits, or marine productivity. All discharges for the proposed activity will be governed by the NPDES General Permit or an Individual Permit; impacts will be localized in deep, offshore waters and will not pollute Florida land or waters. In addition, oil spill impacts on Florida water resources are highly unlikely due to (1) the use of state-of-the-art equipment and technology for well control and blowout prevention, in order to prevent an oil spill; (2) the measures detailed in Marathon's SROSRP, which addresses procedures for containment, recovery, and removal of an oil spill; and (3) the distance from shore (approximately 117 miles). The precautions in Marathon's plan are consistent with the core policies of conserving surface and ground waters for full beneficial use and protecting natural resources, fish, wildlife, and public lands. Therefore, the proposed activities are consistent with Chapter 373.

12. Chapter 375 – Outdoor Recreation and Conservation

This chapter discusses the "Outdoor Recreation and Conservation Act of 1963" and the responsibility of the Department of Environmental Protection (DEP) to implement a comprehensive outdoor recreation plan in cooperation with the Fish and Wildlife Conservation Commission and the water management districts. The DEP participates in the land and water conservation fund program to acquire lands and water areas for outdoor recreation, natural resource conservation, wildlife and forestry management, and water conservation and control. The chapter also empowers the Fish and Wildlife Conservation Commission to regulate motor vehicle access and traffic control on public lands.

Marathon will be using the existing dock and port facilities in the Port Fourchon, Louisiana area. Therefore, there will be no new construction, dredging, or filling on Florida's lands or waters, and no new vehicle traffic on public lands. In addition, oil spill impacts on Florida conservation, recreation, or

resource areas are highly unlikely due to (1) the use of state-of-the-art equipment and technology for well control and blowout prevention, in order to prevent an oil spill; (2) the measures detailed in Marathon's SROSRP, which addresses procedures for containment, recovery, and removal of an oil spill; and (3) the distance from shore (approximately 117 miles). The precautions in Marathon's plan are consistent with the core policies of preserving Florida's lands and water areas for outdoor recreation, conservation, and wildlife management. Therefore, the proposed activities are consistent with Chapter 375.

13. Chapter 376 – Pollution Discharge Prevention and Removal

Chapter 376 declares that the preservation of the seacoast as a source of public and private recreation and the preservation of water and certain lands are matters of the highest urgency and priority and shall be accomplished by maintaining surface and ground water, coastal waters, estuaries, tidal flats, beaches, and public lands adjoining the seacoast in as close to a pristine condition as possible. The discharge of pollutants into or upon any coastal waters, estuaries, tidal flats, beaches, and lands adjoining the seacoast of the State is declared to be inimical to the paramount interests of the State and is prohibited. The statute provides for hazards and threats of danger and damages resulting from any pollutant discharge to be evaluated; requires the prompt containment and removal of pollution; provides penalties for violations; and ensures the prompt payment of reasonable damages from a discharge. Portions of Chapter 376 serve as a complement to the national contingency plan portions of the Federal Water Pollution Control Act.

Marathon has prepared a SROSRP as required for EPs in the Eastern Planning Area, which must be consistent with the National Contingency Plan and with the Oil Pollution Act of 1990 (OPA) in order to obtain MMS approval. As Marathon will be using the existing dock and port facilities in the Port Fourchon, Louisiana area, there will be no transfers between vessels and Florida onshore facilities. As to transfers between offshore facilities and vessels, Marathon's SROSRP outlines response actions, inspection and maintenance of response equipment, required spill response drills, governmental notification procedures, inventories of response equipment, response team organization, spill movement monitoring, and contingency plans for oil spill containment, recovery, and removal. The precautions in Marathon's plan are consistent with the core policies of preventing unauthorized pollutant discharges and maintaining surface and ground water, coastal waters, estuaries, tidal flats, beaches, and public lands in as close to a pristine condition as possible. Therefore, the proposed activities are consistent with Chapter 376.

14. Chapter 377 – Energy Resources

The State's policy is to conserve and control the oil and gas resources in the State, including products made therefrom and to safeguard the health, property, and welfare of Floridians. To accomplish this, Chapter 377 addresses the regulation, planning, and development of the energy resources of the State. The DEP is authorized to regulate all phases of exploration, drilling, and production of oil, gas, and other petroleum products in the State. This chapter describes the permitting requirements and criteria necessary to drill and develop for oil and gas. DEP rules ensure that all precautions are taken to prevent the spillage of oil or any other pollutant in all phases of extraction and transportation.

The State explicitly prohibits pollution resulting from drilling and production activities. No person drilling for or producing oil, gas, or other petroleum products may pollute land or water; damage aquatic or marine life, wildlife, birds, or public or private property; or allow any extraneous matter to enter or damage any mineral or freshwater-bearing formation. Penalties for violations of any provisions of this chapter are detailed.

The proposed project does not involve any drilling or production activities in Florida that are regulated by the Florida DEP. All discharges will be in accordance with the NPDES General Permit or an Individual Permit; impacts will be localized in deep, offshore waters and will not pollute Florida land or waters,

damage wildlife or public or private property, or contaminate any mineral or freshwater-bearing formation. Disposal of trash and debris into the ocean is strictly prohibited, and waste management practices required by MMS under NTL No. 2003-G11 and Lease Stipulation No. 4 will minimize the chance of trash or debris being lost overboard and subsequently washing up on Florida shorelines or waters. Oil spill impacts in Florida coastal areas are highly unlikely due to (1) the use of state-of-the-art equipment and technology for well control and blowout prevention, in order to prevent an oil spill; (2) the measures detailed in Marathon's SROSRP, which addresses procedures for containment, recovery, and removal of an oil spill; and (3) the distance from shore (approximately 117 miles). The precautions in Marathon's plan are consistent with the core policies of safeguarding the health, property, and welfare of Floridians and preventing pollution during drilling activities. Therefore, the proposed activities are consistent with Chapter 377.

15. Chapter 403 – Environmental Control

Chapter 403 establishes enforceable policies that guide environmental control efforts by conserving State waters, protecting and improving water quality for consumption and for the propagation of fish and wildlife, and maintaining air quality to protect human health and plant and animal life. Statutory provisions are enacted to protect the health, peace, safety, and general welfare of the people of the State. The statute provides wide-ranging authority to address various environmental control concerns, including air and water pollution, resource recovery and management, solid and hazardous waste management, drinking water protection, pollution prevention, ecosystem management, and natural gas transmission pipeline siting. Chapter 403 declares that pollution of the air and waters is a menace to public health and is harmful to wildlife, fish, and other aquatic life; that the policy of the State is to conserve, maintain, and improve its waters and air quality, and to develop a comprehensive program for its prevention, abatement, and control of pollution by establishing ambient air and water quality standards.

The Projected Air Quality Emissions Report (EP Appendix G) for the proposed activities falls well below allowable exemption levels and will not result in onshore ambient air concentrations above significant levels as prescribed in the regulations. Therefore, the proposed activities are consistent with the core policies of Chapter 403.

All discharges (inclusive of drilling fluids and cuttings, sanitary and domestic wastes, deck drainage, and miscellaneous wastes) shall be in compliance with the standards imposed by the USEPA Region IV NPDES General Permit or an Individual Permit. As discussed in the Environmental Report, discharges from project activities may temporarily affect water quality in the immediate vicinity of the drillsites, but would not affect water quality or wildlife in Florida State waters. Pollution of coastal waters by an oil spill is highly unlikely due to (1) the use of state-of-the-art equipment and technology for well control and blowout prevention, in order to prevent an oil spill; (2) the measures detailed in Marathon's SROSRP, which addresses procedures for containment, recovery, and removal of an oil spill; and (3) the distance from shore (approximately 117 miles). The precautions in Marathon's plan are consistent with the core policies of conserving State waters and protecting water and air quality. Therefore, the proposed activities are consistent with Chapter 403.

16. Chapter 582 – Soil and Water Conservation

The enforceable policies in this chapter require the conservation, development, and use of soil and water resources to preserve natural resources and control and prevent soil erosion. Soil stabilization preserves State and private lands, protects wildlife habitat, maintains water quality, assists in the maintenance of navigable waterways, and prevents the impairment of dams and reservoirs.

The proposed exploratory operations will be conducted offshore Alabama and at Marathon's existing dock and port facilities located in the Port Fourchon, Louisiana area. Routine operations will not involve any construction or other activities in Florida that could result in soil erosion. Oil spill impacts on Florida soils are highly unlikely due to (1) the use of state-of-the-art equipment and technology for well control and blowout prevention, in order to prevent an oil spill; (2) the measures detailed in Marathon's SROSRP, which addresses procedures for containment, recovery, and removal of an oil spill; and (3) the distance from shore (approximately 117 miles). Any cleanup or recovery activities in Florida would be conducted using applicable best management practices to minimize soil erosion. The precautions in Marathon's plan are consistent with the core policies of preserving Florida's natural resources and preventing soil erosion. Therefore, the proposed activities are consistent with Chapter 582.

CERTIFICATION

The proposed activity complies with the enforceable policies of Florida's approved Coastal Management Program and will be conducted in a manner consistent with such Program.

Marathon Oil Company

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Joseph J. Schneider
Regulatory Compliance Representative
September 15, 2003

PLAN INFORMATION FORM

GENERAL INFORMATION

Type of OCS Plan:	X	Exploration Plan (EP)		Development Operations Coordination Document (DOCD)
Company Name:	Marathon Oil Company		MMS Operator Number:	00724
Address:	P.O. Box 3128 Houston, TX 77253-3128		Contact Person:	Joseph J. Schneider
			Phone Number:	(713) 296-1927
			Email Address:	JJSchneider@MarathonOil.com

Lease: G-23507	Area: De Soto Canyon	Block: 354	Project Name (If Applicable): Stegodon

Objective(s): ☐ Oil ☒ Gas ☐ Sulphur ☐ Salt Onshore Base: Port Fourchon Distance to Closest Land (Miles): 80

Description of Proposed Activities (Mark all that apply)

☒ Exploration drilling	☐ Development drilling
☐ Well completion	☐ Installation of production platform
☐ Well test flaring	☐ Installation of production facilities
☐ Installation of well protection structure	☐ Installation of satellite structure
☐ Installation of subsea wellheads and/or manifolds	☐ Installation of lease term pipelines
☒ Temporary well abandonment	☐ Commence production
☐ Other (specify and describe)	

Do you propose to use new or unusual technology to conduct your activities?		Yes		No
Do you propose any facility that will serve as a host facility for deepwater subsea development?		Yes		No
Do you propose any activities that may disturb an MMS-designated high-probability archaeological area?		Yes		No

Tentative Schedule of Proposed Activities

Proposed Activity	Start Date	End Date	No. of Days
Drill location A and Abandon	3/15/04	5/9/04	56
Drill location B and Abandon	5/10/04	7/4/04	56
Drill location C and Abandon	1/5/05	2/25/05	56
Drill location D and Abandon	2/26/04	4/22/05	56

Description of Drilling Rig

☐ Jackup	☒ Drillship	☐ Caisson	☐ Tension leg platform
☐ Gorilla Jackup	☐ Platform rig	☐ Well protector	☐ Compliant tower
☐ Semisubmersible	☐ Submersible	☐ Fixed platform	☐ Guyed tower
☐ DP Semisubmersible	☐ Other (Attach Description)	☐ Subsea manifold	☐ Floating production system
☐ Drilling Rig Name (If Known):		☐ Spar	☐ Other (Attach description)

Description of Lease Term Pipelines

From (Facility/Area/Block)	T0 (Facility/Area/Block)	Diameter (inches)	Length (Feet)	Product

WELL INFORMATION FORM
(USE SEPARATE FORM FOR EACH LEASE)

PROPOSED WELL/STRUCTURE LOCATIONS

WELL / STRUCTURE NAME	SURFACE LOCATION	BOTTOM-HOLE LOCATION (FOR WELLS)
Well X Name: A	CALLS: 6,563.00' F N L & 2,143.60' F W L OF LEASE OCS G-23507 , DE SOTO CANYON AREA, BLOCK 354 X: 1,364,383.60' Y: 10,384,477.00' LAT: 28° 36' 45.372" LONG: -87° 51' 38.111" TVD (IN FEET): MD (IN FEET): WATER DEPTH (IN FEET): 7,551'	CALLS: F L & F L OF LEASE OCS , AREA, BLOCK X: Y: LAT: LONG:
Well X Name: B	CALLS: 7,301.18' F N L & 2,799.76' F W L OF LEASE OCS G-23507 , DE SOTO CANYON AREA, BLOCK 354 X: 1,365,039.76' Y: 10,383,738.82' LAT: 28° 36' 38.108" LONG: -87° 51' 30.688" TVD (IN FEET): MD (IN FEET): WATER DEPTH (IN FEET): 7,553'	CALLS: F L & F L OF LEASE OCS , AREA, BLOCK X: Y: LAT: LONG:
Well X Name: C	CALLS: 5,586.09' F S L & 5,166.32' F E L OF LEASE OCS G-23507 , DE SOTO CANYON AREA, BLOCK 354 X: 1,372,913.68' Y: 10,380,786.09' LAT: 28° 36' 09.416" LONG: -87° 50' 02.092" TVD (IN FEET): MD (IN FEET): WATER DEPTH (IN FEET): 7,584'	CALLS: F L & F L OF LEASE OCS G-23507 , DE SOTO CANYON AREA, BLOCK X: Y: LAT: LONG:
Well X Name: D	CALLS: 664.89' F S L & 3,443.90' F E L OF LEASE OCS G-23507 , DE SOTO CANYON AREA, BLOCK 354 X: 1,374,636.10' Y: 10,375,864.89' LAT: 28° 35' 20.795" LONG: -87° 49' 42.381" TVD (IN FEET): MD (IN FEET): WATER DEPTH (IN FEET): 7,609'	CALLS: F L & F L OF LEASE OCS , AREA, BLOCK X: Y: LAT: LONG: