

Handwritten:
James
OCS-G29093
SN 18307
18308
Mans

In Reply To: MS 5232

March 2, 2012

Ms. Kemberlia Ducote
LLOG Exploration & Production Company, L.L.C.
1001 Ochsner Blvd.,
Suite 200
Covington, Louisiana 70433

Dear Ms. Ducote:

Reference is made to the following application that has been reviewed by this office:

Application Type: New Right-of-Way Pipeline
Application Date: May 26, 2011
Work Description: Create 200-foot wide Right-of-Way and install, operate, and maintain the following:

A 200-foot wide right-of way to install, operate and maintain a 5.563-inch pipeline, 2.22 miles in length, to transport bulk oil from a Pipeline End Manifold (PEM) through a 51ft long jumper and a PLET in Block 199 to Platform A in Block 243 via a 5.563-inch pipeline 2.22 miles in length, also and a 4-inch associated umbilical, 2.17 miles in length, from Platform A in Block 243 to umbilical Terminal Hub (UTH) in Block 199, all located in Mississippi Canyon Area.

Assigned Right-of-Way Number: OCS-G29093
Assigned Segment Number: 18307
Umbilical Segment Number: 18308

Pursuant to 43 U.S.C. 1334(e) and 30 CFR 250.1000(d), your application is hereby approved.

Segment No.	MAOP (psig)	MAOP Determination
18307	3705	Valves, Flanges, Hydrostatic Test Pressure
18308		Umbilical

Please be reminded that, in accordance with 30 CFR 250.1008(a), you must notify the Regional Supervisor at least 48 hours prior to commencing the installation or relocation of a pipeline or conducting a pressure test on the pipeline. Commencement notification(s) should be faxed to (504) 736-2408. In accordance with 30 CFR 250.1008 (b), you are reminded to submit a report to the Regional

Supervisor within 90 days after completion of any pipeline construction. Also in accordance with a letter to Lessees dated April 18, 1991, a copy of the as-built plat(s) must be submitted to the NOAA-National Ocean Service-OCS, Chief, Nautical Data Branch, N/CS26, 1315 East West Highway, Silver Spring, MD, 20910-3282

Sincerely,

(org. sigd.) B. Hunter

Nick Wetzel
Regional Supervisor
Regional Field Operations

bcc: 1502-01 Segment No. 18307 & 18308 ROW OCS-G29093 (MS 5232)
1502-01 ROW OCS-G29093 (Scanning) (MS 5033)
MS 5250 New Orleans District

BHunter:ttg:3/2/2012:Llog-18307

LLOG

EXPLORATION OFFSHORE, L.L.C.

5" SN 19309

(G29093)

JMB 4/11 SN 18308

Caterway Risor → CVA?

May 26, 2011

Minerals Management Service
RECEIVED

MAY 27 2011

Mr. Michael Saucier
Regional Supervisor Field Operations
Bureau of Ocean Energy Management, Regulation, and Enforcement
1201 Elmwood Park Boulevard
New Orleans, Louisiana 70123-2394
MS 5232

Office of Field Operations
Pipeline Section

RE: **Application for Installation of One (1) 5.563" Right-of-Way Bulk Oil Pipeline,**
one (1) 4.0" O.D. Subsea Control Umbilical, one (1) 5.563" O.D. Manifold Flowline
Jumper, and one (1) 4.5" O.D. Well Flowline Jumper, from LLOG's Mississippi Canyon
Block 199 Subsea Manifold, OCS-G 32301 to W&T Energy VI, LLC's Platform "A",
Mississippi Canyon Block 243, OCS-G-19931 Gulf of Mexico, Offshore, Louisiana

Gentlemen:

Pursuant to the authority granted in 43 U.S.C. 1334 (e) and the regulations contained in Title 30 CFR Part 250, Subpart J and Title 49 CFR Part 195, LLOG Exploration Offshore, L.L.C., (LLOG), hereby submits this application, in quadruplicate, for the right-a-way two hundred feet (200') in width for the construction, maintenance and operation of one (1) 5.563" O.D. bulk oil pipeline, one (1) associated 4.0" O.D. subsea control umbilical, one (1) 5.563" O.D. Manifold Flowline Jumper and one (1) 4.5" O.D. Well Flowline Jumper in the Mississippi Canyon Area, Block 199, Gulf of Mexico. LLOG agrees that said right-of-way, if approved, will be subject to the terms and conditions of said regulations and will be bound by the provisions of the OCS Lands Act, as amended.

The proposed ROW pipeline will be part of a dual pipeline system being installed to produce LLOG's subsea wells in Mississippi Canyon Area, Block 199, and is designated by LLOG as the **West Bulk Oil Pipeline**. The 5.563" O.D. bulk oil pipeline will originate from a pipeline end termination (PLET) located near LLOG's Subsea Well Nos. SS001 and SS002 in Mississippi Canyon Area, Block 199, OCS-G32301, then travel in a southerly direction for approximately 11,733.46 feet (2.22 statute miles) in Federal waters off the Louisiana Coast and terminate at the Mississippi Canyon Area, Block 243, Platform "A", OCS-G 19931 operated, by W&T Energy IV, L.L.C. (MC 243 "A" Platform).

The proposed 4.0" O.D. umbilical will originate from the MC 243 "A" Platform, and travel in a northerly direction for approximately 11,472.95' (2.17 statute miles) and terminate at an Umbilical Termination Head (UTH) in Mississippi Canyon Area, Block 199, OCS-G 32301, near the MC 199 Subsea Well Nos. 001 and 002.

LLOG Exploration Offshore, L.L.C.
MC 199 Right-of-Way Oil Pipeline Application

May 26, 2011

Page 2

The proposed 5.563" O.D. x 51.03' long Manifold Flowline Jumper will originate at the Mississippi Canyon Area, Block 199 Subsea Manifold and terminate at the MC 199 West Pipeline PLET.

The proposed 4.5" O.D. x 53.71' long Well Flowline Jumper will originate at the existing MC 199 Subsea Well No. SS002 subsea tree and terminate at the MC 199 Subsea Manifold.

The pipeline installation contractor will install the proposed 5.563" O.D. pipeline by utilizing reeled pipe, "J" Lay methodology. The control umbilical will be reeled out from a dynamically positioned ROV/Construction support vessel. No anchors will be deployed from the installation vessels. The seafloor in the area of the proposed route is relatively smooth. Water depths along the proposed route range from a minimum depth of 2460 feet at the MC 199 Subsea Manifold, slopes downward at an average rate of approximately 153 feet per mile to maximum of 2800 feet at MC 243 "A" platform.

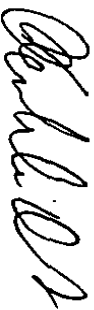
If the above and attached information meets with your approval, please issue the necessary permit at your earliest convenience. Inquiries concerning this application should be first directed to Edie Ridgel of LLOG Exploration Offshore, L.L.C. at edier@llog.com, 985.801.4344. Inquires can also be directed to Mr. Bruce Cooley of LLOG Exploration Offshore, L.L.C. at brucec@llog.com, 985.801.4300 or Mr. Pete Cruz of Pinnacle Engineering Company at petec@pinnacleengr.com, 713.784.1005.

Sincerely,

LLOG Exploration Offshore, L.L.C.

985-881-4738

Bruce Cooley 985 264030
Edie Ridgel



Kimberlia Ducote
Secretary

EBR
Attachments



United States Department of the Interior
BUREAU OF SAFETY AND ENVIRONMENTAL ENFORCEMENT
Gulf of Mexico OCS Region
1201 Elmwood Park Boulevard
New Orleans, LA 70123-2394

In Reply Refer To: MS 5232

February 24, 2012

Dr. Tassos Sachinis
DeepSea (UK) Ltd
Bradford House, 39a East Street,
Epsom, Surrey, KT17 1BL, UK

Dear Dr. Sachinis:

By the transmittal cover dated September 7, 2011, received by our office September 12, 2011, DeepSea (UK) Ltd, (Deep Sea), as the approved contracted certified verification agent (CVA) submitted an interim design phase report and by your transmittal cover dated January 31, 2012, received by our office February 1, 2012, Deep Sea submitted the final design phase report for the 5.563-inch OD SCR, which is associated with pending Right-of-way (ROW) Pipeline Segment No. (PSN) 18307 and Pipeline ROW OCS-G 29093, and LLOG's Mandy Project.

This riser will be installed on LLOG's Platform A, a mini tension leg production platform located in Mississippi Canyon Area, Block 243.

In accordance with 30 CFR 250.916(c)(4) and your recommendation, the BSEE hereby accepts the subject final design phase report.

Sincerely,

Angie D.

Gobert

Digitally signed by Angie D. Gobert
DN: cn=Angie D. Gobert, o=Regional
Field Operations, BSEE, ou=Pipeline
Section MS 5232
email=angie.gobert@bsee.gov, c=US
Date: 20120226 18:56:38 -0600

For: Nick Wetzel
Regional Supervisor
Regional Field Operations

cc: Mr. Bruce Cooley
LLOG Exploration Offshore, L.L.C.
1001 Ochsner Blvd., Suite 200
Covington, Louisiana 70433

Hunter, Bradley

From: Gobert, Angie
Sent: Monday, February 27, 2012 7:23 AM
To: 'sachinis@deepsea-eng.com'
Cc: 'Edie Ridgel'; 'Kumarasamy Varatha-Rajan'; Hunter, Bradley; 'bruceC@llog.com'
Subject: LLOG's ROW Pipeline Segment No. 18307 - Interim and Final Design Phase Report
Attachments: CVA_Design Final Report_LLOG_ROW PSN 18307_Mandy
Project_Acceptance_FINAL_2_24_2012_ADG.pdf

Dear Dr, Sachinis,

Please find attached the acceptance of the final design phase report for LLOG's Mandy Project regarding Right-of-way Pipeline Segment No. 18307' SCR.

Please ensure that the email contact of the individual responsible for confirming and submitting the final design report is included in the submittal.

Thank you for your cooperation.

Regards,
Angie D. Gobert
Senior Staff Petroleum Engineer
Pipeline Section - Regional Field Operations MS 5232
Bureau of Safety and Environmental Enforcement

(P) 504 736-2876
(F) 504 736-2208

2/27/2012

MC199

OCS-G-32301
LLOC

71+25.84'
BLOCKLINE CROSSING
X = 1,052,443.19'
Y = 10,438,560.00'
Lot = 28°45'06.013"N
Lon = 88°50'07.483"W

PROP. EAST 8.563' BULK OIL P/L

PROPOSED WEST 5.563' BULK OIL PIPELINE
TOTAL LENGTH = 11,733.46' = 2.22 statute miles

88+69.46'
SCR/P/L TRANSITION
X = 1,053,591.96'
Y = 10,437,249.91'
Lot = 28°44'53.218"N
Lon = 88°49'54.352"W

S42°24'35"E
2,211.28'

S42°24'35"E
1,000.00'

S42°24'35"E
1,864.00'

98+69.46'
TOUCHDOWN POINT
X = 1,054,266.39'
Y = 10,436,511.57'
Lot = 28°44'46.012"N
Lon = 88°49'46.649"W

MC243

OCS-G-19931
W&T

117+33.46' W&T
"A" PLATFORM
X = 1,055,523.52'
Y = 10,435,135.30'
Lot = 28°44'32.578"N
Lon = 88°49'32.291"W

CURVE 1 DATA	
PC1	32+12.48'
X	1,052,000.89'
Y	10,442,293.03'
Lot	28°45'42.901"N
Lon	88°50'13.098"W
P11	76+58.19'
X	1,052,775.04'
Y	10,438,144.24'
Lot	28°45'01.947"N
Lon	88°50'03.683"W
P11	1,051,099.78'
X	1,051,099.78'
Y	10,439,978.27'
R	4,000.00'
T	2,483.98'
Δ	63°40'48"
L	4,445.71'

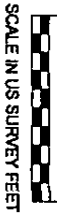
MC244

OCS-G-32305
DEVON

FOR PERMITTING ONLY. STATIONING AND LENGTHS REFER TO HORIZONTAL DISTANCES ONLY.

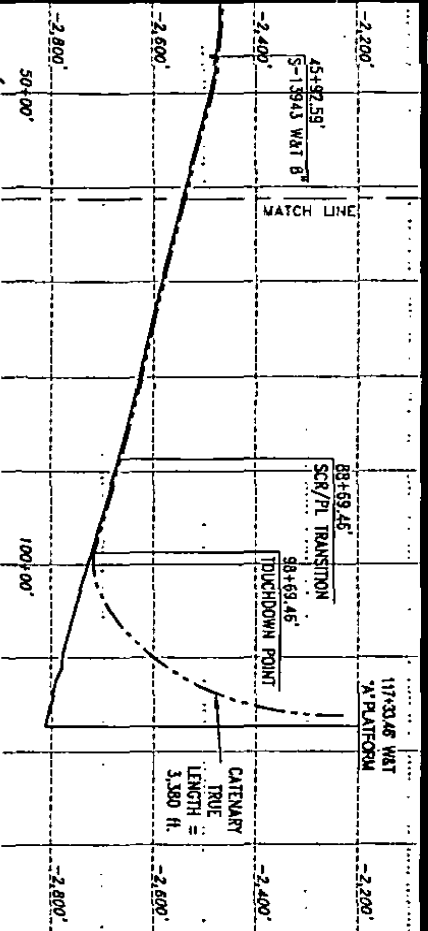
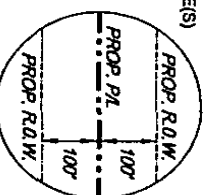
PLAN

2000'

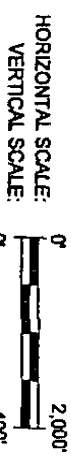


SCALE IN US SURVEY FEET

NADCON version 2.1 utilized for WGS84-NAD27 conversions.



PROFILE



DATE: 05/20/2011 TIME: 13:59 FILENAME: Z:\110092\ACAD\PERMIT\PRM110092_WEST.DWG

HORIZONTAL SCALE: 1" = 2,000'

VERTICAL SCALE: 1" = 400'

VERTICAL EXAGGERATION = 5



PROP. WEST 5.563' BULK OIL PIPELINE
Block 199 PLET to Block 243 "A" Platform
Mississippi Canyon Area

PREPARED BY:



C&C Technologies
SURVEY SERVICES

JOB No: 110092, 110367
FILENAME: PRM110092_WEST.DWG

REVISED: 05/09/2011
05/20/2011

DATE: Mar. 23, 2011
SHEET 3 of 3

130 E. WALSH SUITE 200 NEW ORLEANS, LA (504) 281-4600

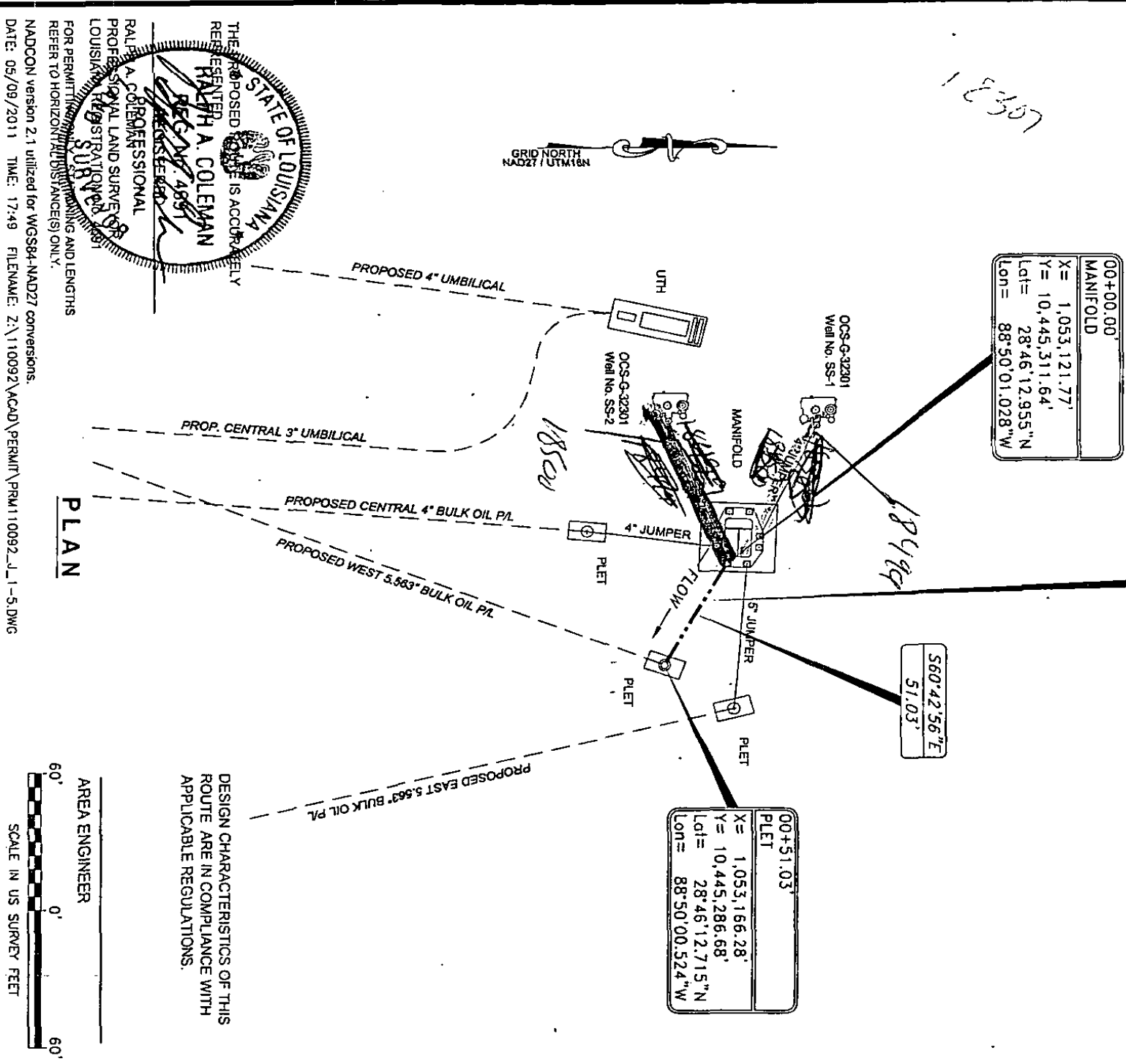
MC199
OCS-G-32301
LLOC

PROPOSED 5" MANIFOLD JUMPER
TOTAL LENGTH = 51.03' = 0.01 statute miles

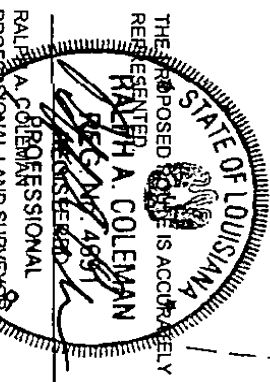
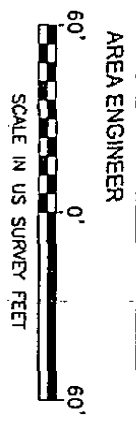
00+00.00'
MANIFOLD
X = 1,053,121.77'
Y = 10,445,311.64'
Lat = 28°46'12.955"N
Lon = 88°50'01.028"W

560°42'56"E
51.03'

00+51.03'
PLET
X = 1,053,166.28'
Y = 10,445,286.68'
Lat = 28°46'12.715"N
Lon = 88°50'00.524"W



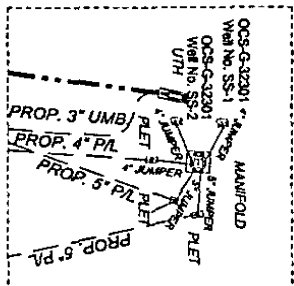
DESIGN CHARACTERISTICS OF THIS ROUTE ARE IN COMPLIANCE WITH APPLICABLE REGULATIONS.



THE PROPOSED ROUTE IS ACCURATELY REGENERATED FROM THE SURVEY RECORDS OF RALPH A. COLEMAN, REGISTERED PROFESSIONAL LAND SURVEYOR, STATE OF LOUISIANA. THIS DRAWING AND LENGTHS REFER TO HORIZONTAL DISTANCES ONLY.
NADCON version 2.1 utilized for WGS84-NAD27 conversions.
DATE: 05/09/2011 TIME: 17:49 FILENAME: Z:\110092\ACAD\PERMIT\PRM110092_J_1-5.DWG

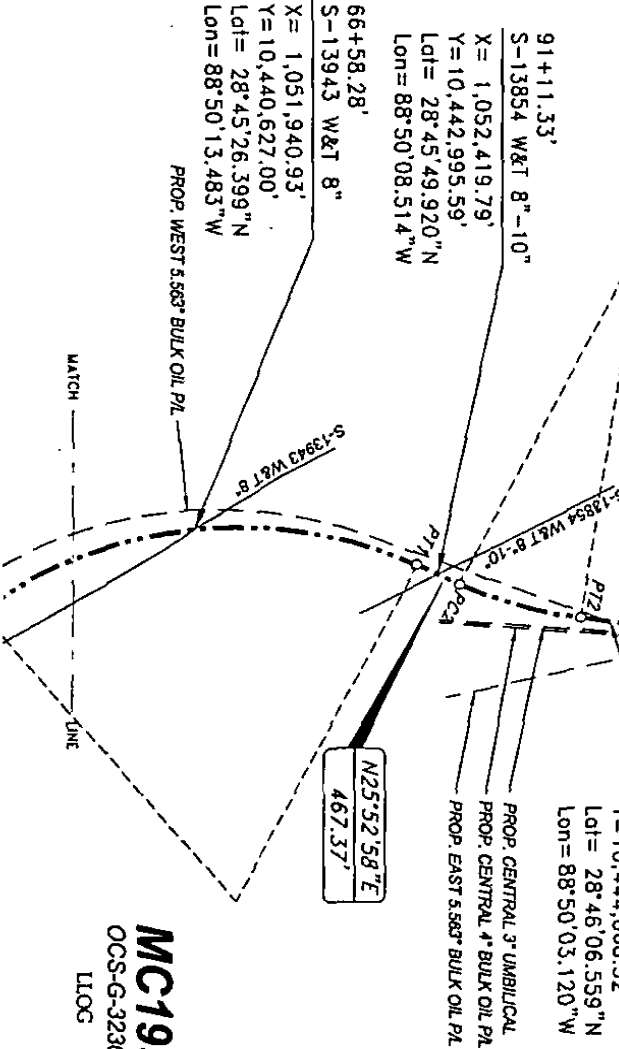


PROPOSED 5" MANIFOLD JUMPER
MANIFOLD to PLET
Block 199, Mississippi Canyon Area



114+72.95'
UTH
X= 1,053,012.29'
Y= 10,445,265.09'
Lot= 28,4612.478"N
Lon= 88.50 02.250"W

PROPOSED 4" UMBILICAL
TOTAL LENGTH = 11,472.95' = 2.17 statute miles



N08°15'57"E
892.05'

108+70.12'
PROPOSED LLOG 5.563"
X= 1,052,925.64'
Y= 10,444,668.52'
Lot= 28°46'06.559"N
Lon= 88°50'03.120"W

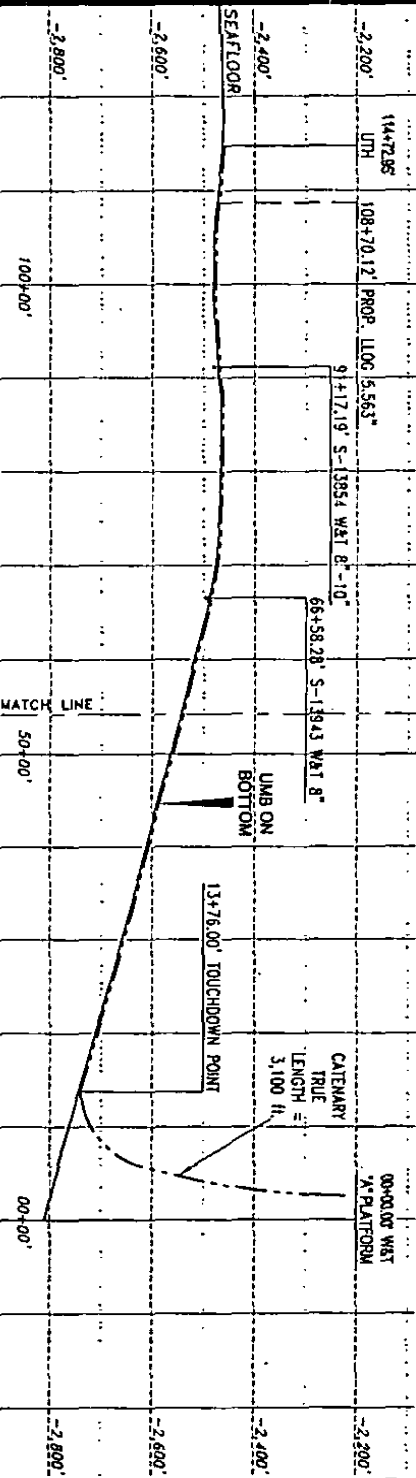
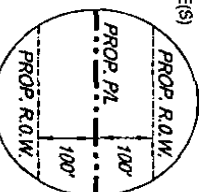
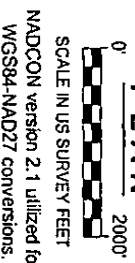
N25°52'58"E
467.37'

CURVE 1 DATA	
PC1	43+74.15'
X=	1,052,797.74'
Y=	10,438,543.04'
Lot=	28°45'05.899"N
Lon=	88°50'03.497"W
PI1	88+83.50'
X=	1,052,320.33'
Y=	10,442,790.62'
Lot=	28°45'47.876"N
Lon=	88°50'09.596"W
PT1	105+80.89'
X=	1,052,794.96'
Y=	10,443,768.83'
Lot=	28°46'03.719"N
Lon=	88°50'07.376"W
CURVE 2 DATA	
PC2	93+50.87'
X=	1,052,524.36'
Y=	10,443,211.11'
Lot=	28°45'52.070"N
Lon=	88°50'07.376"W
PT2	105+80.89'
X=	1,052,884.07'
Y=	10,444,382.29'
Lot=	28°46'03.719"N
Lon=	88°50'07.376"W
PI2	108+70.12'
X=	1,052,925.64'
Y=	10,444,668.52'
Lot=	28°46'06.559"N
Lon=	88°50'03.120"W
R=	4,000.00'
T=	619.90'
Δ=	17°37'08"
L=	1,230.02'

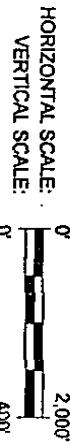
MC199
OCS-G-32301
LLOG

FOR PERMITTING ONLY. STATIONING AND LENGTHS REFER TO HORIZONTAL DISTANCES ONLY.

PLAN



PROFILE



DATE: 05/09/2011 TIME: 18:51 FILENAME: Z:\110092\ACAD\PERMIT\PM110092_UMBILICAL.DWG

PROPOSED 4" UMBILICAL
Block 243 "A" Platform to Block 199 UTH
Mississippi Canyon Area



MC199

OCS-G-32301

LLOC

MATCH

43+95.84'

BLOCKLINE CROSSING

X = 1,052,784.23'

Y = 10,438,560.00'

Lot = 28°45'06.065"N

Lon = 88°50'03.652"W

MC200

OCS-G-32302

NOBLE

N38°42'31"W
2,998.15'

PROPOSED 4" UMBILICAL
TOTAL LENGTH = 11,472.95' = 2.17 statute miles

13+76.00'
TOUCHDOWN POINT
X = 1,054,672.67'
Y = 10,436,203.48'
Lot = 28°44'43.023"N
Lon = 88°49'42.032"W

N38°42'31"W
1,376.00'

00+00.00' W&T
"A" PLATFORM
X = 1,055,533.17'
Y = 10,435,129.73'
Lot = 28°44'32.524"N
Lon = 88°49'32.182"W

GRID NORTH
NAD27 UTM18N

MC243

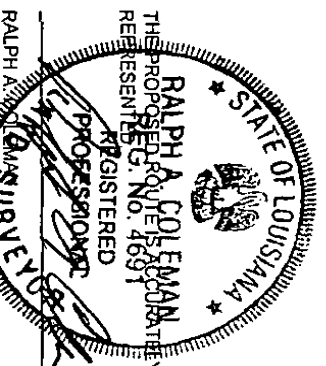
OCS-G-19931

W&T

MC244

OCS-G-32305

DEVON



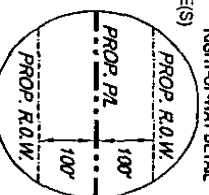
RALPH A. COLEMAN
REGISTERED PROFESSIONAL SURVEYOR
LOUISIANA REGISTRATION NO. 4691

FOR PERMITTING ONLY. STATIONING AND LENGTHS REFER TO HORIZONTAL DISTANCES ONLY.

PLAN

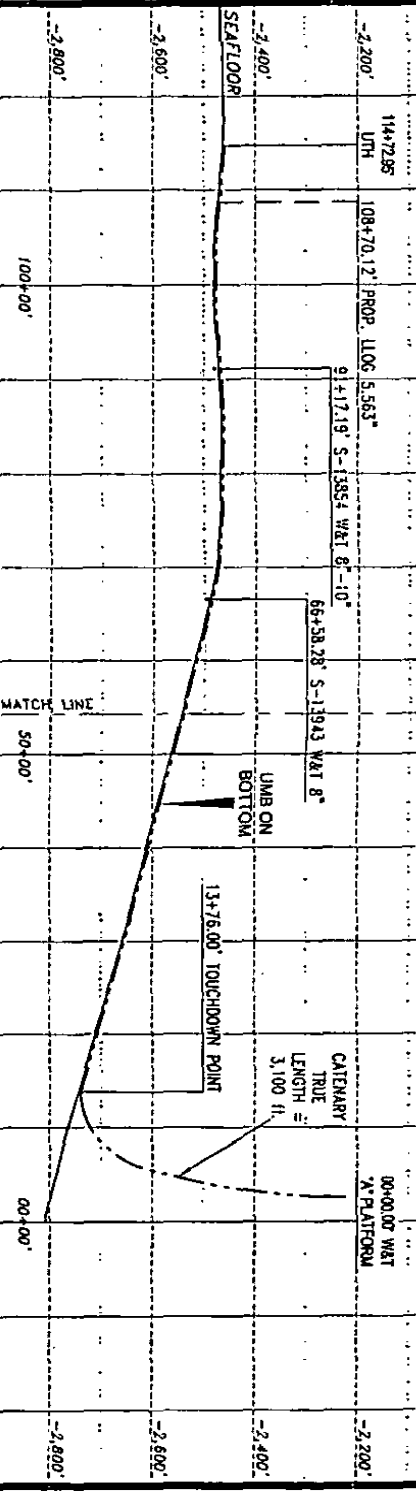


SCALE IN US SURVEY FEET
NADCON version 2.1 utilized for WGS84-NAD27 conversions.



RIGHT-OF-WAY DETAIL
DESIGN CHARACTERISTICS OF THIS ROUTE ARE IN COMPLIANCE WITH APPLICABLE REGULATIONS.

AREA ENGINEER



PROFILE

HORIZONTAL SCALE: 0' to 2,000'
VERTICAL SCALE: 0' to 400'
VERTICAL EXAGGERATION = 5

DATE: 05/09/2011 TIME: 18:51 FILENAME: Z:\110092\ACAD\PERMIT\PRM110092_UMBILICAL.DWG

PROPOSED 4" UMBILICAL

Block 243 "A" Platform to Block 199 UTH

Mississippi Canyon Area



PREPARED BY:



C&C Technologies
SURVEY SERVICES
230 E. WALSH SQUARE ROAD, LAKE CHARTRIE, LA (504) 281-0500

JOB No.: 110092, 110367

REVISED: 5-9-2011

DATE: Mar. 23, 2011

FILENAME: PRM110092_UMBILICAL.DWG

SHEET 2 of 3

Attachment L

WCD Calculation

**LLOG EXPLORATION OFFSHORE, INC.
MC 199 TO MC 243 "A" (WEST FLOWLINE)
5" BULK OIL BI-DIRECTIONAL PIPELINE
OIL SPILL CALCULATION SHEET
WORST CASE DISCHARGE SCENARIO**

A. DAILY FLOWRATES

GAS(mmscfd) 10
OIL (bpd) 5000 = 0.05787 bbl/s

B. LEAK RESPONSE TIME

Leak detection time (s) 30
Shutin response (s) 45
Total response time $\frac{\quad}{75 \text{ s}}$ = 0.020833 hours

C. DISCHARGE VOLUME DURING RESPONSE

VD1 = oil flow rate x total response time
VD1 = 4.340278 bbls

D. LEAKAGE AFTER SHUT IN

Assume 33% of oil in pipeline leaks out.

Liquid holdup in pipeline: 250 bbls
Volume discharge if 33% leaks =
VD2= 75

TOTAL VOLUME SPILLED: VD1 + VD2 = 79.3 barrels

LLOG Exploration Offshore, L.L.C. can control, contain and clean up to the maximum extent practicable any discharged hydrocarbons that threaten coastal resources of Louisiana.

Attachment M

Designated Operators and State Agencies
Notification

The following Designated Oil and Gas Lease Operators, Right-of-Way Holders and Easement Holders have been furnished a copy of this application by Federal Express, Signature Requested. (Note: The status of blocks listed below is current as of May 26, 2011 per BOEMRE data search by LLOG)

MISSISSIPPI CANYON BLOCK 199

<u>LLOG Exploration (Applicant)</u>	<u>OCS-G-32301</u>	<u>Lease Holder</u>
W&T Energy VI, LLC Nine Greenway Plaza, Suite 300 Houston, TX 77079 Attn: Ms. Jeanette Wilkins	OCS-G 32301	Segment 13854 Segment 13943

MISSISSIPPI CANYON BLOCK 243

<u>W&T Energy VI, LLC</u>	<u>OCS-G 19931</u>	<u>LeaseHolder/Operator</u>
Nine Greenway Plaza, Suite 300 Houston, TX 77079 Attn: Ms. Jeanette Wilkins		

STATE AGENCIES

Mr. Gregory DuCote, Coastal Resources Program Manager
Coastal Management Division
Department of Natural Resources
P.O. Box 44487
Baton Rouge, Louisiana 70804-4487

Mr. Mike Walker
Mississippi Coastal Program
Coastal Management Division
Department of Marine Resources
1141 Bayview Avenue,
Biloxi, MS 39530

LLCG

EXPLORATION OFFSHORE, L.L.C.

May 26, 2011

Ms. Jeanette Wilkins
W&T Energy VI, LLC
Nine Greenway Plaza, Suite 300
Houston, TX 77079

RE: Proposed Pipeline Crossing and SSTI

Application for Installation of One (1) 5.563" Right-of-Way Bulk Oil Pipeline,
one (1) 4.0" O.D. Subsea Control Umbilical, one (1) 5.563" O.D. Manifold Flowline Jumper, and one (1)
4.5" Well Flowline Jumper, from LLOG's Mississippi Canyon Block 199 Subsea Manifold, OCS-G 32301
to W&T Energy VI, LLC's Platform "A", Mississippi Canyon Block 243, OCS-G-19931 Gulf of Mexico,
Offshore, Louisiana

Gentlemen:

This letter serves as notification that LLOG Exploration Offshore, L.L.C. (LLOG) is in the process of submitting an application to Bureau of Ocean Energy Management, Regulation, and Enforcement for the installation of one (1) 5.563" O.D. bulk oil pipeline, one (1) associated 4.0" subsea control umbilical, one (1) 5.563" O.D. Manifold Flowline Jumper and one (1) 4.5" O.D. Well Flowline Jumper in the Mississippi Canyon Area, Block 199, Gulf of Mexico.

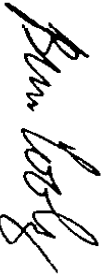
The pipeline installation will involve the crossing of your pipeline Segment No. 13854 and 13943 in Mississippi Canyon Area, Block 243 (OCS-G-19931) and a tie-in at your Platform "A" in Mississippi Canyon Area, Block 243, (OCS-G-19931).

In accordance with BOEMRE requirements, we are enclosing a complete copy of the subject application for your review.

In order to expedite the permit process, if the above information meets with your approval, please indicate your consent to this proposed pipeline crossing and Tie-In by signing this letter in the space provided below and returning a signed copy to the attention of Bruce Cooley, LLOG Exploration Offshore, L.L.C., 1001 Ochsner Boulevard, Suite 200, Covington, Louisiana 70433.

Your cooperation in this matter would be greatly appreciated.

Very truly yours,



Bruce Cooley
Vice President Facilities Engineering

CONSENT GRANTED THIS _____ DAY OF _____, 2011

By: _____

Title: _____

Attachment N

Nondiscrimination Employment Stipulation

UNITED STATES
DEPARTMENT OF THE INTERIOR
Bureau of Ocean Energy Management, Regulation, and Enforcement

NONDISCRIMINATION IN EMPLOYMENT (Form YN 3341-1)

As a condition precedent to the approval of the granting of the subject pipeline right-of-way, the grantee, LLOG Exploration Offshore, L.L.C. hereby agrees and consents to the following stipulation which is to be incorporated into the application for said right-of-way.

During the performance of this grant, the grantee agrees as follows:

During the performance under this grant, the grantee shall comply with paragraphs (1) through (7) of section 202 of Executive Order 11246, as amended (reprinted in 41 CFR 60-1.4(a)), which are for the purpose of preventing discrimination against persons on the basis of race, color, religion, sex or national origin. Paragraphs (1) through (7) of section 202 of Executive Order 11246, as amended, are incorporated in this grant by reference.



Kemberlia Ducote
Secretary

LLOG Exploration Offshore, L.L.C.

5-26-11

Date



Exploration offshore

July 8, 2011

Mr. Brad Hunter
Pipeline Section
Bureau of Ocean Energy Management, Regulation, and Enforcement
1201 Elmwood Park Boulevard
New Orleans, Louisiana 70123-2394
MS 5232

RE: Mississippi Canyon 199 Pipeline Applications
Lease Term Pipeline Application, Segment No. 18311 and Umbilical Segment No. 18312
ROW East Pipeline Application, Segment No. 18309
ROW West Pipeline Application, Segment No. 18307 and Umbilical Segment No. 18308

Dear Mr. Hunter

Please find the enclosed supplemental information and a CD in support of the subject pipeline permit applications.

1. W&T Offshore Letter of No Objection – Lease Term Central Pipeline
2. W&T Offshore Letter of No Objection – ROW East Pipeline
3. W&T Offshore Letter of No Objection – ROW West Pipeline
4. LA CZM Approval – ROW East Pipeline
5. LA CZM Approval – ROW West Pipeline
6. MS CZM Approval – ROW East Pipeline
7. MS CZM Approval – ROW West Pipeline

If the above and attached information meets with your approval, please issue the necessary permit at your earliest convenience. Inquiries concerning these applications should be first directed to Edie Ridgel of LLOG Exploration Offshore, L.L.C. at edier@llog.com, 985.801.4344. Inquiries can also be directed to Mr. Bruce Cooley of LLOG Exploration Offshore, L.L.C. at brucec@llog.com, 985.801.4300 or Mr. Pete Cruz of Pinnacle Engineering Company at petec@pinnacleengr.com, 713.784.1005.

Sincerely,

LLOG Exploration Offshore, L.L.C.

Edie Ridgel
Facilities Engineering Technician

Maritime Management Services

RECEIVED

JUL 11 2011

Office of Field Operations
Pipeline Section

LLOG Exploration Offshore
1001 Ochsenr Boulevard, Suite 200
Covington, Louisiana 70433
P 985 801 4300
F 985 801 4796
www.llog.com

Attachment F

Design Information Sheets/Drawings

Pipeline
Jumpers
Manifold
Umbilical
Risers

LLOG EXPLORATION COMPANY
West 5" Bulk Oil, Bi-Directional Pipeline
Mississippi Canyon 199 PLET
to Mississippi Canyon 243 "A"
Rev. 0, 5/17/11

PIPELINE DESIGN INFORMATION

I. Pipeline and Riser Description

A. Nominal Pipeline:

Size:	5.563	Inch
Wall Thickness:	0.438	Inch
Grade:	API 5L Gr. X65, SMLS	
Length:	11,733	Feet, 2.22 Miles
Bare Weight:	23.97	lbs/ft
Protection Coating Type and Thickness:	Fusion Bonded Epoxy (FBE); 12-14 mils	
Insulation Coating:	Glass Synthetic Polyurethane (GSPU), 2 inches	
Specific Gravity of Pipe in Seawater (empty):	1.27	

B. Steel Catenary Riser:

Size:	5.563	Inch
Wall Thickness:	0.625	Inch
Grade:	API 5L Gr. X65, SMLS	
Bare Weight:	32.96	lbs/ft
Protection Coating Type and Thickness:	FBE 12-14 mils & GSPU 1 inch	
- Below Splash Zone:	Splashron Coating: ½ Inch	
- In Splash Zone:	Fusion Bonded Epoxy; 12-14 mils and/or a three	
- Above Splash Zone:	coat paint system; 12 mils DFT.	
Weight Coating:	None	

II. Cathodic Protection System

The riser and pipeline shall be protected by tapered bracelet type anodes.

Pipeline and Riser Sacrificial Anodes System:

Design Life:	20 yrs.
Type of Anode:	Galvotec CW III ✓
Spacing Interval:	500 ft.
Output:	1150 Amps - hrs./lb.
Efficiency:	0.85
Current Density:	2 ma/sq. ft.
% Assumed Bare Pipe:	5%
Minimum Required Weight of Anode:	N/A

= (.002) (3.14159) (5.563) (500) (.05) (20) (365) (24) / (1150) (12) (.85) = 13.1 lbs.

Use one (1) 37# net weight anode every 500 feet.

III. Water-Depth for Pipeline:

The water depth along the pipeline is approximately between (-)2470 and (-)2810 feet.

IV. Description of Internal Protective Measures:

Internal Coating:	None
Corrosion Inhibitor Program:	As necessary
Pigging Program:	The MC 199 Bulk Oil pipeline will be set up to be piggable. Frequency will be determined after first production.

V. Riser Protection

At Mississippi Canyon 243 "A", the riser will be protected by a riser guard.

VI. Specific Gravity of the Empty Pipe Based on Seawater:

The formula used to calculate the specific gravity is as follows:

$$S.G. = \frac{(W_p + W_{CONC})}{W_{H2O}}$$

Where:

$$\begin{aligned}
 W_p &= \text{Weight of the pipe (lbs/ft)} = 23.97 \\
 W_{GSPU} &= \text{Weight of GSPU (lbs/ft)} = 16.50 \\
 W_{H2O} &= \text{Displaced weight of the seawater (lbs/ft)} = 31.92
 \end{aligned}$$

The above weights are based on the pipe outside diameter and corrosion coating thickness and on the densities of the various materials which are listed below.

$$\begin{aligned}
 \text{Density of Pipe} &= 490 \text{ lbs/ft}^3 \\
 \text{Density of Seawater} &= 64 \text{ lbs/ft}^3 \\
 \text{The specific gravity of the pipeline} &= 1.27
 \end{aligned}$$

VII. Specific Gravity & Temperature of the Product:

The specific gravities and temperature of the oil and gas to be transported is anticipated to be:

$$\begin{aligned}
 \text{S.G. (Gas)} &= 0.69 \text{ (Air = 1.0) @ } T = 80 \text{ Degrees} \\
 \text{S.G. (Oil)} &= 0.81 \text{ (Water = 1.0) @ } T = 80 \text{ Degrees} \\
 \text{Temperature} &= 95 \text{ Degrees Fahrenheit}
 \end{aligned}$$

VIII. Design Capacity:

The design flowing capacity of the flowline is 10 MMSCFD and 5000 BLPD. The total volume capacity of the pipeline is 250 bbls.

IX. Maximum Operating Pressure:

1. Calculations based on CFR, Title 30, Part 250, Subparts H and J.

$$\begin{aligned}
 P &= \frac{2st}{D} \\
 P_1 &= \frac{2s(t-ca)(F)(E)(T)}{D}
 \end{aligned}$$

Where:

- P = Pressure as 100% SMYS (psig)
- P1 = Internal Design Pressure (psig)
- S = Specified Minimum Yield Strength (SMYS) (psi)
- l = Pipe Wall Thickness in Inches
- ca = Corrosion Allowance (use 0.000 inches)
- D = Pipe Outside Diameter in Inches
- (F) = Design Factor
 0.60 for Risers
 0.72 for Pipelines
- (E) = Joint Factor
 1.0 for Seamless Pipe
- (T) = Temperature Derating Factor
 1.0 for Operating Temperatures below 250 Degrees Fahrenheit

1) Pipeline: 5.563" OD x 0.438" W.T. API 5L Gr. X65

- a) $P = (2) (65,000) (0.438) / (5.563) = 10,235 \text{ psig}$
- b) $P1 = (2) (65,000) (0.438) - 0.000 (0.72) (1) (1) / 5.563 = 7,370 \text{ psig}$
- c) Hydrostatic Test Pressure = HTP
 Maximum HTP = $0.95 P = (0.95) (10,235) = 9,724 \text{ psig}$
 Minimum HTP will be $4,632 \text{ psig}$ for 8 hour hold time
 Rated MAOP = $4,632 \text{ psig} / 1.25 = 3,705 \text{ psig}$
- d) Maximum Allowable Operating Pressure (MAOP) = 3,705 psig

2) Riser: 5.563" OD x 0.625" W.T. API 5L Gr. X65

- a) $P = (2) (65,000) (0.625) / (5.563) = 14,605 \text{ psig}$
- b) $P1 = (2) (65,000) (0.625) - 0.000 (0.60) (1) (1) / 5.563 = 8,763 \text{ psig}$
- c) Hydrostatic Test Pressure = HTP
 Maximum HTP = $0.95 P = (0.95) (14,605) = 13,875 \text{ psig}$
 Minimum HTP will be $4,632 \text{ psig}$ for 8 hour hold time
 Rated MAOP = $4,632 \text{ psig} / 1.25 = 3,705 \text{ psig}$
- d) Maximum Allowable Operating Pressure (MAOP) = 3,705 psig

- B. MAOP of Flange, Fittings and Valves:
- 1) Under Water: ANSI 1500 class = 3,705 psig
- 2) Platform Facilities (See Safety Schematic):
ANSI 1500 class = 3,705 psig
- C. Summary
This pipeline and riser will have an MAOP of 3,705 psig
- X. Design Standard:
The design of the proposed pipeline is in accordance with the Department of Interior Subparts H & J Part 250, Title 30, of The Code of Federal Regulations.
- XI. Construction Information:
- | | |
|---|------------------|
| A) Anticipated Start Date: | November 1, 2011 |
| B) Method of Construction: | Lay Barge |
| C) Method of Burial: | N/A |
| D) Time Required to Lay Pipe: | 15 Days |
| E) Time Required to Complete the Project: | 30 Days |

Hunter, Bradley

From: Signorelli, Charlene B
Sent: Wednesday, September 07, 2011 8:18 AM
To: Hunter, Bradley
Subject: P/L ROW G 29093 Segment Nos. 18307 & 18308

Brad,

I have performed the Adjudication Review on P/L ROW G 29093 Segment Nos. 18307 & 18308 for a 200' wide row with associated umbilical to install, operate and maintain a 5.563" pipeline, 2.22 miles in length to transport bulk oil from a PLET in Block 199 to Platform A through Block 243 to a 4" umbilical 2.17 miles in length terminating at a UTH through Block 199 Subsea Manifold to a PLET to a Subsea Well No. 002 Subsea tree terminating at a Subsea Manifold Block 199 all located in Mississippi Canyon Area and have approved it.

Charlene B. Signorelli
Land Law Examiner
Bureau of Ocean Energy Management,
Regulation & Enforcement
Adjudication Unit
(504) 736-2935

July 8, 2011

Mr. Brad Hunter
Pipeline Section
Bureau of Ocean Energy Management, Regulation, and Enforcement
1201 Elmwood Park Boulevard
New Orleans, Louisiana 70123-2394
MS 5232

RE: Mississippi Canyon 199 Pipeline Applications
Lease Term Pipeline Application, Segment No. 18311 and Umbilical Segment No. 18312
ROW East Pipeline Application, Segment No. 18309
ROW West Pipeline Application, Segment No. 18307 and Umbilical Segment No. 18308

Dear Mr. Hunter

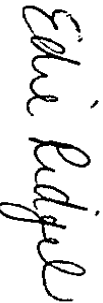
Please find the enclosed supplemental information and a CD in support of the subject pipeline permit applications.

1. W&T Offshore Letter of No Objection – Lease Term Central Pipeline
2. W&T Offshore Letter of No Objection – ROW East Pipeline
3. W&T Offshore Letter of No Objection – ROW West Pipeline
4. LA CZM Approval – ROW East Pipeline
5. LA CZM Approval – ROW West Pipeline
6. MS CZM Approval – ROW East Pipeline
7. MS CZM Approval – ROW West Pipeline

If the above and attached information meets with your approval, please issue the necessary permit at your earliest convenience. Inquiries concerning these applications should be first directed to Edie Ridgel of LLOG Exploration Offshore, L.L.C. at edier@llog.com, 985.801.4344. Inquires can also be directed to Mr. Bruce Cooley of LLOG Exploration Offshore, L.L.C. at brucec@llog.com, 985.801.4300 or Mr. Pete Cruz of Pinnacle Engineering Company at petec@pinnacleengr.com, 713.784.1005.

Sincerely,

LLOG Exploration Offshore, L.L.C.



Edie Ridgel
Facilities Engineering Technician

Reservoir Management Services
RECEIVED

JUL 11 2011

Office of Field Operations
Pipeline Section

W&T OFFSHORE
I N C O R P O R A T E D

June 29, 2011

LLOG Exploration Offshore, L.L.C.

Attn: Ms. Judy Reimel

1001 Ochsner Blvd, Suite 200

Covington, LA. 70433

Re: Pipeline Crossing Agreement in MC 243 by
LLOG Exploration Offshore, L.L.C.
W&T pipeline segment No. 13854 and 13943
GOM Offshore Louisiana

Dear Ms. Reimel:

Reference is made to LLOG Exploration Offshore, L.L.C.'s (LLOG) application to the BOEMRE dated May 31, 2011. LLOG has advised W&T Energy VI, LLC (W&T) that the referenced pipeline segments being 13854 and 13943 owned by W&T will be crossed by LLOG's installation of one (1) 5.563" O.D. Right-of-Way bulk oil pipeline, one (1) 4.0" O.D. Subsea Control Umbilical, one (1) 5.563" O.D. Manifold Flowline Jumper, and one (1) 4.5" O.D. Well Flowline Jumper from MC 199 subsea manifold in OCS-G32301 to W&T's Platform "A" in MC 243, OCS-G 19931 ("the Operation"). W&T has no objection to the pipeline crossing or to the tie-in at W&T's Platform "A" in Mississippi Canyon Area, Block 243 (OCS-G 19931) by LLOG subject to the following conditions:

1. LLOG shall secure all necessary permits from all governmental agencies having jurisdiction thereof for the Operation.
2. The Operation conducted by LLOG shall be at no cost or expense to W&T or its co-owners.
3. LLOG agrees to release, protect indemnify, defend and hold harmless W&T and its affiliates, co-owners, contractors and subcontractors and their respective directors, officers, employees, agents and representatives (collectively, the "W&T Indemnified Parties") from and against any and all claims, liabilities, losses, costs and expenses (including, without limitation, court costs and reasonable attorneys' fees) (collectively "Losses") in connection with personal injuries, including death, pollution, or property damage arising out of or resulting from the Operation or activities of LLOG, its officers, employees, contractors, subcontractors, agents and representative and invitees regardless of whether such injuries, death or damages are caused in whole or part by the sole, partial or concurrent negligence, or other fault of the W&T Indemnified Parties. It is the express intention of the parties hereto that the indemnity provided for herein constitutes an agreement by LLOG to release, protect, indemnify, defend and hold harmless the W&T Indemnified Parties from the consequences of their own negligence or other fault, regardless of whether same is the sole or a concurring cause of the injury, death or damage.

4. LLOG will be utilizing a "real time positioning system" on the marine construction equipment which includes the anchor handling tug, and the "as built" coordinates of the W&T Pipeline are present on the equipment
5. LLOG' anchor handling tug will have a satellite positioning system accurate to within five meters. When setting and weighing anchors, anchor position will be plotted to determine the extent of anchor slippage. All anchors placed across the W&T Pipeline will be located a minimum perpendicular distance of 1,000 feet from the W&T Pipeline, and all anchors not crossing the W&T Pipeline will be located a minimum perpendicular distance of 500 feet from the W&T Pipeline. All anchors shall be lifted vertically from their stationary positions to a height of not less than one-half the distance between the ocean floor and sea level before the anchors are moved laterally.
6. No mats and/or s/c/bags shall be placed on top of cathodic protection anodes.
7. LLOG will inspect the W&T Pipeline for possible damage after installation of the subject pipelines. Depending on water depths and conditions, MARITECH shall have either a diving inspector's log or ROV video to report on the details of the crossing. LLOG shall provide a copy of the log/ROV video to W&T.
8. LLOG, and its agents, contractors, employees, representatives, servants and subcontractors shall observe and comply with all federal, state and local laws, ordinances, rules, regulations, orders and decrees regarding the environment and cultural resources.
9. LLOG shall carry adequate insurance or shall self-insure in order to support its operations.
10. LLOG agrees to provide "as built" drawing showing the actual location of the LLOG pipeline across the W&T Pipeline as soon as practical after completion of construction of the pipelines.
11. LLOG agrees to maintain its pipeline in good condition at all times and that such maintenance shall conform to all applicable rules, laws and regulations.
12. Prior to commencement of the Operation, LLOG agrees to provide written and/or verbal notification to W&T, or in its absence, any other designated representative will have access, upon request, to the lay-barge upon W&T's execution of LLOG's access permit agreement. Notification shall be made to Jay Hachen at (713) 626-8525.
13. LLOG, and its agents, contractors, employees, representatives, servants and subcontractors shall observe and comply with all federal, state and local laws, ordinances, rules, regulations, orders and decrees regarding the environment and cultural resources.

This letter of no objection shall be binding to the parties hereto, their successors and assigns.


If the foregoing is acceptable, please indicate your agreement thereto by signing in the space provided below and returning one copy of this letter to my attention. Should you require additional information, please contact Jim DeGraffenreid at (713) 624-7305.

Sincerely,
W&T Energy VI, LLC
By: W&T Offshore, Inc. its sole member



Keisha Cooper
Landman

AGREED TO AND ACCEPTED THIS 29 DAY OF June, 2011
LLOC Exploration Offshore, L.L.C.

By: 
Title: V.P. Facilities

Cc: BOEMRE

BOBBY JINDAL
GOVERNOR

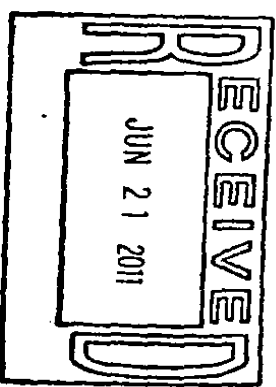


SCOTT A. ANGELLE
SECRETARY

State of Louisiana

DEPARTMENT OF NATURAL RESOURCES OFFICE OF COASTAL MANAGEMENT

June 17, 2011



Eddie Ridgel
LLOG Exploration Offshore, L.L.C.
1001 Ochsner Boulevard, Suite 200
Covington, LA 70433

RE: **C20110244**, Coastal Zone Consistency
LLOG Exploration Offshore, L.L.C.
Bureau of Ocean Energy Management, Regulation, and Enforcement
Federal License or Permit
Install 5.563 inch Bulk Oil Right-of-Way Pipeline (West Bulk Oil Pipeline) from
Mississippi Canyon 199 to Mississippi Canyon 243, **Offshore, Louisiana**

Dear Ms. Ridgel:

The above referenced project has been reviewed for consistency with the approved Louisiana Coastal Resources Program (LCRP) as required by Section 307 of the Coastal Zone Management Act of 1972, as amended. The project, as proposed in the application, is consistent with the LCRP.

If you have any questions concerning this determination please contact Carol Crapanzano of the Consistency Section at (225) 342-9425 or Carol.Crapanzano@la.gov.

Sincerely,

A handwritten signature in blue ink, appearing to read "Gregory J. DuCote".

Gregory J. DuCote

Administrator
Interagency Affairs/Field Services Division

GJD/JDH/cmc

cc: **BOEMRE ATTENTION PIPELINE APPROVALS**
Bonnie Johnson, BOEMRE 5412

Post Office Box 44487 • Baton Rouge, Louisiana 70804-4487
617 North Third Street • 10th Floor • Suite 1078 • Baton Rouge, Louisiana 70802
(225) 342-7591 • Fax (225) 342-9439 • <http://www.dnr.louisiana.gov>
An Equal Opportunity Employer



ROW West Pipeline
P/L SN 18307
UMB SN 18308

MISSISSIPPI
DEPARTMENT OF MARINE RESOURCES

July 6, 2011


Bruce Cooley, V.P.
Facilities Engineering
LLOG Exploration Offshore, L.L.C.
1001 Ochsner Blvd., Suite 200
Covington, LA 70433

Subject: LLOG Exploration Offshore, L.L.C.
Proposed Bulk Oil Pipeline ROW, for umbilical, manifold flowline jumper,
and well flowline jumper
Mississippi Canyon Area, from Block 199 to 243
Offshore Louisiana and Mississippi
DMR #110429

Dear Mr. Cooley:

The State of Mississippi has determined the the consistency certification letter of June 28, 2011 for the above referenced project contained a typographical error. The lease blocks should have been described as "Block 199 to 243" instead of "Block 199 to 143". Please note this correction.

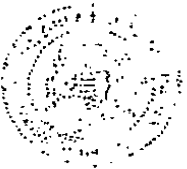
Sincerely,


William W. Walker, Ph.D.
Executive Director

WWW/mftw

cc: Michael Saucier, BOEMRE
Bonnie La Borde Johnson, BOEMRE

SN18507
BH



MISSISSIPPI
DEPARTMENT OF MARINE RESOURCES

June 28, 2011

Bruce Cooley, V.P.
Facilities Engineering
LLOG Exploration Offshore, L.L.C.
1001 Ochsner Blvd., Suite 200
Covington, LA 70433

Subject: LLOG Exploration Offshore, L.L.C.
Proposed Bulk Oil Pipeline ROW
Mississippi Canyon Area, from Block 199 to 143
Offshore Louisiana and Mississippi
DMR #110429

Dear Mr. Cooley:

The State of Mississippi has completed the review of subject by your March 26, 2011 letter, under the Coastal Zone Management Act of 1972. The Department of Marine Resources, as the lead coastal program agency for the State of Mississippi pursuant to 16 U.S.C. Section 1456(c) and Section 57-15-5 of the Mississippi Code of 1972, concurs with LLOG's consistency certification for this project.

If you have any questions about this matter, please do not hesitate to contact us.

Sincerely,

William W. Walker, Ph.D.
Executive Director

www/mfw

cc: Michael Saucier, BOEMRE ✓
Bonnie La Borde Johnson, BOEMRE

Minerals Management Service
RECEIVED

JUL 08 2011

Office of Field Operations
Pipeline Section

1. PIPELINE APPLICATION INFORMATION

Data Requirement	Required Data
<p>Operator Identification: 250.1007(a), LTL 1991</p> <p style="text-align: center;"><i>Base</i></p>	<p>LLOG Exploration Offshore, L.L.C. 1001 Ochsner Blvd., Suite 200 Covington, LA 70433</p> <p>The service base utilized to support the pipeline installation activities for this project will be located in <u>Fourchon, Louisiana</u>. This is an established facility that requires no modifications.</p> <p>Transportation from the existing onshore base, to the block will involve the use of one work/crew boat making two (2) trips per week during operations and one self propelled pipe lay vessel and one ROV/Construction support vessel. The work/crew boat will normally take the most direct route to the referenced block(s) dependent upon weather conditions.</p>
<p>Pipeline Burial: 250.1003(a)(1)</p> <p>Plats 250.1007(a)(1)</p>	<p>The pipeline and umbilical will not be buried</p> <p>See Attachments A-D</p> <p>Proposed West 5.563" Bulk Oil Pipeline Route Block 199 PLET to Block 243 "A" Platform (C&C Technologies Drawing Number PRM110092_WEST, sheets 1 - 3)</p>
	<p>Proposed 4.0" Umbilical Route Block 243 "A" Platform to Block 199 UTH (C&C Technologies Drawing Number PRM110092_UMBILICAL, sheets 1 - 3)</p> <p>Proposed 5.563" Manifold Jumper Route Manifold to PLET Block 199 (C&C Technologies Drawing Number PRM110092_J_1-5, sheets 1 - 2)</p> <p>Proposed 4.5" Well Jumper Route Well No. 2 to Manifold Block 199 (C&C Technologies Drawing Number PRM110092_J_1-5, sheets 1 - 2)</p>
<p>Schematic Drawing: 250.1007(a)(2)</p>	<p>See Attachment E Safety Schematic Drawing (Drawing No. 901)</p>

Cathodic Protection 250.1007(a)(3)(i)	<p>See Attachment F Design Information Sheets/Drawings</p> <ul style="list-style-type: none"> - Pipeline - Jumpers - Manifold - Umbilical - Risers 	
External Pipeline Coating 250.1007(a)(3)(ii)		
Internal Protective Measures 250.1007(a)(3)(iii)		
Gravity of Empty Pipe 250.1007(a)(3)(iv)		
MSP 250.1007(a)(3)(v)		
MAOP and Calculations 250.1007(a)(3)(vi)		
Hydrostatic Test Pressure 250.1007(a)(3)(vii)		
Coastal Zone Management Program Requirements NTL 2007-G20		See Attachment G Coastal Zone Management Certification
MAOP of Receiving PL or Facility 250.1007(a)(3)(viii)		See Attachment E Safety Schematic Drawing (Drawing No. 901)
Proposed Construction Start Date Estimated Duration Overall Completion 250.1007(a)(3)(ix)		November 1, 2011 15 Days 30 Days
Type of Protection Crossing pipelines, Subsea Valves, Taps, and Manifold Assemblies 250.1007(a)(3)(x)	See Attachment H Pipeline Crossing Detail	
Additional Precautions 250.1007(a)(4.i-ii)	N/A	
Hazard and Archaeological Survey & Reports 250.1007(a)(5) NTL 2005-G07, NTL 2008-G05, NTL 2009-G40	See Attachment I Archaeological, Engineering and Hazard Report prepared by C&C Technologies dated March 2011 A review of the hazard survey data indicated that there is no evidence of any geologic condition along the proposed route or in the survey area that would present a hazard or constraint to pipeline construction or operation.	
Copies of Applications Submitted Plat Information on a CD with ASCII file 250.1007(b), NTL 2009-G15	An Original, three copies and a CD See Attachment J CD Enclosed	

ROW Site for Proposed Pipeline 250.1007(a)(1)					
Description	Originate	Terminate	Direction	Distance (ft)	Distance (statute miles)
5.563 O.D. Bulk Oil	Pipeline End Termination in MC 199, OCS-G 32301	Hang off Location MC 243 "A", OCS-G 19931	Southerly	11,733.46	2.22
4.0" O.D. Umbilical	Hang off Location MC 243 "A", OCS-G 19931	Umbilical Termination Head in MC 199, OCS-G 32301	Northerly	11,472.95	2.17
5.563" Manifold Jumper	Manifold in MC 199, OCS-G 32301	Pipeline End Termination in MC 199, OCS-G 32301	South Easterly	51.03	0.01
4.5" Well Jumper	Well No.2 in MC 199, OCS-G 32301	Manifold in MC 199, OCS-G 32301	North Easterly	53.71	0.01

2. REQUIREMENT TO OBTAIN PIPELINE ROW GRANTS

Data Requirement	Required Data
Corporate Registration 250.1009(a)	LLOG Exploration Offshore, L.L.C. is a Louisiana Limited Liability Corporation
ROW Width 250.1009(b)	200'

3. REQUIREMENTS FOR PIPELINE ROW HOLDERS

Data Requirement	Required Data
Comply with Applicable laws and regulations 250.1010(a), 250.1010(b)	LLOG agrees that said right-of ways, if approved, will be subject to the terms and conditions of said regulations and will bound by the provisions of the OCS Lands Act, as amended.
Comply with Archaeological Resources 250.1010(c)	LLOG Exploration Offshore, L.L.C will be operator of the proposed ROW pipeline and Umbilical. LLOG will stop work and report any archaeological resources discovered within the ROW.

4. APPLICATIONS FOR PIPELINE ROW GRANTS

Data Requirement	Required Data
Application Fee Rental Fee 250.1015(b)(3)(i-ii), 250.1000(b)	\$2,569.00 Payment per 250.125 2.22 miles = \$45.00 Payment per 250.1012 See Attachment K
Application Qualifications 250.1015(b)(3)(i-ii). 250.1011(a)(1)	Please refer to your New Orleans Miscellaneous File No. 2058 for a copy of a resolution approved by the Board of Directors authorizing the undersigned to sign for and on behalf of LLOG Exploration Offshore, L.L.C.
	<p>LLOG Exploration Offshore, L.L.C., has an approved \$300,000 Right-of-Way Grant Bond on file with BOEMRE, covering installation of right-of-way pipelines in Federal Waters, Gulf of Mexico.</p> <p>Regional Oil Spill Response Plan</p> <p>All the proposed activities and facilities in the Exploration Plan/Development Operations Coordination Document will be covered by the last approved Oil Spill Response Plan (OSRP) submitted on 06/28/2008 and last approved modification to that Plan dated 01/06/2010. LLOG (MMS Operator No. 02058) submitted the Biennial Oil Spill Response Plan on 06/30/2010 (currently pending approval) with the last modification to that Plan filed on 03/16/2011 (currently pending approval). The last OSRP Certification was accepted by BOEMRE on 03/25/2011.</p> <p>See Attachment L WCD Calculations</p>
Lease and Pipeline Crossing Notification 250.1015(c)	See Attachment M Designated Operators and State Agencies Notifications
Nondiscrimination in Employment 250.1015(d)	See Attachment N Nondiscrimination in Employment Stipulation

5. GRANTING PIPELINE ROW

Data Requirement	Required Data
Adjoin/Cross State Submerged Lands 250.1016(b)	Does not adjoin or subsequently cross state submerged lands.

Attachment A

Proposed West Oil Pipeline

Online Payment

Step 3: Confirm Payment

1 | 2 | 3

Thank you.

Your transaction has been successfully completed.

Pay.gov Tracking Information

Application Name: MMS Pipeline ROW Grant Application - CI/RG/BZ/CM

Pay.gov Tracking ID: 253EUVPI

Agency Tracking ID: 74204544819

Transaction Date and Time: 05/25/2011 16:16 EDT

Payment Summary

Payment Date: 05/26/2011

Account Holder LLOG Exploration Company,

Name: L.L.C.

Region: Gulf of Mexico
Contact: Carol Eaton 985-801-4300

Payment Amount: \$2,614.00

Account Type: Business Checking

LLOG Exploration Offshore,
Company/Co No: L.L.C. 02058

Routing Number: 065000171

Account Number: *****3955

Originating Area/Block: Mississippi Canyon MC, 199
Terminating Area/Block: Mississippi Canyon MC, 243

Check Number: 3612

Pipeline Length/Rental Years: 2.22/ 1

Attachment G

CZM Certification

COASTAL ZONE MANAGEMENT PROGRAM
CONSISTENCY CERTIFICATION

FROM

Mississippi Canyon Block 199 PLET (OCS-G-32301)

TO

Mississippi Canyon Block 243 "A" Platform (OCS-G-19931)

2.2 miles Total Length

The proposed activities described in detail in this right-of-way pipeline application comply with the enforceable policies of Louisiana approved Coastal Management Program and will be conducted in a manner consistent with such program.

**Right-of-way Applicant
(Name and Address)**

LLOG Exploration Offshore, L.L.C.
1001 Ochsner Boulevard, Suite 200
Covington, Louisiana 70433

Certifying Official Signature



Kemberlia Ducote
Secretary

5-26-11

Date

COASTAL ZONE MANAGEMENT PROGRAM
CONSISTENCY CERTIFICATION

FROM

Mississippi Canyon Block 199 PLET (OCS-G-32301)

TO

Mississippi Canyon Block 243 "A" Platform (OCS-G-19931)

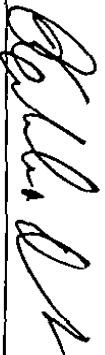
2.2 miles Total Length

The proposed activities described in detail in this right-of-way pipeline application comply with the enforceable policies of Mississippi approved Coastal Management Program(s) and will be conducted in a manner consistent with such Program(s).

**Right-of-way Applicant
(Name and Address)**

LLOG Exploration Offshore, L.L.C.
1001 Ochsner Boulevard, Suite 200
Covington, Louisiana 70433

Certifying Official Signature



Kemberlia Ducote
Secretary

5-26-11

Date

LLOG

EXPLORATION OFFSHORE, L.L.C.

May 26, 2011

Mr. Gregory DuCote
Coastal Resources Program Manager
Coastal Management Division
Department of Natural Resources
P. O. Box 44487
Baton Rouge, Louisiana 70804-4487

RE: **Application for Installation of One (1) 5.563" Right-of-Way Bulk Oil Pipeline,**
one (1) 4.0" O.D. Subsea Control Umbilical, one (1) 5.563" O.D. Manifold Flowline Jumper, and
one (1) 4.5" Well Flowline Jumper, from LLOG's Mississippi Canyon Block 199 Subsea
Manifold, OCS-G 32301 to W&T Energy VI, LLC's Platform "A", Mississippi Canyon Block
243, OCS-G-19931 Gulf of Mexico, Offshore, Louisiana

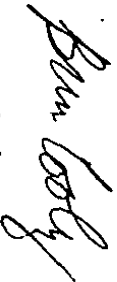
Gentlemen:

In accordance with BOEMRE requirements (NTL No. 2007-G20) for a Right-of-Way pipeline that is adjacent to the State of Louisiana, we are enclosing (1) a complete copy of the pipeline application, (2) a consistency certification, and (3) all necessary data and information concerning the installation of the subject pipeline, and (4) a check in the amount of \$300.00 to cover the application fee.

In order to expedite the permit process, if the enclosed information is determined to be complete and the consistency review can begin, please indicate your consent by signing this letter in the space provided below and returning a signed copy to the attention of Bruce Cooley, LLOG Exploration Offshore, L.L.C., 1001 Ochsner Boulevard, Suite 200, Covington, Louisiana 70433.

Your cooperation in this matter is greatly appreciated.

Very truly yours,
LLOG EXPLORATION OFFSHORE, L.L.C.



Bruce Cooley
Vice President Facilities Engineering
Attachments

NOTIFICATION OF INFORMATION COMPLETENESS AND THAT REVIEW CAN COMMENCE.

THIS _____ DAY OF _____, 2011

By: _____

Title: _____

1001 OCHSNER BLVD., SUITE 200
COVINGTON, LA 70433

PHONE: (985) 801-4300 FAX: (985) 801-4796

LLOG

EXPLORATION OFFSHORE, L.L.C.

March 26, 2011

Mr. Mike Walker
Mississippi Coastal Program
Coastal Management Division
Department of Marine Resources
1141 Bayview Avenue,
Biloxi, MS 39530

RE: **Application for Installation of One (1) 5.563" Right-of-Way Bulk Oil Pipeline,**
one (1) 4.0" O.D. Subsea Control Umbilical, one (1) 5.563" O.D. Manifold Flowline Jumper, and
one (1) 4.5" Well Flowline Jumper, from LLOG's Mississippi Canyon Block 199 Subsea
Manifold, OCS-G 32301 to W&T Energy VI, LLC's Platform "A", Mississippi Canyon Block
243, OCS-G-19931 Gulf of Mexico, Offshore, Louisiana

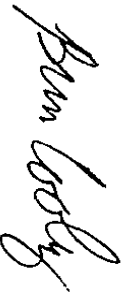
Gentlemen:

In accordance with MMS requirements (NTL No. 2007-G20) for a Right-of-Way pipeline that is adjacent to the State of Mississippi, we are enclosing (1) a complete copy of the pipeline application, (2) a consistency certification, and (3) all necessary data and information concerning the installation of the subject pipeline.

In order to expedite the permit process, if the enclosed information is determined to be complete and the consistency review can begin, please indicate your consent by signing this letter in the space provided below and returning a signed copy to the attention of Bruce Cooley, LLOG Exploration Offshore, L.L.C., 1001 Ochsner Boulevard, Suite 200, Covington, Louisiana 70433.

Your cooperation in this matter is greatly appreciated.

Very truly yours,
LLOG EXPLORATION OFFSHORE, L.L.C.



Bruce Cooley
Vice President Facilities Engineering
Attachments

NOTIFICATION OF INFORMATION COMPLETENESS AND THAT REVIEW CAN COMMENCE.

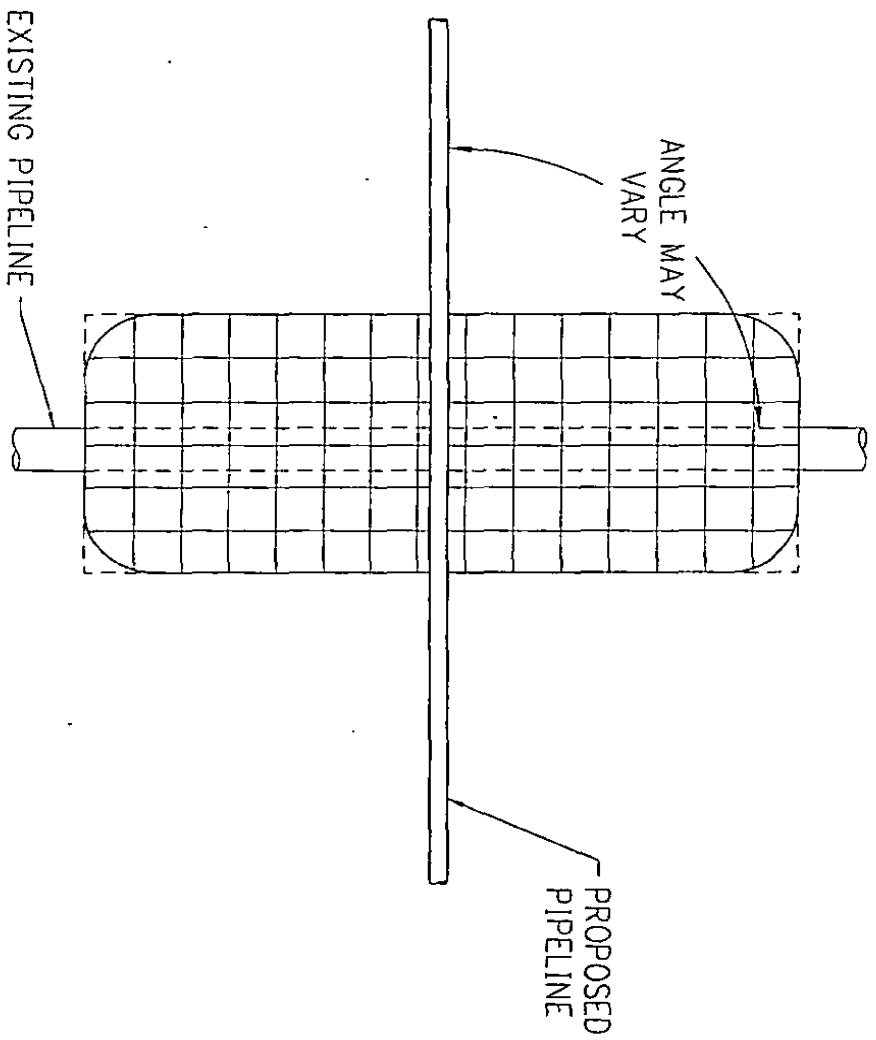
THIS _____ DAY OF _____, 2011

By: _____

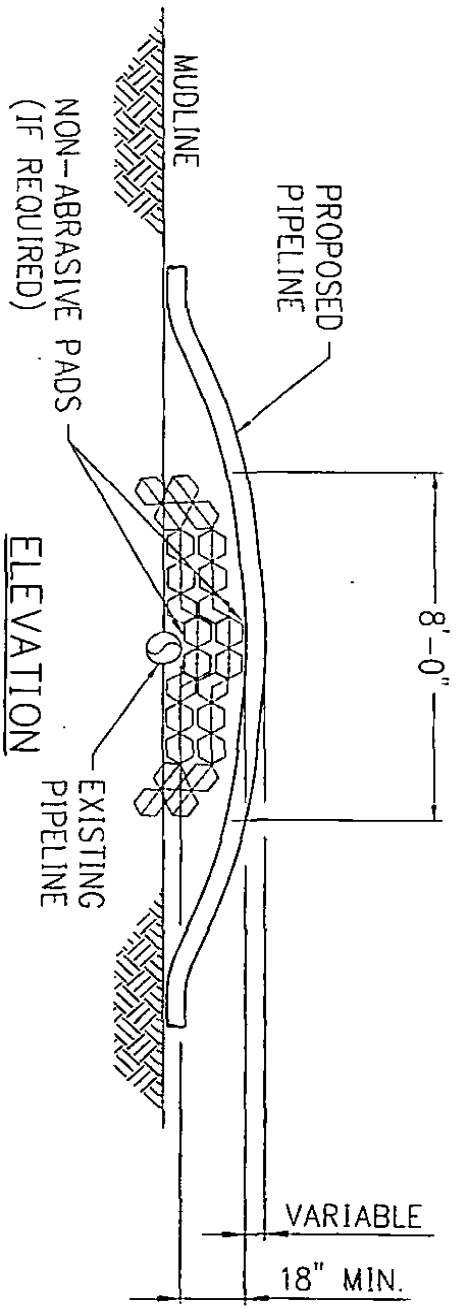
Title: _____

Attachment H

Pipeline Crossing Detail



PLAN



- NOTES:
1. MAT DIMENSIONS: 20'-0" X 8'-0" X 9"
 2. CONCRETE MAT IS COMPRISED OF BLOCKED ELEMENTS MOLDED ONTO UV, STABILIZED ROPE.
 3. TYPICAL PIPELINE CROSSING REQUIRES A MINIMUM OF (2) MATS.

TYPICAL PIPELINE CROSSING--OVER 500' WATER DEPTH.
GULF OF MEXICO

Attachment I

Archaeological Engineering Hazard Survey

See Binder

Attachment J

Digital Data

See CDS

Attachment K

Payment Confirmation



MISSISSIPPI
DEPARTMENT OF MARINE RESOURCES

June 28, 2011

Bruce Cooley, V.P.
Facilities Engineering
LLOG Exploration Offshore, L.L.C.
1001 Ochsner Blvd., Suite 200
Covington, LA 70433

Subject: LLOG Exploration Offshore, L.L.C.
Proposed Bulk Oil Pipeline ROW
Mississippi Canyon Area, from Block 199 to 143
Offshore Louisiana and Mississippi
DMR #110430

Dear Mr. Cooley:

The State of Mississippi has completed the review of subject by your May 26, 2011 letter, under the Coastal Zone Management Act of 1972. The Department of Marine Resources, as the lead coastal program agency for the State of Mississippi pursuant to 16 U.S.C. Section 1456(c) and Section 57-15-5 of the Mississippi Code of 1972, concurs with LLOG's consistency certification for this project.

If you have any questions about this matter, please do not hesitate to contact us.

Sincerely,

William W. Walker, Ph.D.
Executive Director

WWW/mtw

Minerals Management Service
RECEIVED

JUL 08 2011

cc: Michael Saucier, BOEMRE ✓
Bonnie La Borde Johnson, BOEMRE

Office of Field Operations
Pipeline Section

5N18309
BH

SU=18309



ROW East Pipeline
P/L SN 18309

MISSISSIPPI
DEPARTMENT OF MARINE RESOURCES

July 6, 2011

Bruce Cooley, V.P.
Facilities Engineering
LLOG Exploration Offshore, L.L.C.
1001 Ochsner Blvd., Suite 200
Covington, LA 70433

Subject: LLOG Exploration Offshore, L.L.C.
Proposed Bulk Oil Pipeline ROW for a manifold jumper and a well jumper
Mississippi Canyon Area, from Block 199 to 243
Offshore Louisiana and Mississippi
DMR #110430

Dear Mr. Cooley:

The State of Mississippi has determined the the consistency certification letter of June 28, 2011 for the above referenced project contained a typographical error. The lease blocks should have been described as "Block 199 to 243" instead of "Block 199 to 143". Please note this correction.

Sincerely,

Handwritten signature of William W. Walker in black ink.

William W. Walker, Ph.D.
Executive Director

WWW/mfw

cc: Michael Saucier, BOEMRE
Bonnie La Borde Johnson, BOEMRE

BOBBY JINDAL
GOVERNOR

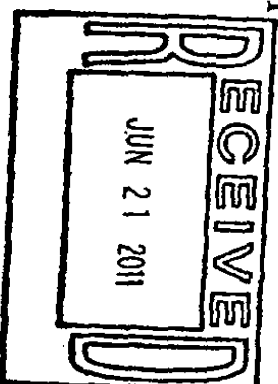


SCOTT A. ANGELLE
SECRETARY

State of Louisiana

DEPARTMENT OF NATURAL RESOURCES OFFICE OF COASTAL MANAGEMENT

June 17, 2011



Bruce Cooley
LLOG Exploration Offshore, L.L.C.
1001 Ochsner Boulevard, Suite 200
Covington, LA 70433

RE: C20110245, Coastal Zone Consistency
LLOG Exploration Offshore, L.L.C.
Bureau of Ocean Energy Management, Regulation, and Enforcement
Federal License or Permit
Install 5.563 inch Bulk Oil Right-of-Way Pipeline (East Bulk Oil Pipeline) from
Mississippi Canyon 199 to Mississippi Canyon 243, Offshore, Louisiana

Dear Mr. Cooley:

The above referenced project has been reviewed for consistency with the approved Louisiana Coastal Resources Program (LCRP) as required by Section 307 of the Coastal Zone Management Act of 1972, as amended. The project, as proposed in the application, is consistent with the LCRP.

If you have any questions concerning this determination please contact Carol Crapanzano of the Consistency Section at (225) 342-9425 or Carol.Crapanzano@la.gov.

Sincerely,

A handwritten signature in black ink, appearing to read "Gregory J. DuCote".

Gregory J. DuCote
Administrator

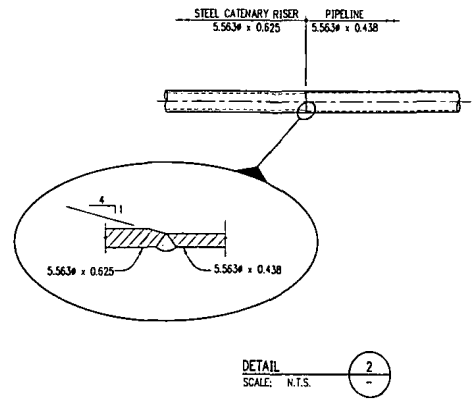
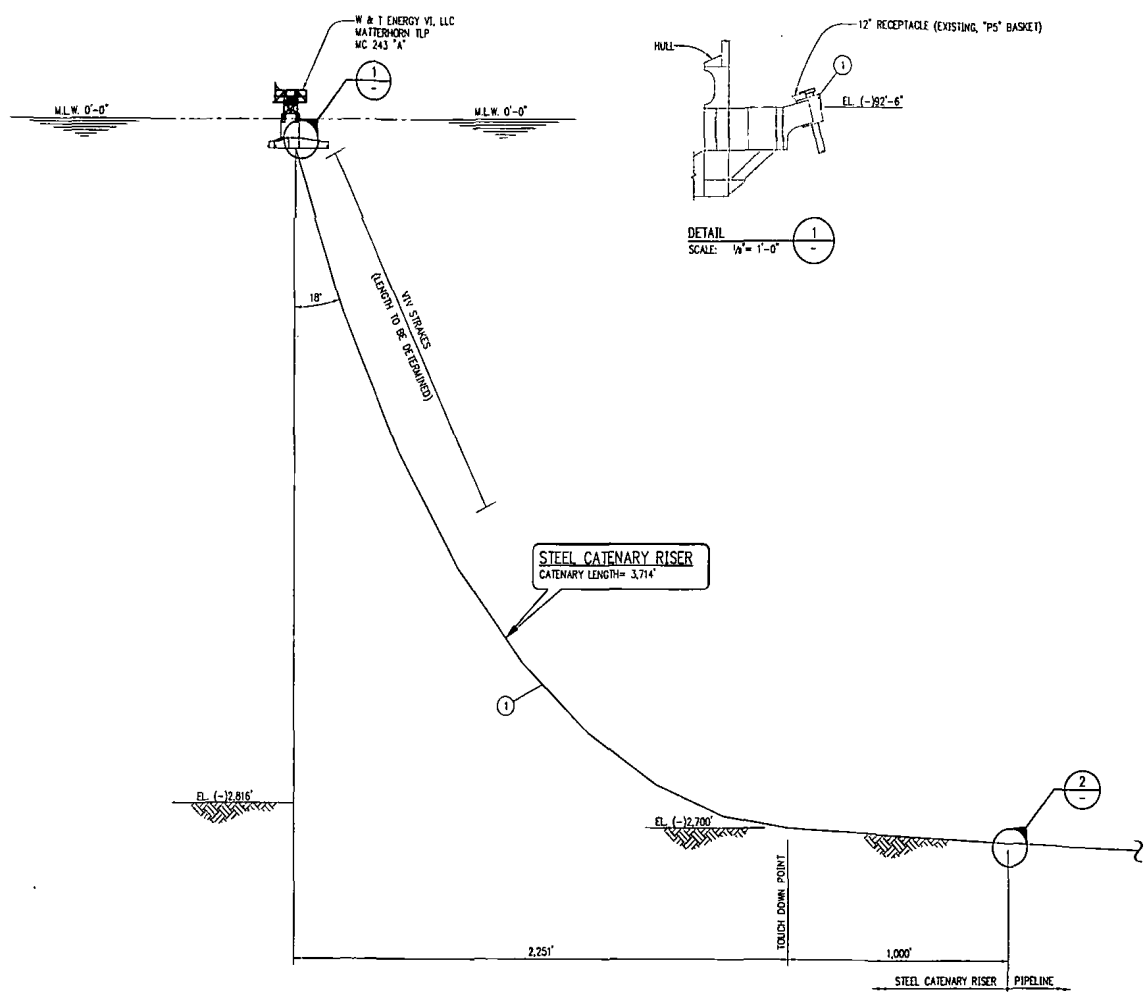
Interagency Affairs/Field Services Division

GJD/JDH/cmc

cc: BOEMRE ATTENTION PIPELINE APPROVALS
Bonnie Johnson, BOEMRE 5412

Post Office Box 44487 • Baton Rouge, Louisiana 70804-4487
617 North Third Street • 10th Floor • Suite 1078 • Baton Rouge, Louisiana 70802
(225) 342-7591 • Fax (225) 342-9439 • <http://www.dnr.louisiana.gov>
An Equal Opportunity Employer

MATERIAL SUMMARY		
ITEM	QTY.	DESCRIPTION
1	4,714'	5.563# 0.625 WT PIPELINE, API 5L X65, PSL-2, SMLS, 12-14 MILS FBE, WITH 1" 6SPU
2	ONE	STEEL CATENARY RISER FLEX JOINT ASSEMBLY, OIL STATES



RISER ELEVATION
SCALE: 1" = 300'-0"

NOTES
1. HYDROTEST:
THE RISER SHALL BE HYDROTESTED WITH PIPELINE TO A MINIMUM OF 4631 PSI AND HELD FOR A PERIOD OF 8 HOURS. THE PRESSURE SHALL HOLD OR RISE OVER THE LAST TWO HOURS.

THIS DRAWING IS THE PROPERTY OF AND EMBODIES CONFIDENTIAL INFORMATION OF PINNACLE ENGINEERING, INC. & LLOG EXPLORATION OFFSHORE, INC. THIS DRAWING AND THE INFORMATION THEREON SHALL NOT BE REPRODUCED OR DISCLOSED TO ANY OTHER PARTY OR USED FOR ANY OTHER PURPOSE OTHER THAN FOR THE BENEFIT OF AND AS AUTHORIZED BY PINNACLE ENGINEERING, INC. OR LLOG EXPLORATION OFFSHORE, INC.

NO.	DATE	REVISION	BY	APPR.

PINNACLE
ENGINEERING

TX REGISTERED ENGR FIRM F-567

APPROVAL	
Drawn By:	J. GUEVARRA
Date:	5-17-11
Checked By:	
Date:	
Designed By:	
Date:	
Approved By:	
Date:	

LLOG
exploration

MANDY SUBSEA DEVELOPMENT

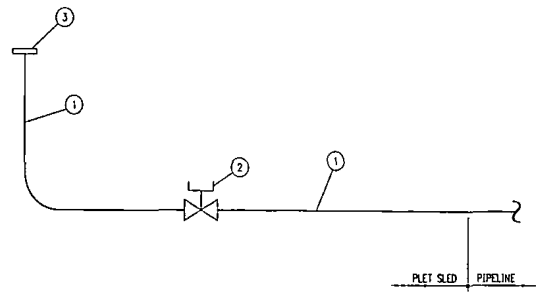
MC 199 TO MC 243 "A"

RISER ELEVATION DETAILS AT MISSISSIPPI CANYON 243 "A"
(EAST BULK OIL RISER)

JOB NO. 2022600 SCALE: NOTED DMC. NO. 9002A REV. A

Job: 05737/1 10-08 P:\PINNACLE\0007\STRUCT\2022600\2022600002.dwg

MATERIAL SUMMARY		
ITEM	QTY.	DESCRIPTION
1	--	PIPE, 5.5634 O.D. WT., API 5L GR X65, SMLS, COATED WITH 12-14 MILS D.F.T. FUSION BONDED EPOXY, WITH 2" OGPU
2	ONE	VALVE, 4 1/2", GATE, API 5000, MANUAL OPERATOR WITH ROV INTERFACE, 1/2" NPT, 81M O.D. WT., GR X65 PIPE, RATED FOR SUBSEA SERVICE
3	ONE	REMOTE ARTICULATED CONNECTOR, 4 1/2", API 10000, MALE CONNECTOR ASSEMBLY, OIL STATES



Job No. 202500 05/25/11 11:50 P:\PINNACLE\ROOT\STRUCT\202500\202500S.DWG

NOTES

1. HYDROTESTS:
 THE PLET ASSEMBLY SHALL BE HYDROTESTED TO A MINIMUM OF 4632 PSI AND HELD FOR A PERIOD OF 8 HOURS. THE PRESSURE SHALL HOLD OR RISE OVER THE LAST TWO HOURS.

THIS DRAWING IS THE PROPERTY OF AND EMBODIES CONFIDENTIAL INFORMATION OF PINNACLE ENGINEERING, INC. & LLOG EXPLORATION OFFSHORE, INC. THIS DRAWING AND THE INFORMATION THEREON SHALL NOT BE REPRODUCED OR DISCLOSED TO ANY OTHER PARTY OR USED FOR ANY OTHER PURPOSE OTHER THAN FOR THE BENEFIT OF AND AS AUTHORIZED BY PINNACLE ENGINEERING, INC. OR LLOG EXPLORATION OFFSHORE, INC.

NO.	DATE	REVISION	BY	APPR.
A		ISSUED FOR PERMIT		

PINNACLE ENGINEERING

TX REGISTERED ENGR FIRM F-567

APPROVAL	
Drawn By	J. GUEVRA
Date	5-19-11
Checked By	
Date	
Designed By	
Date	
Approved By	
Date	

LLOG
exploration

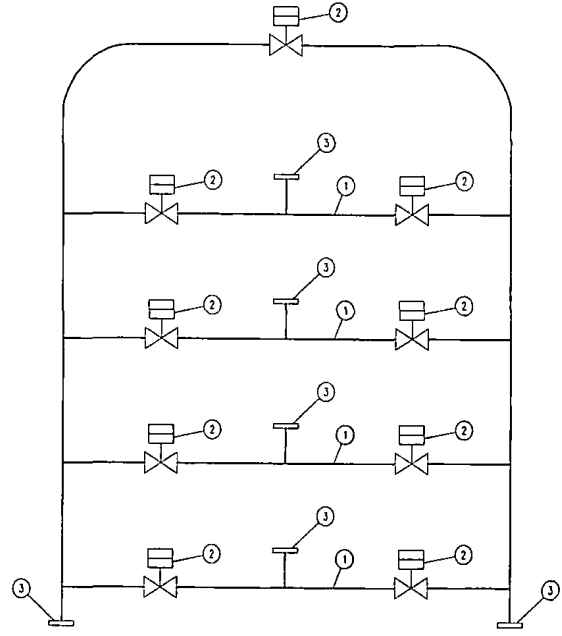
MANDY SUBSEA DEVELOPMENT

MC 199 TO MC 243 "A"

5" PLET PIPING SCHEMATIC

JOB NO. 202500 SCALE: NOTED DWG. NO. 903 REV. A

MATERIAL SUMMARY		
ITEM	QTY.	DESCRIPTION
1	-	PIPE, 5.563M 0.438 WT., API 5L GR X65, SMLS, COATED WITH 12-14 MILS D.F.T. FUSION BONDED EPOXY, WITH 2" CSPU
2	9	VALVE, 4 1/2" GATE, API 5000, MANUAL OPERATOR WITH ROW INTERFACE, ME + ME, 8TM 0.438 WT. GR X65 PIPE, RATED FOR SUBSEA SERVICE
3	6	REMOTE ARTICULATED CONNECTOR, 4 1/2", API 10000, MALE CONNECTOR ASSEMBLY, OIL STATES



Job No. 202800 05/29/11 13:59 P:\PINNACLE\ROOT\STRUCT\202800\20280004.dwg

NOTES

1. HYDROTEST:
 THE MANIFOLD ASSEMBLY SHALL BE HYDROTESTED TO A MINIMUM OF 4632 PSI AND HELD FOR A PERIOD OF 8 HOURS. THE PRESSURE SHALL HOLD OR RISE OVER THE LAST TWO HOURS.

THIS DRAWING IS THE PROPERTY OF AND EMBODIES CONFIDENTIAL INFORMATION OF PINNACLE ENGINEERING, INC. & LLOG EXPLORATION OFFSHORE, INC. THIS DRAWING AND THE INFORMATION THEREON SHALL NOT BE REPRODUCED OR DISCLOSED TO ANY OTHER PARTY OR USED FOR ANY OTHER PURPOSE OTHER THAN FOR THE BENEFIT OF AND AS AUTHORIZED BY PINNACLE ENGINEERING, INC. OR LLOG EXPLORATION OFFSHORE, INC.

NO.	DATE	REVISION	BY	APPR
A		ISSUED FOR PERMIT		

PINNACLE ENGINEERING

TX REGISTERED ENGR FIRM F-567

APPROVAL	
Drawn By	A. CHEVANA
Date	5-19-11
Checked By	
Date	
Designed By	
Date	
Approved By	
Date	

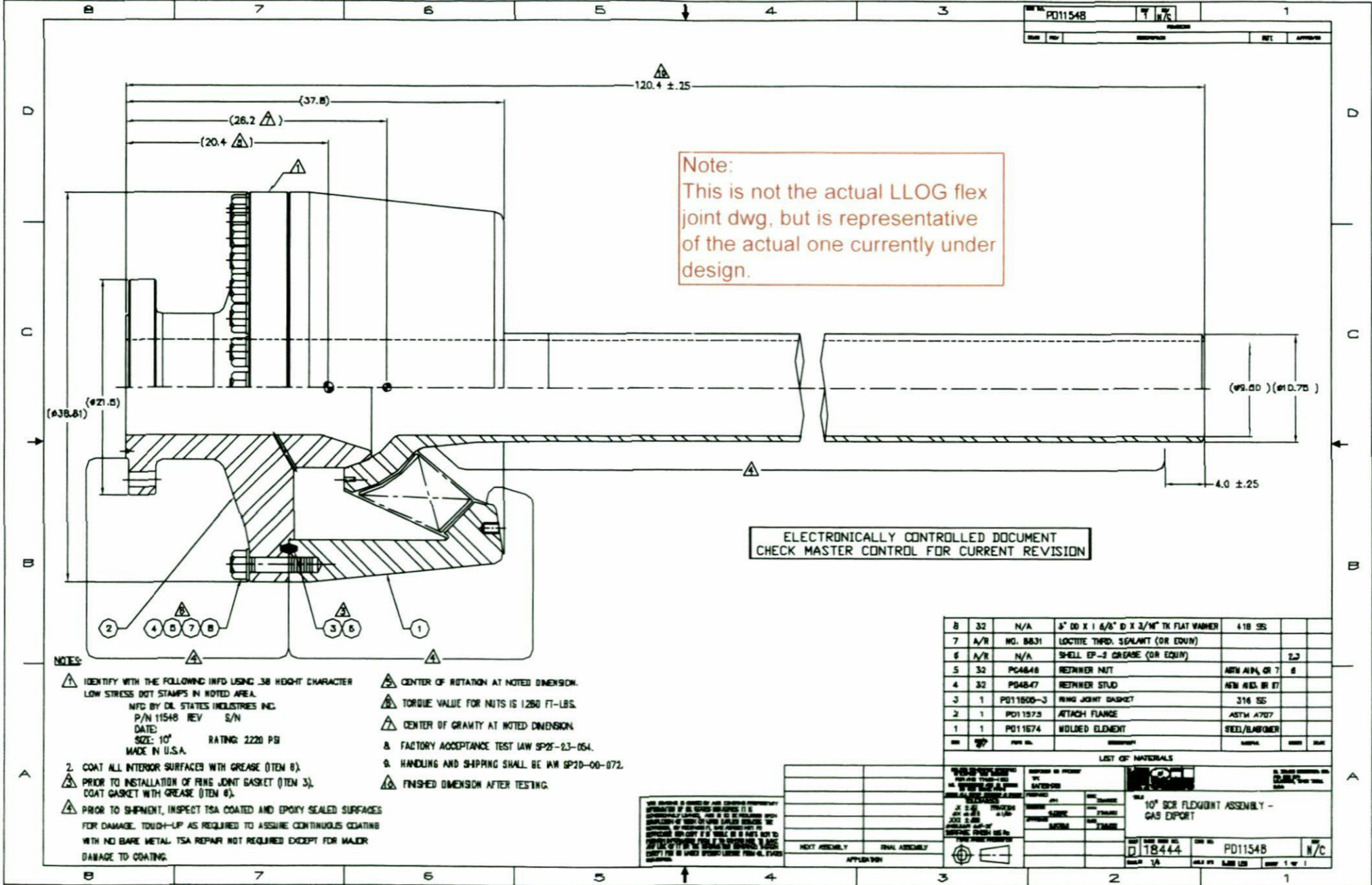
LLOG
 exploration

MANDY SUBSEA DEVELOPMENT

MC 199 TO MC 243 "A"

MANIFOLD SCHEMATIC

JOB NO. 202800 SCALE: NOTED DWG. NO. 904 REV. A



Note:
This is not the actual LLOG flex joint dwg, but is representative of the actual one currently under design.

ELECTRONICALLY CONTROLLED DOCUMENT
CHECK MASTER CONTROL FOR CURRENT REVISION

- NOTES:**
- 1. IDENTIFY WITH THE FOLLOWING INFO USING .38 HEIGHT CHARACTER LOW STRESS DOT STAMPS IN NOTED AREA.
MFG BY DL STATES INDUSTRIES INC.
P/N 11548 REV S/N
DATE:
SIZE: 10" RATING: 2220 PSI
MADE IN U.S.A.
 - 2. COAT ALL INTERIOR SURFACES WITH GREASE (ITEM 8).
PRIOR TO INSTALLATION OF RING JOINT GASKET (ITEM 3), COAT GASKET WITH GREASE (ITEM 8).
 - 3. PRIOR TO SHIPMENT, INSPECT TSA COATED AND EPOXY SEALED SURFACES FOR DAMAGE. TOUCH-UP AS REQUIRED TO ASSURE CONTINUOUS COATING WITH NO BARE METAL. TSA REPAIR NOT REQUIRED EXCEPT FOR MAJOR DAMAGE TO COATING.
 - 4. CENTER OF ROTATION AT NOTED DIMENSION.
 - 5. TORQUE VALUE FOR NUTS IS 1280 FT-LBS.
 - 6. CENTER OF GRAVITY AT NOTED DIMENSION.
 - 7. FACTORY ACCEPTANCE TEST LAW SP25-23-054.
 - 8. HANDLING AND SHIPPING SHALL BE W9 SP20-00-072.
 - 9. FINISHED DIMENSION AFTER TESTING.

QTY	UNIT	DESCRIPTION	MATERIAL	REMARKS
8	32	N/A	3" OD X 1 1/8" ID X 3/4" THK FLAT WAFER	418 SS
7	A/R	NO. 8831	LOCTITE THREAD SEALANT (OR EQUIV)	
6	A/R	N/A	SHELL EP-2 GREASE (OR EQUIV)	2,3
5	32	PG4848	RETAINER NUT	ASTM A193, GR 7 B
4	32	PG4847	RETAINER STUD	ASTM A193, GR 7 B
3	1	PD11500-3	RING JOINT GASKET	316 SS
2	1	PD11573	ATTACH FLANGE	ASTM A707
1	1	PD11574	WELDED ELEMENT	STEEL/LABOMER

LIST OF MATERIALS

ITEM NO.	DESCRIPTION	QTY	UNIT	REMARKS
1	10" SCR FLEXJOINT ASSEMBLY - GAS EXPORT	1	ASSEMBLY	

THIS DRAWING IS CONTROLLED BY THE ISSUING AUTHORITY. ANY CHANGES MUST BE APPROVED BY THE ISSUING AUTHORITY. THIS DRAWING IS THE PROPERTY OF THE ISSUING AUTHORITY AND IS NOT TO BE REPRODUCED OR TRANSMITTED IN ANY FORM OR BY ANY MEANS, ELECTRONIC OR MECHANICAL, INCLUDING PHOTOCOPYING, RECORDING, OR BY ANY INFORMATION STORAGE AND RETRIEVAL SYSTEM. VIOLATION OF THIS NOTICE IS SUBJECT TO PROSECUTION.

REV	DATE	BY	CHKD	APP'D	DESCRIPTION
1	2002 08 28	J. J. [Signature]	[Signature]	[Signature]	ISSUED FOR PRODUCTION

10" SCR FLEXJOINT ASSEMBLY - GAS EXPORT

REV: 18444

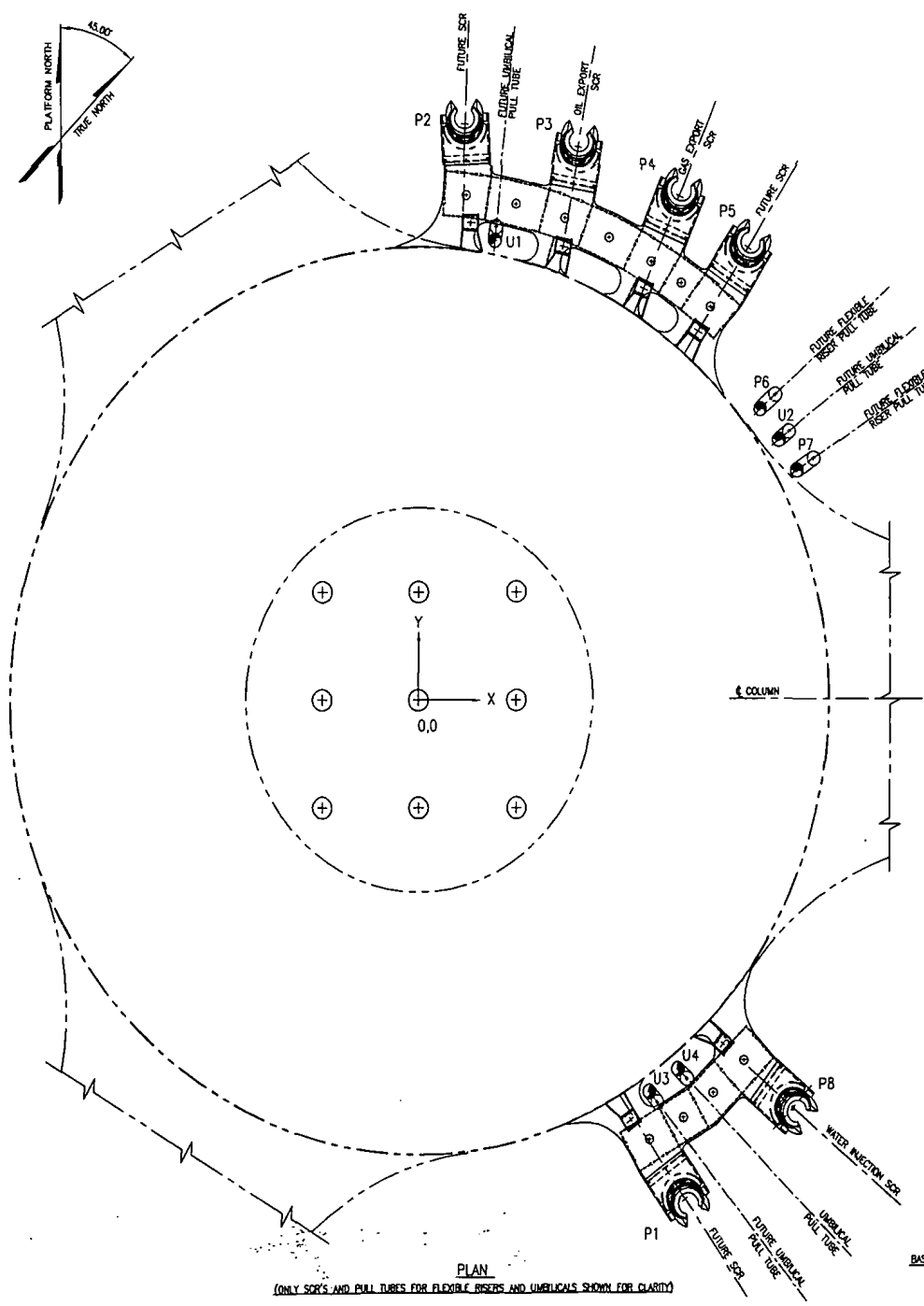
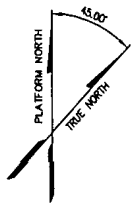
DATE: 2002 08 28

BY: J. J. [Signature]

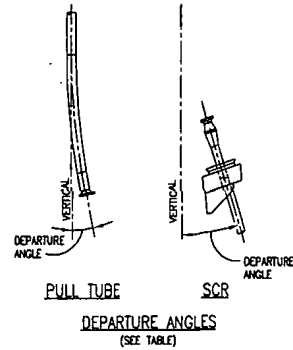
CHKD: [Signature]

APP'D: [Signature]

SCALE: 1/1



PLAN
(ONLY SCR'S AND PULL TUBES FOR FLEXIBLE RISERS AND UMBILICALS SHOWN FOR CLARITY)



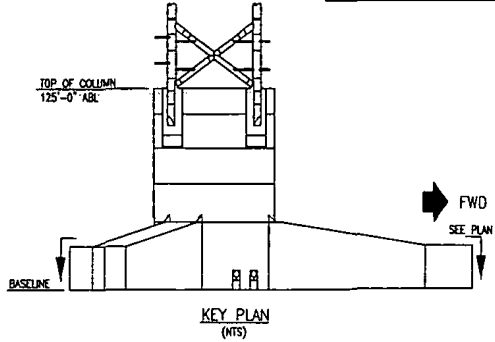
**REVISED
APPROVED FOR
CONSTRUCTION**
SEPT 26, 2002

REVISIONS				
NO	BY	DESCRIPTION	DATE	CHK APVD
A	JIS	ISSUED FOR INFORMATION ONLY	28 OCT 01	
B	JIS	ISSUED FOR INFORMATION ONLY	10 JAN 02	
C	JIS	ISSUED FOR INFORMATION ONLY	24 JAN 02	
D	JIS	ISSUED FOR INFORMATION ONLY	20 MAR 02	
0	JIS	APPROVED FOR CONSTRUCTION	27 JUN 02	WAG ACK
1	BTP	1. REVISED DEPARTURE ANGLE ON P5 2. REVISED WALL THICKNESS CALL OUT TO REFLECT REFERENCE DRAWING NO. 1	07 AUG 02	WAG WAG
2	BTP	REVISED WALL THICKNESS CALL OUTS.	28 SEP 02	WAG ACK

REFERENCE DRAWINGS		
NO.	DWG NO.	DRAWING TITLE
1	21079-DG-0011	HULL/TOPSIDES INTERFACE PIPING MATRIX

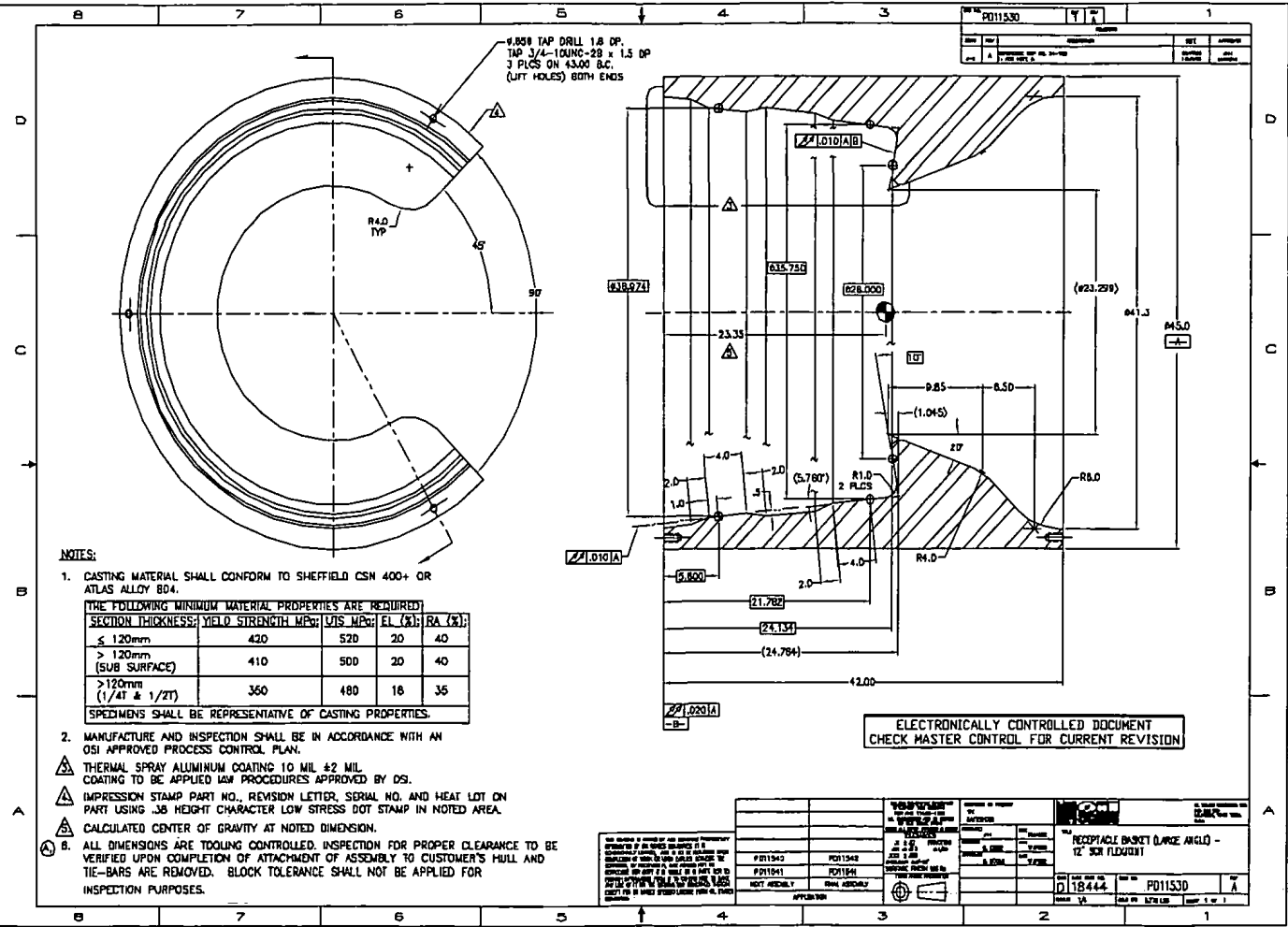
- DRAWING NOTES**
- PULLTUBE "X,Y,Z," COORDINATES ARE TO THE BOTTOM FLANGE FACE.
 - SCR "X,Y,Z," COORDINATES ARE TO THE CENTER OF ROTATION OF THE FLEX JOINT.
 - "DIRECTIONAL BEARING" IS RELATIVE TO TRUE NORTH.
 - ALL FLEXIBLE RISER PULL TUBES HAVE 80' BEND RADIUS. ALL UMBILICAL PULL TUBES HAVE 50' BEND RADIUS.
 - ALL PULL TUBE FLANGES ARE 16" 900# REWM ANS Q1 105. FLANGE BORE TO MATCH PULL TUBE WALL THICKNESS.
 - 12" O.A. CLAMPS TO BE PROVIDED ON HULL FOR P1, P2 AND P5.

FLEXIBLE RISER, SCR & UMBILICAL SYSTEM ARRANGEMENT								
SLOT	DESCRIPTION	PULL TUBE OR PIPE OD	WALL THICKNESS (WT)	COORDINATES			DEPARTURE ANGLE	DIRECTIONAL BEARING
				X	Y	Z		
P1	FUTURE SCR	6"	-	27'-2 3/8"	-46'-1 3/4"	12'-1 3/8"	15 deg	S 80.00° E
P2	FUTURE SCR	6"	-	5'-0 1/4"	53'-3 3/16"	12'-1 3/8"	15 deg	N 42.50° W
P3	OIL EXPORT SCR	8"	0.5	16'-7"	51'-1 7/8"	12'-1 3/8"	18 deg	N 34.50° W
P4	GAS EXPORT SCR	10"	0.594	26'-10 1/4"	46'-6 5/8"	12'-1 3/8"	15 deg	N 21.50° W
P5	FUTURE SCR	6"	-	33'-8"	41'-6 15/16"	12'-1 3/8"	18 deg	N 11.50° W
P6	FUTURE FLEXIBLE RISER PULL TUBE	16"	0.656	36'-7 1/8"	28'-1 7/8"	3'-6"	11 deg	N 4.50° E
P7	FUTURE FLEXIBLE RISER PULL TUBE	16"	0.656	40'-5 13/16"	22'-2 3/8"	3'-6"	11 deg	N 12.50° E
P8	WATER INJECTION SCR	6"	0.432	36'-3 1/2"	-37'-8 7/8"	12'-1 3/8"	15 deg	N 84.00° E
U1	FUTURE UMBILICAL PULL TUBE	16"	0.656	8'-0 1/2"	43'-10 9/16"	3'-6"	10 deg	N 38.50° W
U2	FUTURE UMBILICAL PULL TUBE	16"	0.656	37'-11 3/16"	24'-8 11/16"	3'-6"	10 deg	N 8.50° E
U3	FUTURE UMBILICAL PULL TUBE	16"	0.656	24'-5 1/8"	-37'-3 7/8"	3'-6"	10 deg	S 85.00° E
U4	UMBILICAL PULL TUBE	16"	0.656	27'-5 3/8"	-35'-1 7/8"	3'-6"	10 deg	N 89.00° E



KEY PLAN
(MTS)

<p>PATENTED</p> <p>THE DESIGN - U.S. PATENT NO. 6,117,816; EUROPEAN PATENT NO. 1,827,822; CANADIAN PATENT NO. 2,382,822. THE DESIGN IS PROTECTED UNDER THE UNITED STATES PATENT LAWS AND IS NOT TO BE REPRODUCED OR USED TO PROMOTE ANY PRODUCT OR SERVICE WITHOUT THE WRITTEN PERMISSION OF ATLANTIA OFFSHORE LIMITED.</p>		<p>PROPRIETARY</p> <p>THIS DOCUMENT AND THE INFORMATION CONTAINED HEREIN ARE THE PROPERTY OF ATLANTIA OFFSHORE LIMITED - HOLDINGS LTD. U.S.A. AND ARE NOT TO BE REPRODUCED OR USED TO PROMOTE ANY PRODUCT OR SERVICE WITHOUT THE WRITTEN PERMISSION OF ATLANTIA OFFSHORE LIMITED.</p>	
<p>Atlantia Offshore Limited</p>		<p>TotalFinaElf E&P USA, Inc. MATTERHORN MISSISSIPPI CANYON 243</p>	
<p>SCALE: 3/16" = 1'-0" DATE: OCT 15 01</p>		<p>SEASTAR® TENSION LEG PLATFORM</p>	
<p>DESIGNED BY: JIS DATE: OCT 15 01</p>		<p>SCR & PULL TUBE ARRANGEMENT AT DEPARTURE ELEVATION</p>	
<p>DFTD CHK BY: DCH DATE: 27 JUN 02</p>		<p>APPROVED BY: ACK DATE: 27 JUN 02</p>	
<p>ENGRG CHK BY: WAG DATE: 27 JUN 02</p>		<p>DRAWING NO. 21079-DG-0012</p>	
<p>QA CHK BY: TK DATE: 27 JUN 02</p>		<p>SHT. 1 OF 1 REV. 2</p>	
<p>APPROVED BY: ACK DATE: 27 JUN 02</p>		<p>PROJECT NO. 21079 CLIENT DRAWING NO.</p>	



P011530			
REV	DATE	BY	CHK
1	11/18/44

NOTES:

1. CASTING MATERIAL SHALL CONFORM TO SHEFFIELD CSN 400+ OR ATLAS ALLOY 804.

THE FOLLOWING MINIMUM MATERIAL PROPERTIES ARE REQUIRED				
SECTION THICKNESS	YIELD STRENGTH MPa	TENS MPa	EL. (%)	RA (%)
≤ 120mm	420	520	20	40
> 120mm (SUB SURFACE)	410	500	20	40
> 120mm (1/4T & 1/2T)	360	480	18	35

SPECIMENS SHALL BE REPRESENTATIVE OF CASTING PROPERTIES.

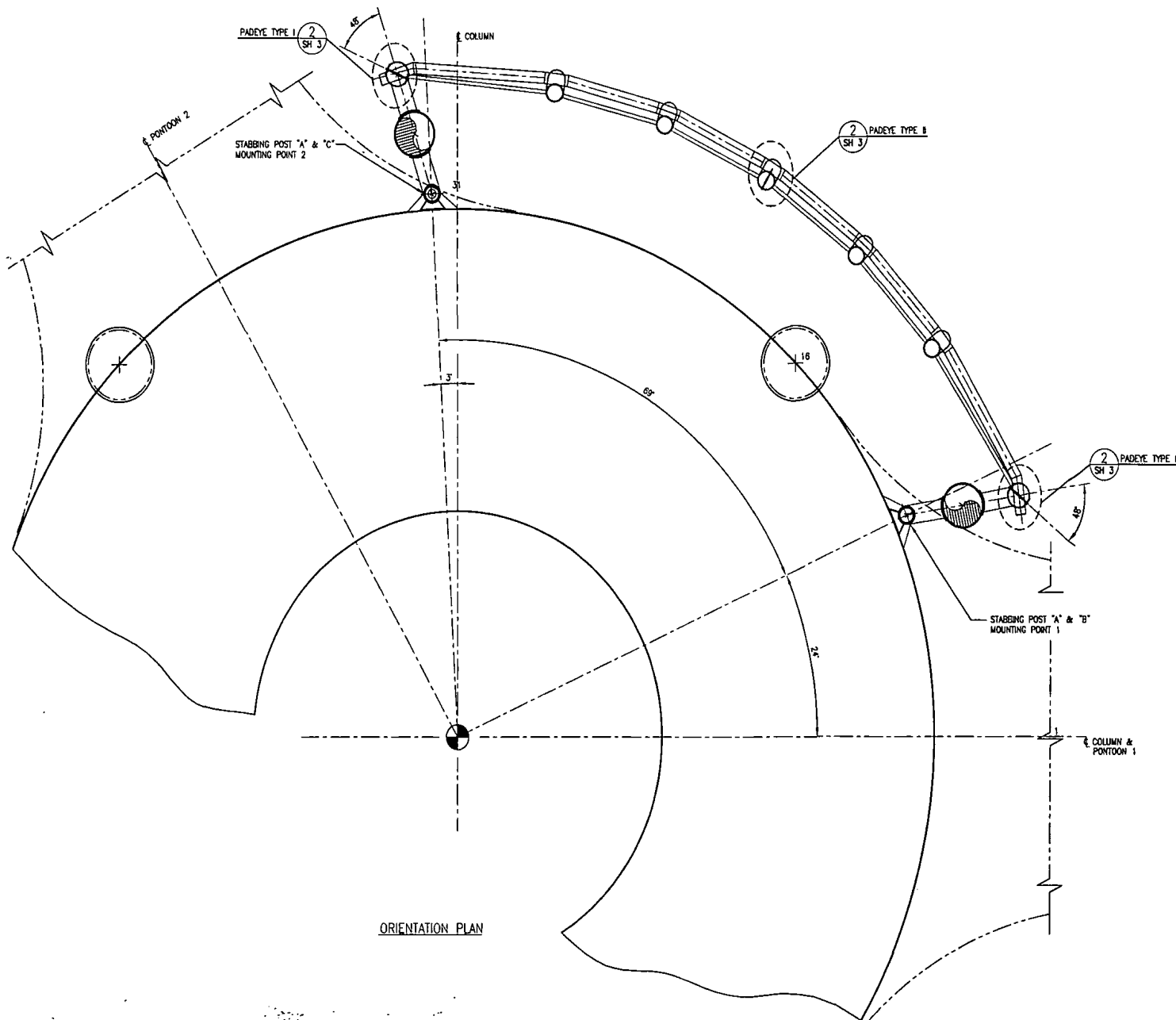
2. MANUFACTURE AND INSPECTION SHALL BE IN ACCORDANCE WITH AN OSI APPROVED PROCESS CONTROL PLAN.

- ▲ THERMAL SPRAY ALUMINUM COATING 10 MIL ±2 MIL COATING TO BE APPLIED IN PROCEDURES APPROVED BY OSI.
- ▲ IMPRESSION STAMP PART NO., REVISION LETTER, SERIAL NO. AND HEAT LOT ON PART USING .38 HEIGHT CHARACTER LOW STRESS DOT STAMP IN NOTED AREA.
- ▲ CALCULATED CENTER OF GRAVITY AT NOTED DIMENSION.

▲ B. ALL DIMENSIONS ARE TOOLING CONTROLLED. INSPECTION FOR PROPER CLEARANCE TO BE VERIFIED UPON COMPLETION OF ATTACHMENT OF ASSEMBLY TO CUSTOMER'S HULL AND TIE-BARS ARE REMOVED. BLOCK TOLERANCE SHALL NOT BE APPLIED FOR INSPECTION PURPOSES.

ELECTRONICALLY CONTROLLED DOCUMENT
CHECK MASTER CONTROL FOR CURRENT REVISION

RECEIPTABLE BASKET (LARGE ANGLE) - 12" SQ. FLUORIN D 118444 P011530 1 of 1		APPROVED BY: _____ DATE: _____
---	--	-----------------------------------



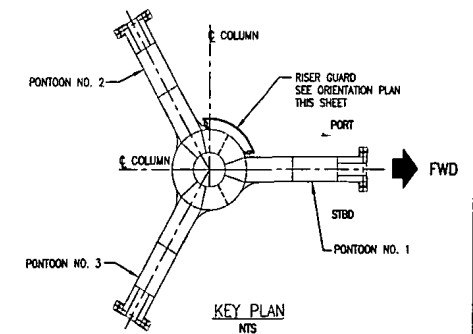
ORIENTATION PLAN

REVISIONS				
NO	BY	DESCRIPTION	DATE	CHK APVD
0	SM	APPROVED FOR CONSTRUCTION	10 MAY 02	GM ACK

REFERENCE DRAWINGS		
NO.	DWG NO.	DRAWING TITLE
0	21079-DG-1001	HULL GENERAL NOTES
1	21079-DG-1005	PRINCIPAL DIMENSIONS
2	21079-DG-1010	MOLDED LINES
3	21079-DG-1050	COLUMN STRUCTURE
4	21079-DG-1070	STANDARD STRUCTURAL DETAILS
5	21079-DG-1080	GRINDING LOCATIONS AND DETAILS

- DRAWING NOTES**
- 1). ALL PLATE MATERIAL TO BE ABS GRADE AH36, TUBULAR STEEL TO BE API 5LX52, UNLESS NOTED OTHERWISE.
 - 2). ALL WELDING TO BE IN ACCORDANCE WITH ABS RULES FOR WELDING AND AWS D1.1, LATEST EDITION.
 - 3). FREE EDGES OF PLATE MUST MEET AWS OXYGEN CUTTING SURFACES ROUGHNESS GAUGE CA-1-G, SAMPLE 4.
 - 4). ALL DIMENSIONS GIVEN ARE SUBORDINATE TO PRINCIPAL DIMENSIONS AS GIVEN IN REF NO. 1. REPEATED DIMENSIONS GIVEN HERE ARE FOR INFORMATION ONLY. WHERE ANY CONTRADICTION ARISES, REF NO. 1 SHALL BE CONSIDERED AUTHORITY.
 - 5). FABRICATOR SHALL OBSERVE MOLDED DIMENSIONS. REFERENCE NO. 2 SHALL BE REGARDED AS AUTHORITY IN DEFINING ALL MOLDED SURFACES TRAILING. ADDITIONAL DIMENSIONS GIVEN HERE SHALL BE REGARDED AS MOLDED UNLESS NOTED OTHERWISE.

APPROVED FOR
CONSTRUCTION
MAY 10, 2002

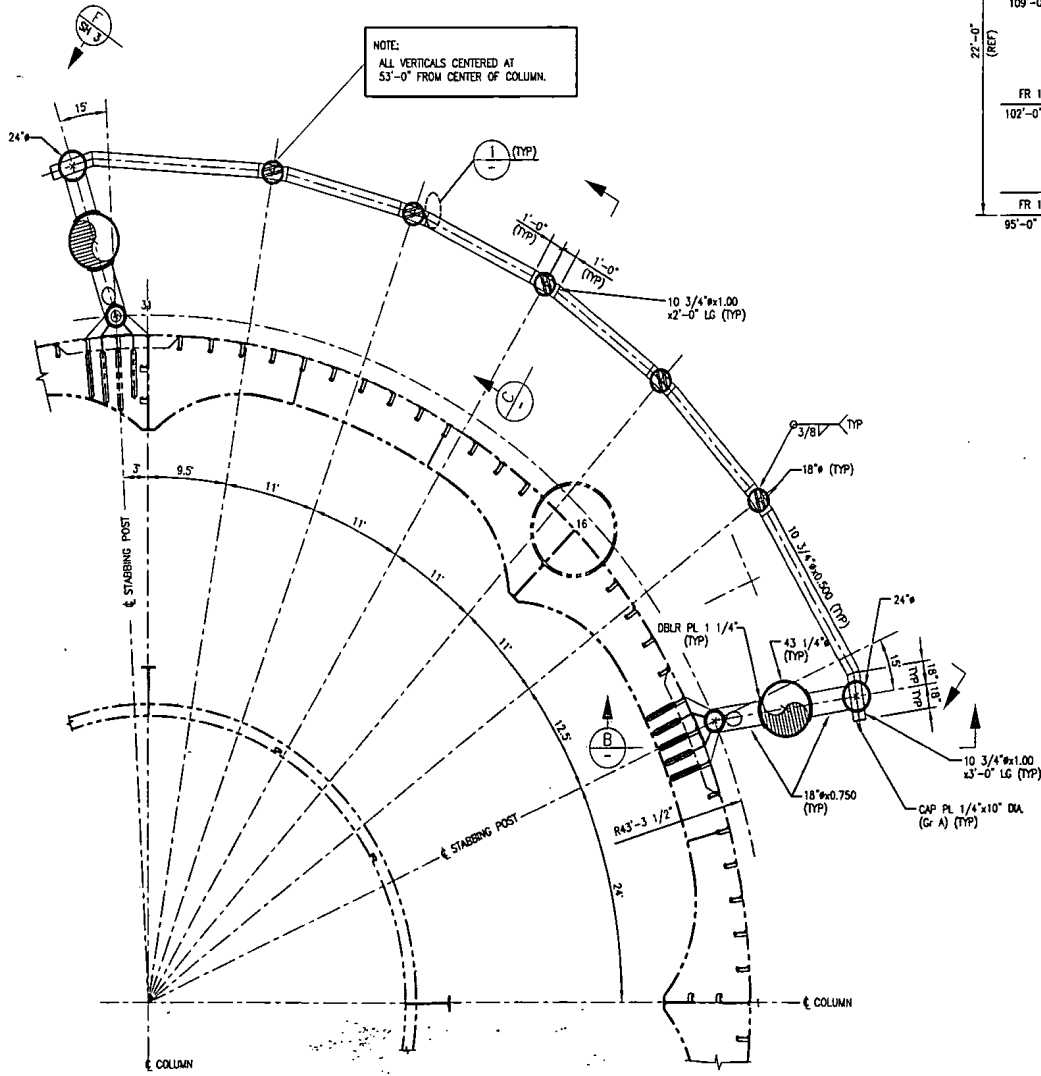


<p>PATENTED</p> <p>THE SEASTAR - U.S. PATENT NO. 5,117,814; 5,297,422; 5,432,274; 5,448,184 AND 5,864,552. THE FORM OR STYLE DEVICES IN THIS DOCUMENT ARE PROPRIETARY AND STRICTLY PROTECTED UNDER THE UNITED STATES PATENT LAWS, FOREIGN AND OTHER U.S. PATENTS PENDING.</p>		<p>PROPRIETARY</p> <p>THIS DOCUMENT AND THE INFORMATION DISCLOSED HEREIN ARE THE PROPERTY OF ATLANTIA OFFSHORE LIMITED * HOUSTON, TEXAS * U.S.A. AND ARE NOT TO BE REPRODUCED OR USED IN ANY MANNER WITHOUT THE WRITTEN PERMISSION OF ATLANTIA OFFSHORE LIMITED.</p>	
		<p>TotalFinaElf E&P USA, Inc. MATTERHORN MISSISSIPPI CANYON 243</p>	
<p>SCALE: 1/4" = 1'-0"</p>		<p>DATE: 22 MAR 02</p>	
<p>DESIGNED BY: SM</p>		<p>SEASTAR® TENSION LEG PLATFORM</p>	
<p>DFTD CHK BY: DCH</p>		<p>10 MAY 02</p>	
<p>ENGRD CHK BY: GM</p>		<p>10 MAY 02</p>	
<p>QA CHK BY: DEL</p>		<p>10 MAY 02</p>	
<p>APPROVED BY: ACK</p>		<p>10 MAY 02</p>	
<p>PROJECT NO. 21079</p>		<p>DRAWING NO. 21079-DG-1283</p>	
<p>CLIENT DRAWING NO.</p>		<p>SHT. 1 OF 4</p>	
<p>REV. 0</p>		<p>REV. 0</p>	

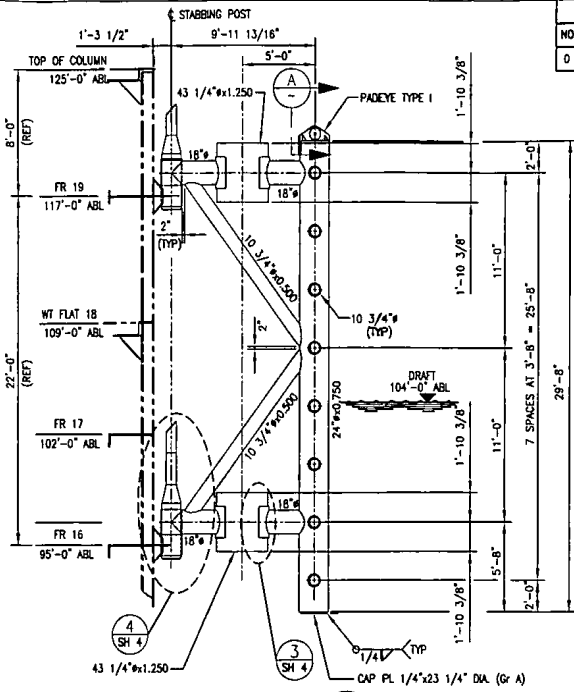
DETAIL
SCALE: 3" = 1'-0"

SECTION
SCALE: 3" = 1'-0"

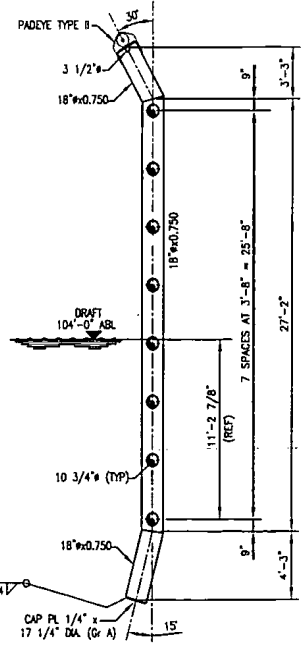
NOTE:
ALL VERTICALS CENTERED AT
53'-0" FROM CENTER OF COLUMN.



PLAN AT EL 117'-0" ABL
FRAME NO. 19



SECTION
SCALE: 1/4" = 1'-0"

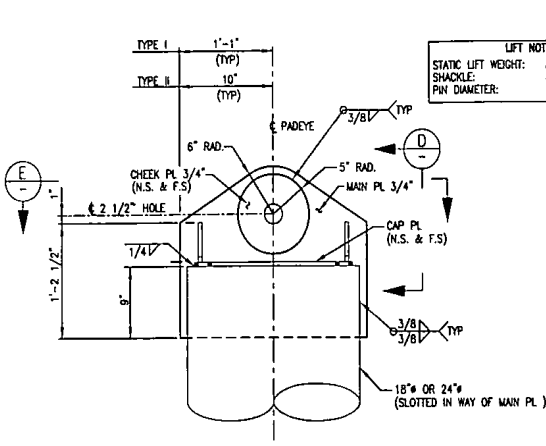


SECTION
SCALE: 1/4" = 1'-0"

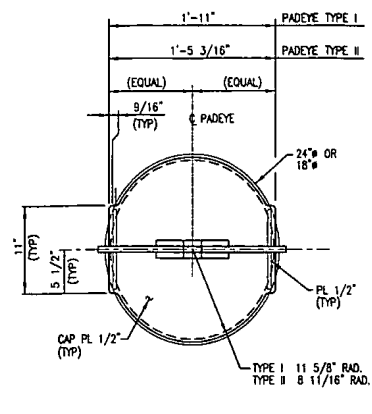
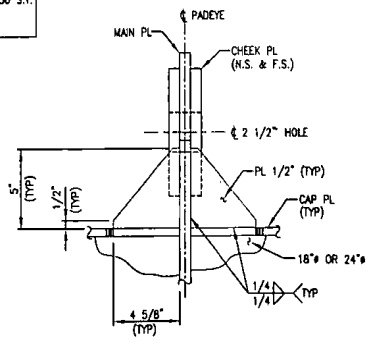
REVISIONS					
NO	BY	DESCRIPTION	DATE	CHK	APVD
0	SM	APPROVED FOR CONSTRUCTION	10 MAY 02	GM	ACK

APPROVED FOR
CONSTRUCTION
MAY 10, 2002

PATENTED		PROPRIETARY	
<small>THE SEASTAR - U.S. PATENT NOS. 5,117,814, 5,297,422, 5,432,274, 5,548,184 AND 5,644,550. THE SEAM OR IDEAS DISCLOSED IN THIS DOCUMENT ARE PROPRIETARY AND STRICTLY PROTECTED UNDER THE UNITED STATES PATENT LAWS, FOREIGN AND OTHER U.S. PATENTS PENDING.</small>		<small>THIS DOCUMENT AND THE INFORMATION DISCLOSED HEREIN ARE THE PROPERTY OF ATLANTIA OFFSHORE LIMITED - HOUSTON, TEXAS - U.S.A. AND ARE NOT TO BE REPRODUCED OR USED TO PURSUE ANY INFORMATION FOR PURPOSES OF TRADE OR OTHERWISE EXCEPT WHERE PROVIDED BY WRITTEN AGREEMENT WITH ATLANTIA OFFSHORE LIMITED.</small>	
		TotalFinaElf E&P USA, Inc. MATTERHORN MISSISSIPPI CANYON 243	
SCALE: 1/4" = 1'-0"		DATE: 22 MAR 02	
DESIGNED BY: SM		10 MAY 02	
DFTD CHK BY: DCH		10 MAY 02	
ENGRD CHK BY: GM		10 MAY 02	
QA CHK BY: DBL		10 MAY 02	
APPROVED BY: ACK		10 MAY 02	
PROJECT NO: 21079		CLIENT DRAWING NO.	
SHEET 2		REV. 0	



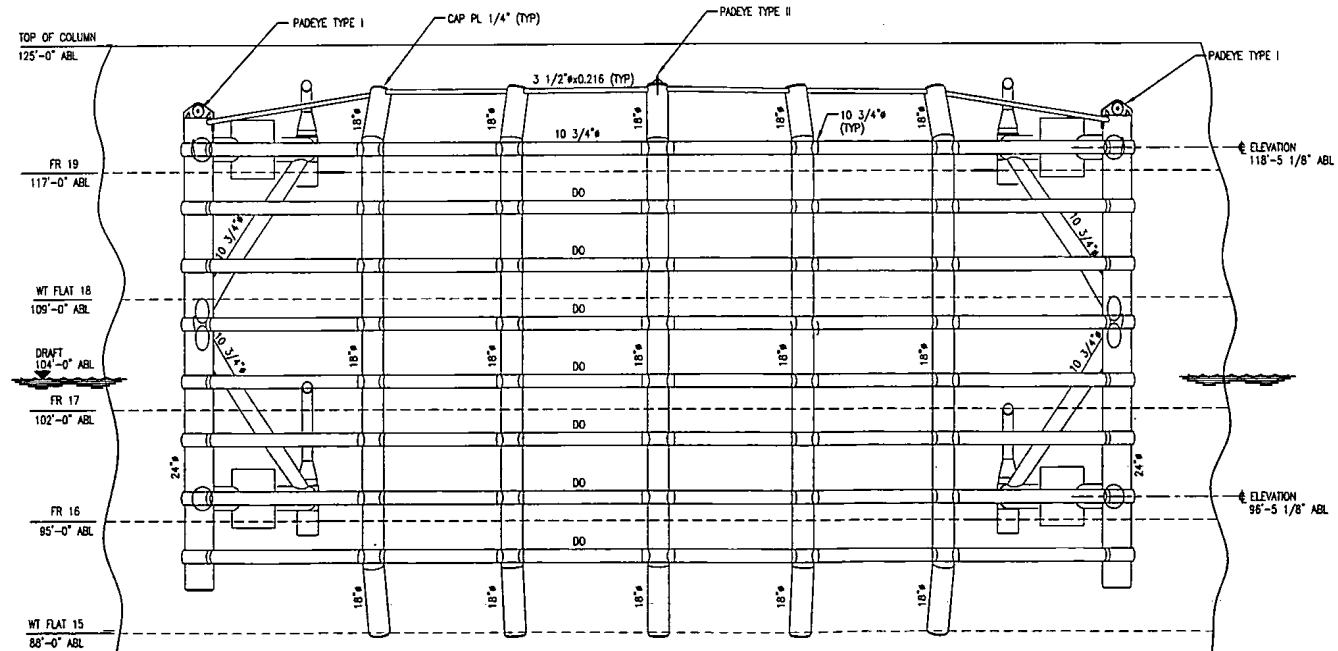
LIFT NOTE
 STATIC LIFT WEIGHT: APPROX. 30 S.T.
 SHACKLE: 50 TONS
 PIN DIAMETER: 2 1/4"



DETAIL
 SCALE: 1 1/2" = 1'-0"
 PAD EYE DETAIL - TYPE I & II AS NOTED
 (SEE SHIT 1 FOR ORIENTATION)

SECTION
 SCALE: 3" = 1'-0"

SECTION
 SCALE: 1 1/2" = 1'-0"



SECTION
 SCALE: 1/4" = 1'-0"

REVISIONS					
NO	BY	DESCRIPTION	DATE	CHK	APVD
0	SM	APPROVED FOR CONSTRUCTION	10 MAY 02	GM	ACK

APPROVED FOR
 CONSTRUCTION
 MAY 10, 2002

PATENTED <small>THE SEASTAR - U.S. PATENT NOS. 5,117,814; 5,177,422; 5,432,774; 5,548,184 AND 5,564,502. THE IDEA OR IDEA DISCLOSED IN THIS DOCUMENT ARE PROPRIETARY AND STRICTLY PROTECTED UNDER THE UNITED STATES PATENT LAWS. FOREIGN AND OTHER U.S. PATENTS PENDING.</small>		PROPRIETARY <small>THIS DOCUMENT AND THE INFORMATION DISCLOSED HEREIN ARE THE PROPERTY OF ATLANTIA OFFSHORE LIMITED - HOUSTON, TEXAS - U.S.A. AND ARE NOT TO BE REPRODUCED OR USED TO REPRODUCE ANY INFORMATION FOR WORKS OF SIMILAR OR APPLICABLE DESIGN, WHERE PROVIDED BY WRITTEN AGREEMENT WITH ATLANTIA OFFSHORE LIMITED.</small>	
		TotalFinaElf E&P USA, Inc. MATTERHORN MISSISSIPPI CANYON 243	
SCALE: 1/4" = 1'-0"		DATE: 22 MAR 02	
DESIGNED BY: SM		10 MAY 02	
DFTG CHK BY: DCH		10 MAY 02	
ENGRG CHK BY: GM		10 MAY 02	
QA CHK BY: DEL		10 MAY 02	
APPROVED BY: ACK		10 MAY 02	
PROJECT NO. 21079		CLIENT DRAWING NO.	
DRAWING NO. 21079-DG-1283		SHEET 3 OF 3	
REV. 0		REV. 0	

LLOG EXPLORATION OFFSHORE, L.L.C.
 5" Jumper Design
 Mississippi Canyon 199 Manifold
 to Mississippi Canyon 199 5in Bulk Oil PLETs
 Rev. 0, 5/17/11

Maximum Operating Pressure:

1. Calculations based on CFR, Title 30, Part 250, Subparts H and J.

$$P = \frac{2st}{D}$$

$$P = \frac{2s(t-ca)(F)(E)(T)}{D}$$

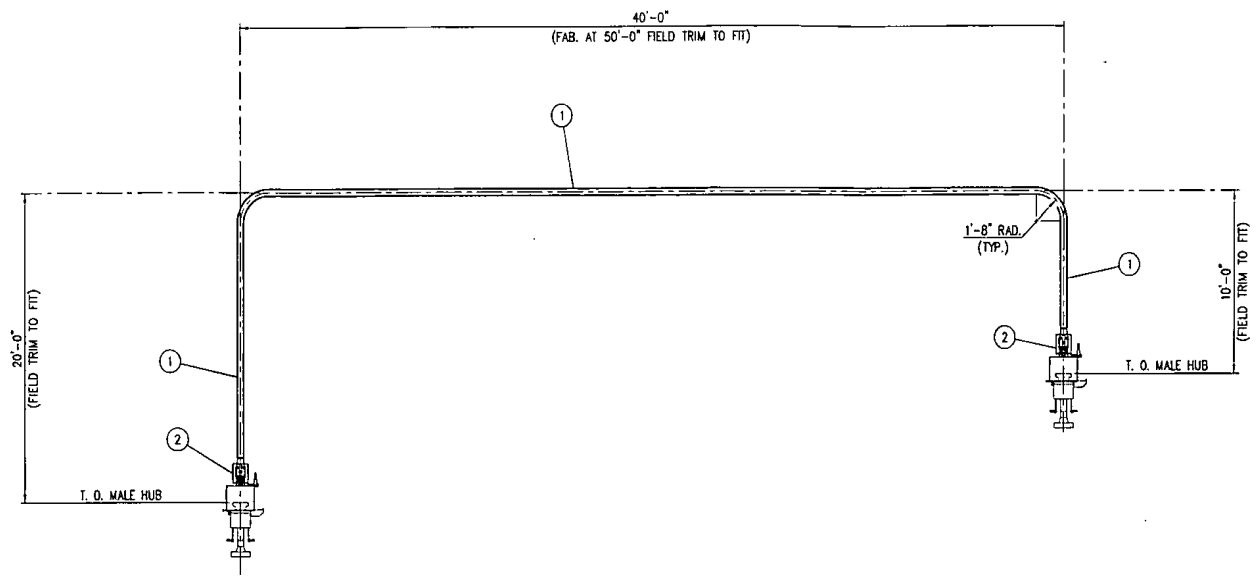
Where:

- P = Pressure as 100% SMYS (psig)
 PI = Internal Design Pressure (psig)
 s = Specified Minimum Yield Strength (SMYS) (psi)
 t = Pipe Wall Thickness in Inches
 ca = Corrosion Allowance (use 0.000 inches)
 D = Pipe Outside Diameter in Inches
 (F) = Design Factor
 0.60 for Risers
 0.72 for Pipelines & Jumpers
 (E) = Joint Factor
 1.0 for Seamless Pipe
 (T) = Temperature Derating Factor
 1.0 for Operating Temperatures below 250 Degrees Fahrenheit

- 1) Jumper: 5.563" OD x 0.438" W.T. API 5L Gr. X65

- a) P = (2) (65,000) (0.438) / (5.563) = 10,235 psig
 b) PI = (2) (65,000) (0.438 - 0.000) (0.72) (1) (1) / 5.563 = 7,370 psig
 c) Hydrostatic Test Pressure = HTP
 Maximum HTP = 0.95 P = (0.95) (10,235) = 9,724 psig
 Minimum HTP will be 4,632 psig for 8 hour hold time
 Rated MAOP = 4,632 psig / 1.25 = 3,705 psig
 d) Maximum Allowable Operating Pressure (MAOP) = 3,705 psig

MATERIAL SUMMARY		
ITEM	QTY.	DESCRIPTION
1	-	PIPE, 5.5634 0.438 WT., API 5L OR X65, SMLS, COATED WITH 12-14 MILS D.F.T. FUSION BONDED EPOXY, WITH 2' GSPU
2	2	REMOTE, ARTICULATED CONNECTOR, 4 1/2", API 10000, FEMALE CONNECTOR ASSEMBLY, OIL STATES



ELEVATION
5" JUMPER SPOOL DETAILS
 N.T.S.

J:\shubh Cueva\05/20/11 14:40 P:\PINNACLE\ROOT\STRUCT\202800\20280606.DWG

NOTES
 1. HYDROTEST:
 THE JUMPER ASSEMBLY SHALL BE HYDROTESTED TO A MINIMUM OF 4632 PSI AND HELD FOR A PERIOD OF 8 HOURS. THE PRESSURE SHALL HOLD OR RISE OVER THE LAST TWO HOURS.

THIS DRAWING IS THE PROPERTY OF AND EMBODIES CONFIDENTIAL INFORMATION OF PINNACLE ENGINEERING, INC. & LLOG EXPLORATION OFFSHORE, INC. THIS DRAWING AND THE INFORMATION THEREON SHALL NOT BE REPRODUCED OR DISCLOSED TO ANY OTHER PARTY OR USED FOR ANY OTHER PURPOSE OTHER THAN FOR THE BENEFIT OF AND AS AUTHORIZED BY PINNACLE ENGINEERING, INC. OR LLOG EXPLORATION OFFSHORE, INC.

NO.	DATE	REVISION	BY	APPR
A		ISSUED FOR PERMIT		



PINNACLE ENGINEERING

TX REGISTERED ENGR FIRM F-567

APPROVAL	
Drawn By	J. GUEVARA
Date	5-19-11
Checked By	
Date	
Designed By	
Date	
Approved By	
Date	

LLOG
 exploration

MANDY SUBSEA DEVELOPMENT
 MC 199 TO MC 243 "A"

5" JUMPER DETAILS

JOB NO. 202800	SCALE: NOTED	DWG. NO. 906	REV. A
----------------	--------------	--------------	--------

LLOG EXPLORATION OFFSHORE, L.L.C.
 4" Jumper Design
 Mississippi Canyon 199
 Tree to Manifold & 4 in Bulk Oil PLET to Manifold
 Rev. 0, 5/17/11

Maximum Operating Pressure:

1. Calculations based on CFR, Title 30, Part 250, Subparts H and J.

$$P = \frac{2st}{D}$$

$$P = \frac{2s(t-ca)(F)(E)(T)}{D}$$

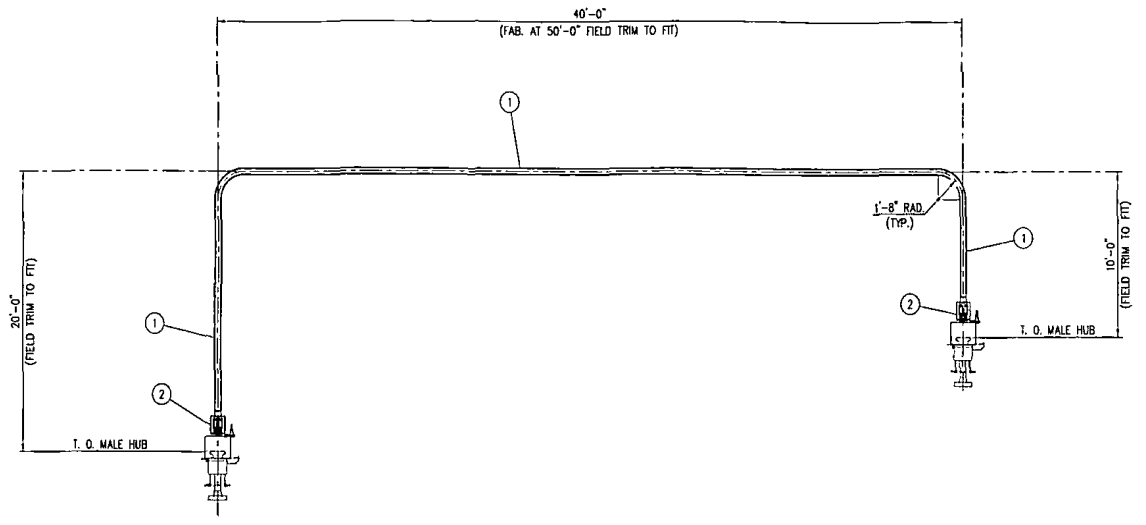
Where:

- P = Pressure as 100% SMYS (psig)
 P1 = Internal Design Pressure (psig)
 s = Specified Minimum Yield Strength (SMYS) (psi)
 t = Pipe Wall Thickness in Inches
 ca = Corrosion Allowance (use 0.000 inches)
 D = Pipe Outside Diameter in Inches
 (F) = Design Factor
 0.60 for Risers
 0.72 for Pipelines & Jumpers
 (E) = Joint Factor
 1.0 for Seamless Pipe
 (T) = Temperature Derating Factor
 1.0 for Operating Temperatures below 250 Degrees Fahrenheit

- 1) Jumper: 4.500" OD x 0.586" W.T. API 5L Gr. X65

- a) $P = (2) (65,000) (0.586) / (4.500) = 16,929 \text{ psig}$
 b) $P1 = (2) (65,000) (0.586 - 0.000) (0.72) (1) (1) / 4.500 = 12,189 \text{ psig}$
 c) Hydrostatic Test Pressure = HTP
 Maximum HTP = $0.95 P = (0.95) (16,929) = 16,082 \text{ psig}$
 Minimum HTP will be 4,632 psig for 8 hour hold time
 Rated MAOP = $4,632 \text{ psig} / 1.25 = 3,705 \text{ psig}$
 d) Maximum Allowable Operating Pressure (MAOP) = 3,705 psig

MATERIAL SUMMARY		
ITEM	QTY.	DESCRIPTION
1	-	PIPE, 4.5004 0.586 WT., API 5L GR X65, SMLS, COATED WITH 12-14 MILS D.F.T. FUSION BONDED EPOXY, WITH 2" CSPU
2	2	REMOTE ARTICULATED CONNECTOR, 4 1/4", API 10000, FEMALE CONNECTOR ASSEMBLY, OIL STATES



ELEVATION
4" JUMPER SPOOL DETAILS
N.T.S.

Jobno 05/20/11 14:40 P:\PINNACLE\ROOT\STRUCT\202800\202800805.DWG

NOTES
1. HYDROTEST:
THE JUMPER ASSEMBLY SHALL BE HYDROTESTED TO A MINIMUM OF 46.32 PSI AND HELD FOR A PERIOD OF 8 HOURS. THE PRESSURE SHALL HOLD OR RISE OVER THE LAST TWO HOURS.

THIS DRAWING IS THE PROPERTY OF AND EMBODIES CONFIDENTIAL INFORMATION OF PINNACLE ENGINEERING, INC. & LLOG EXPLORATION OFFSHORE, INC. THIS DRAWING AND THE INFORMATION THEREON SHALL NOT BE REPRODUCED OR DISCLOSED TO ANY OTHER PARTY OR USED FOR ANY OTHER PURPOSE OTHER THAN FOR THE BENEFIT OF AND AS AUTHORIZED BY PINNACLE ENGINEERING, INC. OR LLOG EXPLORATION OFFSHORE, INC.

NO.	DATE	REVISION	BY	APPV
A		ISSUED FOR PERMIT		



PINNACLE ENGINEERING
TX REGISTERED ENGR FIRM F-567

APPROVAL	
Drawn By	J. GUEVA
Date	5-18-11
Checked By	
Date	
Designed By	
Date	
Approved By	
Date	

LLOG
exploration

MANDY SUBSEA DEVELOPMENT
MC 199 TO MC 243 "A"

4" JUMPER DETAILS

JOB NO. 202800 SCALE: NOTED DWG. NO. 905 REV. A