M1 OK 0

09 FEB 2006

In Reply To: MS 5232

SCANNED

Mr. Mickey W. Shaw
ATP Oil & Gas Corporation
4600 Post Oak Place, Suite 200
Houston, Texas 77027-9726

Dear Mr. Shaw:

Reference is made to the following application that has been reviewed by the Minerals Management Service:

Application Type: New Right-of-Way Pipeline
Application Date: May 23, 2005
Supplemental Data Dates: June 6, 2005, June 7, 2005, November 17, 2005, November 17, 2005, November 23, 2005, November 17, 2005, December 13, 2005, January 18, 2006

Work Description: Create 200-foot wide right-of-way and install, operate, and maintain the following:

One 6-3/4-inch pipeline 0.61 miles long to transport bulk oil from Subsea Well No. 4 through a PLET in Mississippi Canyon Block 711 and looping through Mississippi Canyon Block 755 back to Mississippi Canyon Block 711 "A". Also, an associated umbilical, 1.24 mile long, from the MC 711 "A" looping through MC 755 ending at the PLET in MC 711.

Assigned Right-of-Way Number: OCS-G26866
Assigned Segment Number: 15170
Umbilical Segment Number: 15171

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

The approval is subject to the following:

1) There is evidence that an historic period shipwreck may be located in the area of your proposed activities. If you discover any site, structure, or object of potential archaeological significance while conducting operations, the provisions of 30 CFR 250.194(c) requires you to immediately halt operations within the area of discovery and report this discovery to the Regional Director. Every reasonable effort must be taken to preserve the archaeological resource from damage until the Regional Director has told you how to protect it.

2) Our review of your application indicates that the proposed pipeline route is in the vicinity of the unidentified side-scan sonar target listed in the Enclosure, a feature that may represent a significant archaeological resource. In accordance with 30 CFR 250.194(b), you will either (1) conduct an underwater archaeological investigation prior to commencing construction activities to

determine whether this feature represents an archaeological resource, or (2) ensure that all seafloor disturbing actions required by pipeline construction avoid the unidentified feature by a distance greater than that listed in the Enclosure. Submit lay barge anchor position plats, at a scale of 1-in. = 1,000-ft. with DGPS accuracy, with your pipeline construction report required by 30 CFR 250.1008(b) that demonstrate that the feature was not physically impacted by the construction activities. If you conduct an underwater archaeological investigation prior to commencing operations, comply with the investigation methodology and reporting requirements found at: http://www.gomr.mms.gov/homepg/regulate/envir/archaeological/evaluation.html.

Your request to use navigational positioning equipment to comply with Notice to Lessees and Operators No. 98-20, Section IV.B, is hereby approved.

Segment No.	MAOP (psig)	MAOP Determination
15170	7500	Hydrostatic Test Pressure

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 National Ocean Service, N/CS26 Room 7317, 1315 E-W Highway, Silver Spring, MD 20910-3282

Sincerely,

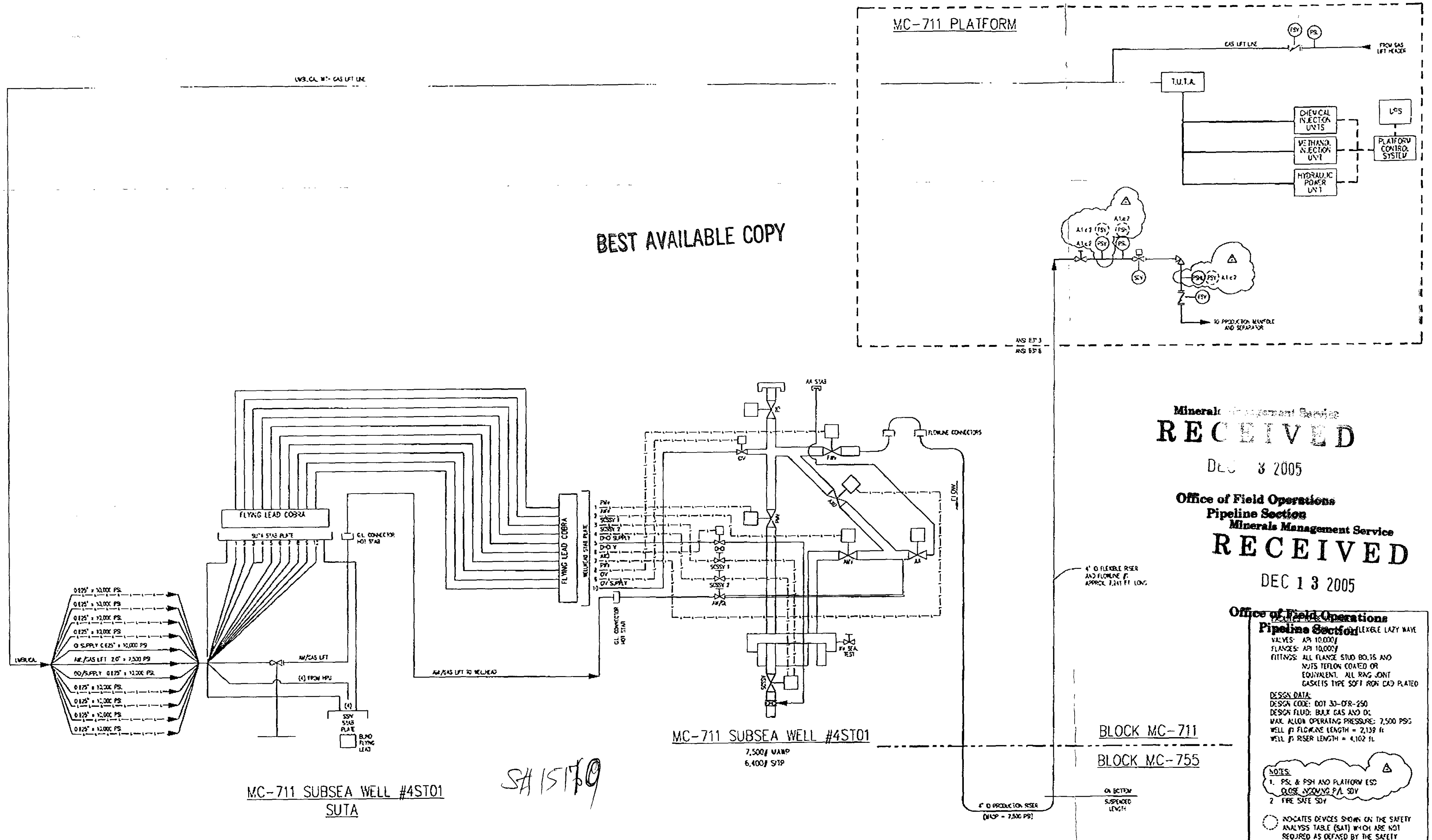
Donald C. Howard
Regional Supervisor
Field Operations

bcc: 1502-01 Segment No. 15170, 15171 ROW OCS-G26866 (MS 5232)
✓1502-01 ROW OCS-G26866 (Microfilm) (MS 5033)
MS 5250 New Orleans District w/flow schematic
MS 5232 Cartography

Enclosure No. 1

Side-Scan Sonar Targets

Area/ Block	Magnetometer Association	Dimensions LxWxH (Feet)	Coordinates		Minimum Avoidance Distance (Feet)
MC 711	YES`	200x30x16	X=	801546.19	1000
			Y=	10248459	



... FLEXIBLE LAZY WAVE

VALVES: API 10,000#

FLANGES: API 10,000#

FITTINGS: ALL FLANGE STUD BOLTS AND NUTS TEFLON COATED OR EQUIVALENT. ALL RING JOINT GASKETS TYPE SOFT IRON CAD PLATED

DESIGN DATA:

DESIGN CODE: DOT 30-CFR-250

DESIGN FLUID: BULK GAS AND OIL

MAX. ALLOW OPERATING PRESSURE: 7,500 PSIG

WELL #1 FLOWLINE LENGTH = 2,139 ft

WELL #1 RISER LENGTH = 4,102 ft

NOTES:

1. PSL & PSH AND PLATFORM ESD CLOSE INCOMING P/L SDV
2. FIRE SAFE SDV

INDICATES DEVICES SHOWN ON THE SAFETY ANALYSIS TABLE (SAT) WHICH ARE NOT REQUIRED AS DEFINED BY THE SAFETY ANALYSIS CHECKLIST (SAC) IN API RP14C.

NO	DATE	BY	REVISION DESCRIPTION
D	12/12/05	RKA	INSTRUMENTS ADDED AT REV C. CLOUDED AT REV D
C	12/08/05	NAA	GENERAL REVISION
B	05/18/05	NAA	ISSUED FOR PERMIT
A1	05/17/05	NAA	ISSUED FOR REVIEW AND COMMENT

ENGINEER'S STAMP:

DRAWN BY: R. AVERY
DATE: 05/16/05
CHECKED BY: N. ORSINI
DATE: 05/16/05
APPROVED BY: J. HINES
DATE: 5/18/05
PLOT SCALE: 1=1
SCALE: N.T.S

ATP OIL & GAS CORPORATION

BLUEWATER INDUSTRIES

PEGASUS International

MC-711 FIELD DEVELOPMENT PHASE 1

WELL #4ST01 PRODUCTION RISER R.O.W. FLOWLINE SAFETY SCHEMATIC

JOB NO	DWG NO	SHEET NO	REV
1166190	1166190W029	00	D

15170 - MICRO

nexen

NEXEN PETROLEUM U.S.A. INC.
12790 Merit Drive Suite 800 Dallas Texas 75251 1270
T 972 450.4600 www.nexeninc.com

Letter of No Objection

October 21, 2005

U.S. Department of the Interior
Minerals Management Service
1201 Elmwood Park Blvd.
New Orleans, LA 70123-2394

Attn: Mr. Alex Alvarado

RE: ATP Oil & Gas Corporation Lease OCS-G-14016, Mississippi Canyon Block 711
Nexen Petroleum U.S.A. Inc. Lease OCS-G-24105 Mississippi Canyon Block 755

Dear Mr. Alvarado:

In letter dated May 23, 2005, from Mickey W. Shaw with ATP Oil & Gas Corporation (ATP), it was requested that Nexen Petroleum U.S.A. Inc. ("Nexen") concur with ATP's proposal for installation of the a 6.895-inch OD bulk oil pipeline and associated umbilical originating at Subsea well No. 006 located on ATP's Lease OCS-G-14016, Mississippi Canyon Block 711. The proposed routing comes into close proximity of the existing Nexen Well No. 2 in Mississippi Canyon Block 755 Lease OCS-G-24105. ATP also sent a proposal letter dated May 9, 2005 in which Right-of-Use and Easement covering proposed anchor placement was presented.

Additionally, Nexen has submitted in their Revised Exploration Plan to drill MC 755 Well No. 3, a proposed mooring arrangement for the "GSF Arctic I" which poses potential conflicts associated with the ATP flowline and umbilical installation proposal. In letters dated June 2, 2005 and June 20, 2005, signed by Larry McRae of Nexen, it was requested that the MMS not approve ATP's proposed plans until both companies could discuss these conflicts.

After extensive discussions and negotiations between Nexen and ATP, both parties have agreed to a resolution of the mooring conflicts associated with development of resources on the two leases.

Please let this letter serve as Nexen's Letter of No Objection to ATP's mooring and subsea equipment installation in MC 755 and MC 711 as agreed by both parties in the letter agreement dated October 14, 2005.

nexen

If you should need further information on the activities subject to this waiver letter, please feel free to contact me at 972-450-4757.

Very truly yours,

NEXEN PETROLEUM U.S.A. INC.

Larry D. McRae
Vice President - Operations

LDM:mcp

cc: MMS: Nick Wetzel, Plans Unit
ATP/M. Shaw
ATP/Robert M. Shivers
L. Bohot
R. Sommer
M. Patton
B. Bagley
C. Gill
J. Connor Consulting, Inc. - Ms. Sharon DeSimoni

SCANNED

AMENDMENT

JUN 2 1 2005

nexen

NEXEN PETROLEUM U.S.A. INC.
12790 Merit Drive Suite 800 Dallas Texas 75251 1270
T 972 450.4600 www.nexeninc.com

June 20, 2005

J. Connor Consulting, Inc.
Attn: Ms. Sharon DeSimoni
16225 Park Ten Place, Suite 700
Houston, TX 77084

RE: ATP Oil & Gas Proposal Letter dated May 23, 2005

Dear Sharon:

This letter is a formal response to a proposal letter dated May 23, 2005, from Mickey W. Shaw with ATP Oil & Gas Corporation in which he requested Nexen Petroleum U.S.A. Inc. concur with ATP's proposal for installation of the a 6.895-inch OD bulk oil pipeline and associated umbilical originating at Subsea well No. 006 located on ATP's Lease OCS-G-14016, Mississippi Canyon Block 711. The proposed routing loops onto the northern section of Nexen Petroleum U.S.A. Inc. Mississippi Canyon Block 755 Lease OCS-G-24105 and comes into close proximity of the existing Well No. 2. After careful consideration of all of the issues surrounding this proposal, we regretfully inform you that Nexen will strongly oppose ATP's proposed application as it currently exists.

Nexen Petroleum cannot concur with the flowline routing due to the lack of resolution surrounding the previous ATP Oil and Gas proposal letter dated May 9, 2005 in which Right-of-Use and Easement covering proposed anchor placement was discussed and rejected due to considerable mooring conflicts. Nexen has considerable concerns associated with the flowline placement severely limiting the options for the mooring conflict resolution. Nexen Petroleum would prefer a north routing for the proposed bulk flowline to limit the effects to ongoing mooring analysis surrounding future re-entry of the Mississippi Canyon 755 Well No.2. The proposed ATP bulk flowline and umbilical increases hardship and financial burden on Nexen's future operations due to the need to install a preset mooring system and potential use of highbred mooring systems to accommodate the associated risk of the close proximity of the drilling and FOI mooring systems. The additional commercial burden and associated risk are currently being nexen

evaluated and it is our intent to work towards a win-win solution for both parties. This will require considerable effort and cooperation from both parties and will include reduction of safe zones and careful SIMOPs planning. We have included a proposed mooring arrangement for the "GSF Arctic I" which illustrates the potential conflicts associated with the flowline and umbilical installation.

We hope that this detail will help you to understand why we cannot assent to your proposed application and we welcome the opportunity to meet with you at a future date to discuss alternatives and solutions.

Very truly yours,

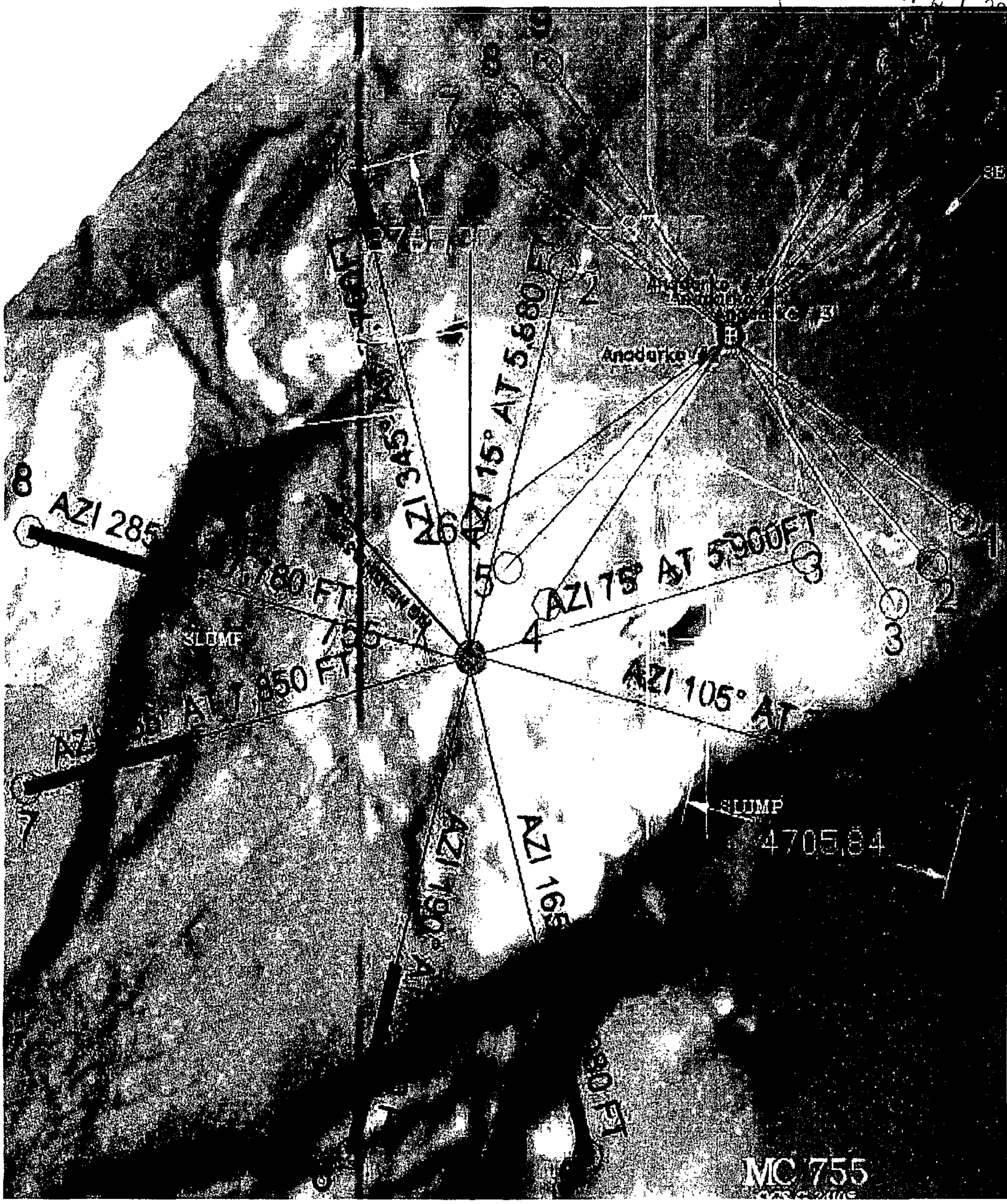
NEXEN PETROLEUM U.S.A. INC.

Larry D. McRae
V.P. Operations

LDM/bj

Enclosures

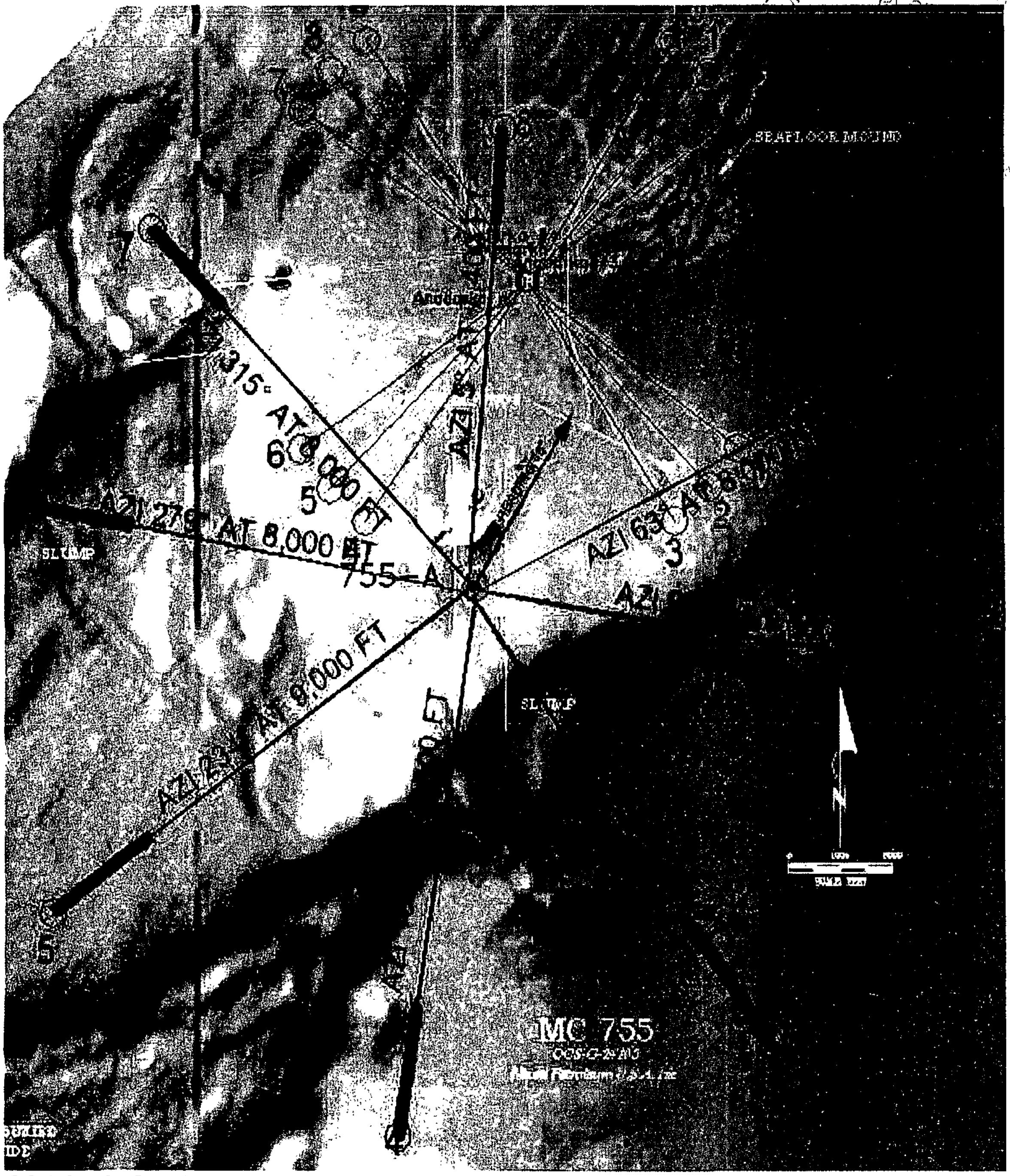
cc: Minerals Management Service
Attn: Mr. Nick Wetzel, Plans Unit
ATP / Attn: M. Shaw
L. Bohot
R. Sommer
M. Patton
B. Bagley
C. Gill
B. Whitney



GSF Arctic I Mooring Pattern

This system has been designed using single line catenary analysis, and no mooring analysis has been completed. Prior to final approval, a mooring analysis should be carried out to verify the feasibility of this system.

The following figure depicts the As-Installed mooring pattern for the *GSF Celtic Sea* when it was previously located on MC 755 January of 2005



GSF Celtic Sea Mooring Pattern

If you have any questions or comments, please feel free to contact us.

Best regards,

David Adam Adair Staff Engineer Delmar	&	Evan Zimmerman, JD Engineering Manager Delmar

Shrestha, Bimal

From: Sharon DeSimoni [Sharon.DeSimoni@jccteam.com]
Sent: Wednesday, November 23, 2005 9:03 AM
To: Shrestha, Bimal; Meyer, Tom
Subject: FW: PRODUCTION SYSTEM CP
Attachments: Production System Corrosion Assesment.doc

Gentlemen,

Attached is the Production System Corrosion Assessment document for the subsea production system related to the applications for Pipeline Segment No.'s 15168, 15169, 15170, 15171 (Bimal) and 15253, 15254 and 15255 (Tom).

Please let me know if this is the last piece to this puzzle and if approval for the pipelines will be soon.

Thanks
Have a great holiday!
Sharon

-----Original Message-----
From: John Hines [mailto:jhines@Pegasus-International.com]
Sent: Wednesday, November 23, 2005 8:56 AM
To: Sharon DeSimoni
Cc: Gregory Roland (groland@atpog.com); Robert Shivers (rshivers@atpog.com); Ernesto Forero; Allan Sharp; Phillip Shin; Carlos Pernalete; Don Ross; Gary Ford; Norman Driskill
Subject: PRODUCTION SYSTEM CP

Sharon,
Please find appended the requested information for the MMS regarding the Cathodic Protection for the production system.
This includes the total CP for:
The connector systems,
The rigid jumpers,
The production PLETS
And The Flexible risers/flowlines.
Regards J Hines

John Hines
Pegasus International Inc
777 North Eldridge Parkway, Suite 300
Houston Texas 77079

Direct:713-463-4939
Main:713-465-5777

Production System Cathodic Protection

Scope

This Document summarizes the Cathodic Protection provided for the MC-711 production system. A thorough overall Cathodic Protection check has been performed on the jumpers, PLETs, flexible risers and end fittings.

General

The production system is composed of the tree connectors (CRA and 4130), the rigid jumpers (Duplex/Sduplex CRA) c/w connectors (CRA and 4130), the PLET connector (CRA and 4130) and pipework (Duplex/SDuplex CRA), the flexible (316 CRA and steel wires) with 4130 end fittings and the interface with topsides pipework.

The Cathodic Protection of the Tree is not addressed in this document, it is in the scope of the tree manufacturer.

From the Tree connectors all the way to the flexible riser end fittings, the protection is provided by the anodes on the PLET as follows:

- To protect the tree connector, the jumper and the connector to the PLET, 30lb of aluminum anode are required (Annex A). The anodes at the PLET are sufficient to provide this mass requirement for protection over 20 years.
- To protect the Production PLET structure, pipework and connectors, 669 lb of aluminum anodes are required (Annex B). The anodes at the PLET structure can provide this mass requirement for protection over 20 years.
- To protect the flexible riser and end fittings, 149 lb of aluminum anode are required (Annex C). The anodes at the PLET are sufficient to provide this mass requirement for protection over 20 years.

The PLET is designed with 10 anodes of 87 lb each for a total aluminum anode mass of 870 lb. From the 870 lb, 30 lb are allocated to protect the tree connector, the jumper and

PLET connector; 669 lb are allocated to protect the PLET structure, pipework and connectors; and 149 lb are allocated to protect the flexible riser and end fittings. The remainder of 22 lb can be retained to cover against any contingency thereafter.

Annex A

GOMEZ PROJECT - PRODUCTION JUMPERS AND CONNECTORS

Cathodic Protection Calculation using DEP 30.10.73.32-Gen

Design Life; $T_{design} := 20 \cdot yr$ Coating constants; $k_1 := 0.05$ $k_2 := 0.005$

Inputs

Jumper Details(Including connectors):

4.5" Jumper Length; $Lj := 43m$

Jumper Connectors length: $Lc := 17m$

Overall Length; $L_{16pipe} := Lj + Lc$ $L_{16pipe} := 60 \cdot m$

4.5" Pipe Diameter; $D_{16pipe} := 114.3mm$

4.5" Coating Thickness; $t_{16coat} := 0.5 \cdot mm$

Pipe Joint Length; $L_{joint} := 12.2 \cdot m$

Anode Details: Details of the anodes on the PLET

Anode Length; $L_{anode} := 750 \cdot mm$

Anode Thickness; $t_{anode} := 40 \cdot mm$

Anode Gap; $t_{gap} := 40 \cdot mm$

Anode Utilisation; $u := 80 \cdot \%$

Anode Temperature; $T_{anode} := 10 \cdot C$

4.5" Steel Temperature; $T_{16steel} := 70 \cdot C$

Anode Material Density; $\rho_{anode} := 2750 kg \cdot m^{-3}$

Base Anode Efficiency; can use 2500 A-hr/kg because the anodes are cooled on the PLET/tree $E_{base} := 2500 A \cdot hr \cdot kg^{-1}$

Coating Breakdown Factors: FBE

$f_{initial}$; $f_{initial} := 5 \cdot \%$

$f_{average}$; $f_{average} := k_1 + T_{design} \cdot \frac{k_2}{2.yr}$ $f_{average} = 0.1$

f_{final}; $f_{final} := k_1 + T_{design} \cdot \frac{k_2}{yr}$ $f_{final} = 0.15$

Current Densities:

Initial; $C_{initial} := 20 \cdot mA \cdot m^{-2}$

Average; $C_{average} := 20 \cdot mA \cdot m^{-2}$

Final; $C_{final} := 20 \cdot mA \cdot m^{-2}$

Environment and Potentials:

Steel Potential; $E_{steel} := -0.8 \cdot V$

Anode Potential; $E_{anode} := -1.05 \cdot V$

Env. Resistance; $R_{env} := 0.3 \cdot \Omega \cdot m$

Calculation of Current Demand

Lengths and Areas

4.5" Length protected: $L_{16pipe} = 60\,m$

4.5" Area protected: $A_{16protect} := \pi \cdot D_{16pipe} \cdot L_{16pipe}$ $A_{16protect} = 21.545\,m^2$

Increase in Current Demand due to Temperature:

Increase per unit temp above 25deg C; $i := 1 \cdot mA \cdot m^{-2} \cdot C^{-1}$ $T_{ref} := 25 \cdot C$

$$I_{16initial} := \begin{cases} C_{initial} & \text{if } T_{16steel} < 25 \cdot C \\ C_{initial} + i \cdot (T_{16steel} - T_{ref}) & \text{if } T_{16steel} > 25 \cdot C \end{cases}$$

$I_{16initial} = 65\,mA \cdot m^{-2}$

$I_{16average} := I_{16initia}$ $I_{16final} := I_{16averag}$

Current Demands

4.5" jumper and connectors

Initia	$I_{16init} := f_{initial} \cdot I_{16initial} \cdot A_{16protect}$	$I_{16init} = 0.07\,A$
Average	$I_{16avg} := f_{average} \cdot I_{16average} \cdot A_{16protect}$	$I_{16avg} = 0.14\,A$
Final	$I_{16final} := f_{final} \cdot I_{16final} \cdot A_{16protect}$	$I_{16final} = 0.21\,A$

$T_{ref1} := 20 \cdot C$

Anode Mass and Requirements

$Corr := 27 \cdot A \cdot hr \cdot kg^{-1} \cdot C^{-1}$

Temperature Corrected Efficiency;

$$E := \begin{cases} E_{base} & \text{if } T_{anode} < 20 \cdot C \\ E_{base} - Corr \cdot (T_{anode} - T_{ref1}) & \text{if } T_{anode} > 20 \cdot C \end{cases}$$

$E = 2500\,kg^{-1} \cdot A\,hr$

Total Anode Mass Required, based upon average current;

$$M_{req} := \frac{I_{16avg} \cdot T_{design}}{E \cdot u}$$

$M_{req} = 12.276\,kg$

From the calculations, it is evident that 27 lb total anode material is needed to provide Cathodic Protection for the jumper and the connectors.

Annex B

PEGASUS INTERNATIONAL, INC.
OFFSHORE STRUCTURE CATHODIC PROTECTION DESIGN

CLIENT: Bluewater Industries

PROJECT: "MC 711 - 4"" Production Plets - PLET"

JOB NUMBER: 116-6865

ENGINEER: Matias Wilson

GULF OF MEXICO DESIGN CRITERIA:

Current Density:			
above mudline:	(Cs)	0.006	Amp/Ft.^2
below mudline:	(Cp)	0.002	Amp/Ft.^2
Utilization Factor:	(U)	0.900	
Life Expectancy:	(T)	20	Yrs.
Energy Capabilities:	(Ec)	1100	Amp-Hr./Lb.
Surface Area:			
above mudline:	(As)	552.00	Ft.^2
below mudline:	(Ap)	0.00	Ft.^2
Weight of Single Anode:	(W)	87	Lb.

RESULTS:

Combined Current	(CC)	**3.08**	Amp	CC=(Cs)(As)+(Cp)(Ap)
Total Weight Required:	(Wt)	**545.47**	Lb.	Wt=CC(8766)(T)/[(Ec)(U)]

NUMBER OF ANODES REQUIRED: (N) **7** N=(Wt/W)

References:

"NACE Standard RP0176-83, Item No. 53036"

PEGASUS INTERNATIONAL, INC.

OFFSHORE STRUCTURE CATHODIC PROTECTION DESIGN

CLIENT: Bluewater Industries

PROJECT: "MC 711 - 4"" Production Plets - YOKE"

JOB NUMBER: 116-6865

ENGINEER: Matias Wilson

GULF OF MEXICO DESIGN CRITERIA:

Current Density:			
above mudline:	(Cs)	0.006	Amp/Ft.^2
below mudline:	(Cp)	0.002	Amp/Ft.^2
Utilization Factor:	(U)	0.900	
Life Expectancy:	(T)	20	Yrs.
Energy Capabilities:	(Ec)	1100	Amp-Hr./Lb.
Surface Area:			
above mudline:	(As)	125.00	Ft.^2
below mudline:	(Ap)	0.00	Ft.^2
Weight of Single Anode:	(W)	87	Lb.

RESULTS:

Combined Current	(CC)	**0.70**	Amp	CC=(Cs)(As)+(Cp)(Ap)
Total Weight Required:	(Wt)	**123.52**	Lb.	Wt=CC(8766)(T)/[(Ec)(U)]

NUMBER OF ANODES REQUIRED: (N) **2** N=(Wt/W)

References:

"NACE Standard RP0176-83, Item No. 53036"

Annex C

PEGASUS INTERNATIONAL, INC.
FLOWLINE CATHODIC PROTECTION DESIGN

CLIENT:	Bluewater Industries
PROJECT:	"MC 711 - 4"" Production Flexible Risers"
JOB NUMBER:	116-6190
ENGINEER:	Ernesto Forero

GULF OF MEXICO DESIGN CRITERIA:

Design Life:	(tf)	20	Yrs.
Pipe OD:	(D)	9.76	in
		247.90	mm
Coating Thickness:	(tcor)	0.168	in
		4.27	mm
Flowline Length:	(Ltot)	8711	ft
		2655.11	m
Flowline Surface Area:	(Ac)	22258	ft^2
		2067.84	m^2
Mean Design Current Density:	(icm)	0.060	A/m^2
Coating Breakdown Factors:			
mean:	(fcm)	0.007	
final:	(fcf)	0.009	
Anode Properties:			
Weight of Single Anode:	(W)	87	Lb.
Utilization Factor:	(u)	0.9	
RESULTS:			
Mean Current Demand:	(Icm)	0.87	Amp
Net Mass Required:	(Mb)	68	kg
		149.09	lb

NUMBER OF ANODES REQUIRED: (N) 1.7

References:

Reference 1. DNV-RP-F103 OCTOBER 2003
Reference 2. ISO 15589-2 2004

BLUEWATER INDUSTRIES

MC-711 FIELD DEVELOPMENT

PHASE 1 RIGID JUMPER AND PRODUCTION PLET PIPEWORK DESIGN REPORT

PEGASUS
International

A	Issued for Comment	8/25/05	P. Fry	O. Mauvoisin	N. Driskill		
Rev	Description	Date	Originator	Checker	Project Approval	Pegasus Approval	Client Approval

DOCUMENT NO.: 1166-190-TR-364

TABLE OF CONTENTS

1.0 INTRODUCTION

1.1 Project Description

ATP Oil & Gas Corporation (ATP) is developing the MC-711 field in Mississippi Canyon located in the Gulf of Mexico.

The development will comprise up to four wells tied-back to a converted drill rig semi-submersible floating production facility (FPF).

Two export lines are required, one oil export line and one gas export line, using dynamic flexible risers and rigid pipeline. Provision for a future third-party tie-in to the FPF is to be made.

All subsea well tiebacks to the FPF are provided using flexible flowlines. The subsea well controls will be provided by using direct hydraulic, closed loop, systems via individual dynamic umbilicals.

The FPF topsides process facilities for the oil and gas production from the subsea wells will be provided in the form of pre-fabricated pancakes or modules which are independent to the existing rig facilities.

Pegasus-International Inc has been contracted to undertake the subsea, controls, pipelines and topsides design engineering for the project. Excluded from the scope of work is the conversion design of drilling rig semi-submersible and its mooring system.

1.2 Scope

This rigid jumper and PLET pipework design report, prepared by Pegasus International, Inc., details the engineering work performed and technical basis for the design of the two proposed Phase 1 4-inch rigid jumpers connecting well 1 and well 2 to their respective PLETs. The overall field layout, shown on Drawing No. 1166190F004 (Ref. 2), illustrates the location of the proposed wells and PLETs.

The remainder of this report is arranged as follows:

- Section Two presents the basis for the design
- Section Three presents the method of analysis
- Section Four contains the computer model description
- Section Five contains the output for PLET design
- Section Six contains the output for jumper design
- Section Seven contains a demonstration of compliance with serviceability limits of the connectors

1.3 Summary

From the analysis of the jumpers for various lengths, it was found that the M-shaped jumpers presented in section 4 of this report are able to pass the code check for both oil and gas production for tree movements ranging of +/- 24". Since the M-shape jumper requires more pipe and bends, it is more expensive than a simple U-shaped jumper. If it can be shown that the maximum amount of displacement that the jumper will see is less than or equal to +/- 5" and the length of the jumper is 30-ft-or less, than the 30 ft simple U-shaped jumper can be utilized as a more economical solution.

From the analysis of the jumpers for stress considerations as well as VIV considerations, it was found that the jumper dimensions provided in this report are adequate for the design criteria.

From the flow assurance data available, it was found that there was no significant slugging observed under any conditions of varying flowrate and reservoir pressure for either oil or gas production and therefore no stress analysis was performed for slug presence. The "Production Jumpers" drawing (Ref. 12) presents the design details and the seabed layout for the jumpers.

2.0 DESIGN BASIS

2.1 Introduction

The overall design premise is presented in Document No: 1166-190-TR-300 (Ref. 1). This section presents the design data to be utilized during the design of the Phase 1 rigid jumpers connecting the wells to their respective PLETs.

2.2 Design Codes and Standards

The general acceptance criteria for the design of the jumpers is as given in the following codes and standards:

- ASME B31.4 - Pipeline Transportation Systems for Liquid Hydrocarbons and Other Liquids (Ref. 9)
- ASME B31.8 - Gas Transmission and Distribution Piping Systems (Ref. 8)
- DnV-RP-F105 – Free Spanning Pipelines (Ref. 10)
- DnV-RP-C203 – Fatigue Strength Analysis of Offshore Steel Structures (Ref. 11)

All wells and jumpers are considered to be subject to both oil and gas production and therefore all of the jumpers will comply with all of the above codes.

For other project codes, regulations and standards, refer to the Design Premise, Pegasus document number 1166-190-TR-300 (Ref. 1).

2.3 Mechanical Data

The generic material properties summarized in Table 2.1 are established values within the industry for rigid pipelines. Due to the highly corrosive nature of the produced fluid, carbon steel will not be considered for the rigid jumper material (Ref. 3).

<u>4-inch Rigid Jumpers #1 and #2</u>

- Outside Diameter: 4.5 inch
- Corrosion allowance: 0.000 inch (corrosion resistant material)
- Wall thickness: 0.674 inch
- FBE Coating: 18 mils

<u>PLET Pipe</u>

- Outside Diameter: 4.5 inch
- Corrosion allowance: 0.000 inch (corrosion resistant material)
- Wall thickness: 0.531 inch
- FBE Coating: 18 mils

Table 2.1 below, presents the properties of the Duplex steel.

Table 2.1 – Duplex Steel Properties

Property	Super Duplex (UNS 32740/50/60)
Steel Density	7790kg/m^3
	486.3lb/ft^3
Young's Modulus of Elasticity	200 x 10^{3}MPa
	29 x 10^{3}ksi
Poisson's Ratio	0.3
Coefficient of Linear Expansion	13.0 x 10^{-6}/°C
	7.2 x 10^{-6}/°F
Steel Thermal Conductivity	16.0 W/m.K
	9.24Btu/ft.hr.°F
Yield Strength	550MPa
	79.8ksi
Yield Strength (at 100°C)	480MPa
	69.6ksi

2.4 Environmental Data

Wave and current data for the proposed pipelines for the MC-711 field in the Gulf of Mexico is provided by A.H. Glenn and Associates (Ref. 5). The data presented in this section is a summary of the environmental data which will govern the design of the rigid jumpers. Refer to the Design Premise (Ref. 1) for complete listings of the environmental data.

- Surface Current Velocity 7.8 ft/s
- Current Velocity on Bottom (for static analysis) 1.7 ft/s
- Current Velocity on Bottom (for VIV analysis) 0.4 ft/s
- Wave Height (Hmax) 74 ft
- Wave Period (Tmax) 14.4 sec
- Kinematic Viscosity 1.63 x 10^{-5}ft^2/s
- Density 64 lb/ft^3
- Ambient Temperature 39.2 °F

The wave and current are assumed to be perpendicular to the jumpers for the purpose of this analysis. The current velocity on bottom for static analysis is the value presented in the project Design Premise (Ref. 1) for pipeline design is used for stress analysis of the rigid jumpers. The current velocity on bottom for VIV analysis is the 100 year storm eddy ("Loop") current at the jumper depth (Ref. 5) is used for the natural frequency analysis of the jumpers. Note that from the current data in Ref. 5, the current velocity is 0.4 ft/s for depths of 70% to 100% of water depth which would incorporate any height of the jumper above the seabed.

2.5 Process Data

The following data is a list of the properties used for the design. The pressures and temperatures can be found in section 5.2 of the Design Premise (Ref. 1).

Oil Production:

Fluid Density	=	0.02818 lb/in^3
Normal Operating Temperature	=	120 F
Ambient Temperature	=	39.2 F
MAOP	=	7500 psi
Hydrotest Pressure	=	9375 psi
Code Check	=	B31.4 Ch. IX (Ref. 9)

Gas Production:

Fluid Density	=	0.00325 lb/in^3
Normal Operating Temperature	=	110 F
Ambient Temperature	=	39.2 F
MAOP	=	7500 psi
Hydrotest Pressure	=	9375 psi
Code Check	=	B31.8 Ch. VIII (Ref. 8)

2.6 Jumper Lengths

The exact lengths of the jumpers connecting the PLETs to the wells are not known at this time. Due to the large water depth, the location of the PLETs will vary from the designed location. For this reason, a range of lengths will be designed for. The drawing of the seabed layout at the wells is provided in Pegasus drawing number 1166190F004 (Ref. 2). From this drawing, a nominal jumper length is assumed. The lengths of jumpers designed for are:

Jumper #1 Nominal Length	=	90 ft
Jumper #2 Nominal Length	=	37 ft

2.7 Design Requirements

During analysis of the rigid jumpers, loadings from the flowlines, expansion loads (due to pressure and temperature), well movements during workover, and measurement tolerances must be taken into account. The table below provides the values to be used during analysis:

Table 2.2 – List of Values Assumed for Analysis

Description	Value Assumed
Loading from Flowlines	None
Expansion Loads	Caesar will calculate during analysis
Well Movements during Workover	Analysis run with 20" movement
Measurement Tolerances	+/- 4" inline with the jumper

It is assumed that there is no loading on the jumpers from the flowlines because there is a tether on the flowline which will remove any loading from the risers (Ref. 2). Also, the flowlines are flexible pipe so most of the forces will be transferred to the end with least resistance (the bend end away from the PLET) and the PLET will be able to resist any movement due to the remaining load that it faces from the flowlines.

3.0 METHOD OF ANALYSIS

Caesar II pipe modeling software was used to run the analysis of the jumper design. Due to the various design requirements presented in section 2.7 of this report, many cases had to be run in order to insure that the jumpers complied with the codes.

- Case 1 – Nominal position of PLET and well
- Case 2 – Well moved 24" towards PLET (this includes the maximum well movement during workover and the measurement tolerance in the same direction)
- Case 3 – Well moved 24" away from PLET (this includes the maximum well movement during workover and the measurement tolerance in the same direction)

Due to the fact that each jumper is to be designed for both oil and gas production, each of the three cases presented above were run to check for code compliance containing oil or gas.

Input and output files from the Caesar II analysis are presented in Appendix A.

Due to VIV considerations, an Abaqus model was analyzed and the natural frequency obtained was used in conjunction with DnV-RP-F105 (ref. 10) to obtain a fatigue analysis. The fatigue analysis methodology and results are presented in Appendix B along with the Abaqus files and the fatigue calculation spreadsheet.

4.0 CAESAR II MODEL DESCRIPTION AND GEOMETRY

4.1 Rigid Jumper and PLET Piping

The PLET was assumed to have no clamps on the PLET piping on the Caesar model. The point where the production pipe (flexible) and the PLET pipe connect was modeled as an anchor point on the Caesar model. Also, the PLET was assumed to have a hub support height of 2'-6" above the centerline of the PLET piping. The PLET piping is at 110 deg angle and 103 deg angle from the jumper piping (Ref. 2) for well 1 and well 2 respectively. The PLET piping was assumed to have a length of 10' from the anchor flange at the flowline connection point to the centerline of the vertical portion of the PLET piping.

The Caesar analysis was performed for a hub support as a mix between an anchor and a pin support. The support is modeled as a pin with the following spring rates which were found using a model of the hub support on StruCad (Ref. 13):

Kx = Kz = 37.5 kip/in
Ky = 3250 kip/in
Rx = Rz = 5885 ft.kip/rad = 1232551.5 in.lb/deg
Rz = 955 ft.kip/rad = 200014.7 in.lb/deg

Each of the jumpers was designed as an M-shaped jumper in order to satisfy the stress check. A simple, U-shaped jumper was also tested for various lengths in order to determine the maximum length that this type of jumper could span without failing the stress check but no length of this type of jumper could pass the stress check with either 12" or 24" of tree displacement. Therefore, the simple U-shaped jumper is not a valid option for our jumpers under the 12" or 24" tree displacement criteria. A simple U-shaped jumper has been analyzed for 30 ft and 63 ft jumper lengths in order to determine the maximum amount of tree displacement that it could handle. Results of each of the M-shape jumpers analyzed as well as the results of the U-shaped jumper are presented in section 6 of this report.

4.2 Hub Modeling

The male and female hubs were modeled into Caesar as rigid elements with applied weights as follows:

Male Hub length	=	3'-1.25"
Male Hub weight	=	480 lb
Female Hub length	=	4'-8.219"
Female Hub weight	=	800 lb (assumed)

The values presented above are from their respective Oil States drawings (Ref. 6 and Ref. 7). The female hub weight had to be assumed due to that information not being available.

4.3 Load Cases and Loadings

For each of the Caesar models, the following load cases were used for analysis:

Case 1 - W+T1+P1+D1 (OPE)
Case 2 - W+T1+P1+D1+WAV1 (OCC)
Case 3 - W+T1+P1+D2+WAV1 (OCC)
Case 4 - W+T1+P1+D3+WAV1 (OCC)
Case 7 - W+P1 (SUS)

Case 8 - WW+HP (HYD)

Where:

W = weight (submerged weight of pipe and contents)
T1 = temperature
P1 = pressure
D1 = applied tree displacement of 0"
D2 = applied tree displacement of 24" towards PLET(includes 4" measurement tolerance)
D3 = applied tree displacement of 24" away from PLET (includes 4" measurement tolerance)
WAV1 = environmental loads (acting perpendicular to the piping)
HP = hydrotest pressure
WW = Water weight (pipe filled with water)

For a description of the Cases run, refer to section 3.0 of this report. The temperature, pressure and environmental loads are presented in section 2 of this report.

Each of the load cases presented above were used for the stress check of the jumpers. However, only the middle load cases (OCC) were used to present the output on the hub support since this would be the worst case scenario.

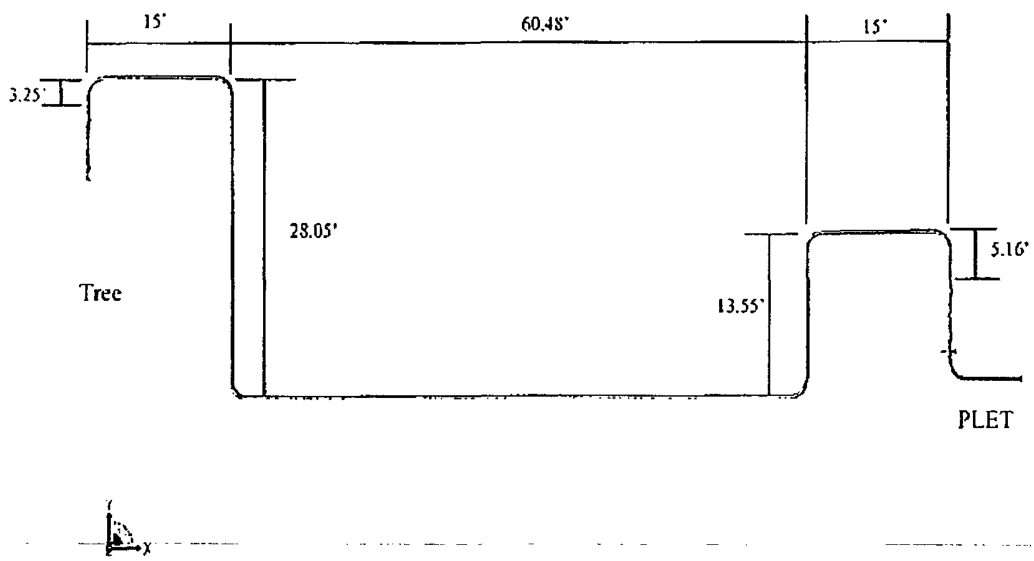
4.4 90 ft Jumper (Jumper #1)

Hub Weights

Male = 480 lb
Female = 800 lb (assumed)

Figure 4.1 below presents the dimensioned Caesar model of the 90 ft rigid jumper. All bends are 5D bends. Note that the middle of the jumper is resting on the seabed.

Figure 4.1 Model of 90 ft Rigid Jumper



Note: The horizontal PLET piping is assumed 10' long in the x-z plane at an angle of 110 deg from the z-axis (Ref. 2).

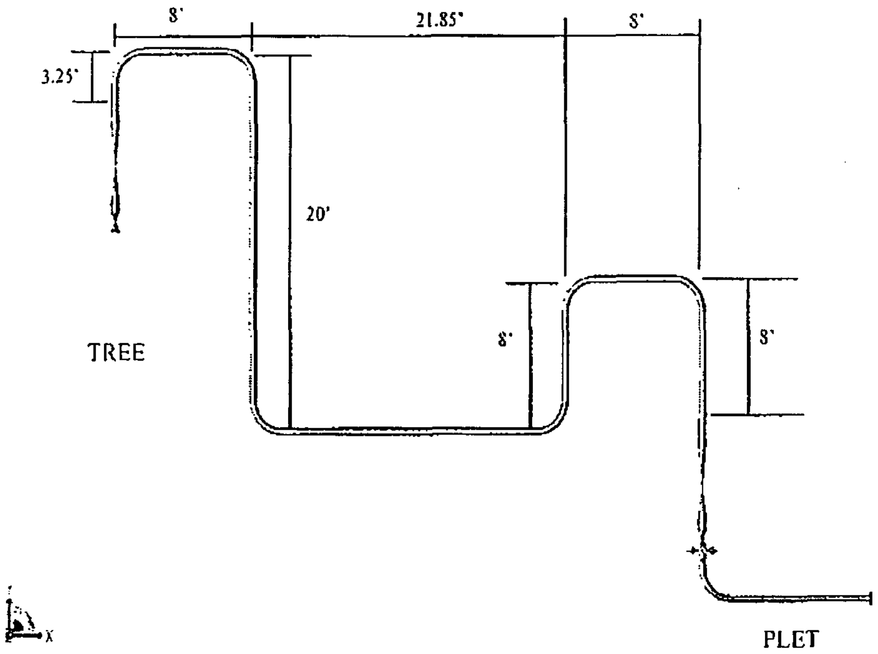
4.5 37 ft M-shaped Jumper (Jumper #2)

Hub Weights

Male = 480 lb
Female = 800 lb (assumed)

Figure 4.2 below presents the dimensioned Caesar model of the 37 ft rigid jumper. Note that all bends are 5D bends.

Figure 4.2 Model of 37 ft Rigid Jumper



Note: The horizontal PLET piping is assumed 8' long in the x-z plane at an angle of 103 deg from the z-axis (Ref. 2).

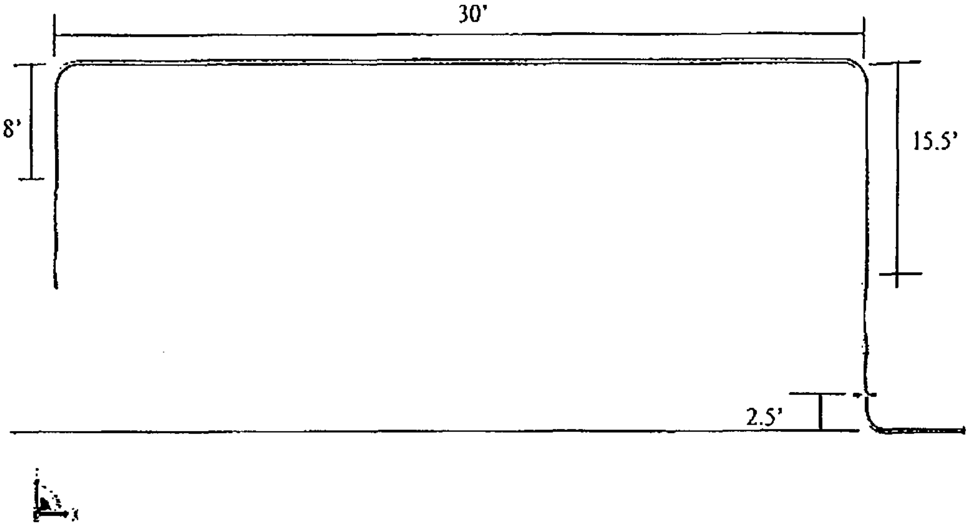
4.6 Simple U-shaped Jumper (Option)

Hub Weights

Male = 480 lb
Female = 800 lb (assumed)

Figure 4.3 below presents the dimensioned Caesar model of the 30 ft rigid jumper. Note that all bends are 5D bends.

Figure 4.3 Model of 30/63 ft U-Shaped Rigid Jumper



Based on the dimensions provided in Figure 4.3 above, it was found that the simple U-shaped rigid jumper is a viable option for tree displacements up to +/- 5". At +/- 5" of tree displacement, the code stress check resulted in a maximum stress in the 90% range of allowable code stress for the 30 ft and 63 ft options. Increasing the displacement to +/-6" results in the jumper overstressing.

4.7 Product Vibration

From the flow assurance data available, it was found that there was no significant slugging observed under any conditions of varying flowrate and reservoir pressure for either oil or gas production and therefore no stress analysis was performed for slug presence.

5.0 RESULTS OF ANALYSIS

The 4-inch rigid jumpers were analyzed using the Caesar II pipe modeling software. Based on this analysis, the results for jumper design in order to pass the stress check as well as being available in the restricted time frame are provided in this section.

5.1 Static Analysis Stress Results

From the static analysis, the jumper design passes the stress check for each of the cases run. Tables 5.1 and 5.2 below present the stress results vs. the allowable stress for each of the cases.

Table 5.1 – Stress Results vs. Allowable Stress for 90 Ft. Jumper

	Case	Stress (psi)	Allowable Stress (psi)	% of Allowable
OIL				
	Case 2	41166	58770	70.0%
	Case 3	51144	58770	87.0%
	Case 4	45875	71820	63.9%
GAS				
	Case 2	42786	58770	72.8%
	Case 3	53892	58770	91.7%
	Case 4	47970	71820	66.8%

Table 5.2 – Stress Results vs. Allowable Stress for 37 Ft. Jumper

	Case	Stress (psi)	Allowable Stress (psi)	% of Allowable
OIL				
	Case 2	22819	57456	39.7%
	Case 3	52517	71820	73.1%
	Case 4	56500	71820	78.7%
GAS				
	Case 2	22819	55314	41.3%
	Case 3	61208	71820	85.2%
	Case 4	61148	71820	85.1%

5.2 90 ft Jumper (Jumper #1) VIV Analysis

For a jumper length greater than 37 ft, there is a risk for VIV. For this reason, a fatigue analysis was performed to determine the fatigue life of the jumper. Based on calculations performed in accordance with DnV-RP-F105 (ref. 10), it was found that the fatigue life of the jumpers is greater than the minimum required code life. The calculations are presented in Appendix B.

5.3 37 ft Jumper (Jumper #2) VIV Analysis

As stated in section 5.1, if the distance between the PLET and tree exceeds the 37' length, then the jumper is at risk for VIV. Based on calculations in accordance with DnV-RP-F105, the fatigue life is adequate for this jumper use. The fatigue analysis is provided in Appendix B.

5.4 Demonstration of Compliance with Serviceability Limits

In order for this system to work, it is necessary to ensure that every aspect of the system is able to withstand the forces acting on them. One of the limiting factors in our system are the connectors. Table 5.3 below provides the limits of the connectors (Ref. 4) and Table 5.4 provides the forces and moments that the connector will face from the M-shaped jumper designs.

Table 5.3 – Connector Capacities

Size (in)	OD (in)	ID (in)	Bending Capacity (ft.lb)	Torsion Capacity (ft.lb)	Axial Capacity (lb)
3	4.75	3.06	40,798	19,583	388,289
4	5.75	4.06	65,688	31,530	487,691
6	7.19	5.13	126,702	60,817	747,931

Table 5.4 – Connector Loads

	Size (in)	Bending Moment (ft.lb)	Torsion Moment (ft.lb)	Axial Force (lb)
Loads from Analysis	4	21,705	1,283	3,160

The results presented in Table 5.4 are for the worst case of the 90 ft and 37 ft jumpers. Comparing the results in Table 5.4 to the values provided in Table 5.3 for the 4 inch connector, it appears that the connectors for the oil production and gas production piping should be sufficient for this model.

6.0 OUTPUT FOR PLET DESIGN

In order to design the PLET correctly, the forces acting on the hub support must be taken into account. Table 6.0 provides a summary of the loads and moments that the hub support on the PLET is to be designed for (maximum loads from analysis with some conservatism added). The actual forces and moments found from the analysis are given in the tables that follow. Tables 6.1 and 6.2 below present the forces and moments on the hub support for the 90 ft option (Jumper #1), and Tables 6.3 and 6.4 present the forces and moments on the hub support for the 37 ft Jumper #2. Ref. 13 is the PLET structure engineering design report.

The PLET was assumed to have a hub support height of 2'-6" above the centerline of the PLET piping. The PLET piping is at 110 deg angle from the jumper piping (Ref. 2) and has the same pipe properties as the rigid jumper. The PLET piping was assumed to have a length of 10' from the anchor flange at the flowline connection point to the centerline of the vertical portion of the PLET piping. The x, y, and z directions are as seen in Figures 4.1 and 4.2.

Table 6.0 – Summary of Max Loads and Moments for PLET Design

Fx (lb)	-4,500
Fy (lb)	-3,000
Fz (lb)	+2,000
Mx (ft.lb)	-2,000
My (ft.lb)	+1,500
Mz (ft.lb)	-16,000 / +18,000

Table 6.1 – 90 ft Oil Jumper Results

	Case 1	Case 2	Case 3
Fx (lb)	-2910	-2680	-3140
Fy (lb)	-2473	-2485	-2460
Fz (lb)	946	1041	851
Mx (ft.lb)	-1440	-1573	-1307
My (ft.lb)	927	951	902
Mz (ft.lb)	13291	12969	13612

Table 6.2 – 90 ft Gas Jumper Results

	Case 1	Case 2	Case 3
Fx (lb)	-2616	-2387	-2846
Fy (lb)	-2319	-2332	-2306
Fz (lb)	869	964	774
Mx (ft.lb)	-1296	-1429	-1163
My (ft.lb)	916	941	892
Mz (ft.lb)	12021	11699	12342

Table 6.3 – 37 ft Oil Jumper Results

	Case 1	Case 2	Case 3
Fx (lb)	-2164	104	-4433
Fy (lb)	-1743	-2293	-1194
Fz (lb)	543	586	500
Mx (ft.lb)	-317	-128	-505
My (ft.lb)	183	166	201
Mz (ft.lb)	679	-15779	17136

Table 6.4 – 37 ft Gas Jumper Results

	Case 1	Case 2	Case 3
Fx (lb)	-1947	321	-4216
Fy (lb)	-1662	-2211	-1113
Fz (lb)	497	540	454
Mx (ft.lb)	-241	-52	-429
My (ft.lb)	182	165	200
Mz (ft.lb)	643	-15815	17101

*NOTE: The results provided are based on an assumed female hub weight of 800 lb. All results are for the analysis including wave/current loading, temperature, pressure and the displacement of the tree where applicable.

7.0 CONCLUSION

From the analysis of the jumpers for various lengths, it was found that the M-shaped jumpers presented in section 4 of this report are able to pass the code check for both oil and gas production for tree movements ranging of +/- 24". Since the M-shape jumper requires more pipe and bends, it is more expensive than a simple U-shaped jumper. If it can be shown that the maximum amount of displacement that the jumper will see is less than or equal to +/- 5" and the length of the jumper is 30 ft or less, than the 30 ft simple U-shaped jumper can be utilized as a more economical solution.

From the analysis of the jumpers for stress considerations as well as VIV considerations, it was found that the jumper dimensions provided in this report are adequate for the design criteria.

From the flow assurance data available, it was found that there was no significant slugging observed under any conditions of varying flowrate and reservoir pressure for either oil or gas production and therefore no stress analysis was performed for slug presence. The "Production Jumpers" drawing (Ref. 12) presents the design details and the seabed layout for the jumpers.

8.0 REFERENCES

1 MC-711 Field Development
"Design Premise"
Document Number 1166-190-TR-300

2 MC-711 Field Development
"Overall Field Layout at MC-711 Phase 1 – Manifold on West Option"
Drawing Number 1166190F004

3 MC-711 Field Development
"Materials Selection and Corrosion Protection Report"
Document Number 1166-190-TR-320

4 Remote Articulated Connector
Table provided by Oil States

5 A. H. Glenn and Associates Services
"Selected Meteorological and Oceanographic Data: Mississippi Canyon Block 711 (3000 Foot Mean Lower Low Water Depth) and Grand Isle Block 115 (350 Foot Mean Lower Low Water Depth): Offshore Louisiana."

6 Oil States Drawing
"4 1/16" – 10,000 RAC Male Hub General Arrangement"
Drawing Number RA041100MHA\GAA0000C

7 Oil States Drawing
"4 1/16" – 10,000 Remote Articulated Connector Female Hub Assembly"
Drawing Number RA041100FHA\GAA0000E

8 ASME B31.8
"Gas Transmission and Distribution Piping Systems"
2003 Edition

9 ASME B31.4
"Pipeline Transportation Systems for Liquid Hydrocarbons and Other Liquids"
1998 Edition

10 DnV RP-F105
"Free Spanning Pipelines"
2002 Edition

11 DnV RP-C203
"Fatigue Strength Analysis of Offshore Steel Structures"
2001 Edition

12 Pegasus Drawing
"Production Jumpers"
Drawing No. 1166190N006

13 MC-711 Field Development
"Export PLET Structure Engineering Design Report"
Document No. 1166-190-TR-367

BS

J. Connor Consulting, Inc.

DOCUMENT TRANSMITTAL

DATE: **June 7, 2005**

Attention: Bimal Shrestha	From: Sharon DeSimoni
Company Name: Minerals Management Service.	
1201 Elmwood Park Boulevard New Orleans, Louisiana 70123-2394	

Bimal,

Enclosed please find eight copies each of the technical specifications and drawing of the RIGID Jumpers for Pipeline Segment No.'s 15168 and 15170.

Please include same in the applications previously submitted.

Thanks again for your assistance!

Sharon

Sharon

From the desk of:

Sharon DeSimoni
Regulatory Consultant
J. Connor Consulting, Inc.
Telephone: 281-578-3388
Fax: 281-578-8895
E-mail: Sharon.desimoni@jccteam.com

BS

BLUEWATER INDUSTRIES

MC-711

SPECIFICATION FOR DUPLEX PIPE

PEGASUS
International

0	Approved for Tender	04/05/05	G .Stevenson	O. Mauvoisin	J. Hines		
Rev	Description	Date	Originator	Checker	Project Approval	Pegasus Approval	Client Approval

DOCUMENT NO.: 1166-190-SN-036

TABLE OF CONTENTS

1.0 INTRODUCTION

1.1 Scope

This specification, when read in conjunction with the contract referenced standards, specifications, and other listed documents, defines the minimum requirements for the application, inspection and testing of duplex or super duplex pipe to specification API 5LC, as modified by this specification.

CONTRACTOR shall be responsible for the manufacture, fabrication, certification, test and delivery of the pipe, as outlined in this specification.

1.2 Abbreviations

Within this document the following abbreviations are used:

API	American Petroleum Institute
ASTM	American Society for Testing of Materials
AWS	American Welding Society
BS	British Standards
DPI	Dye penetrant inspection
EN	Euronorm
EPIC	Engineer, procure, install and commission
MPI	Magnetic particle inspection
NDE/T	Non-destructive examination/testing
NPS	Nominal pipe size
PREN	Pitting resistance equivalent - nitrogen
PREW	Pitting resistance equivalent - tungsten
SMYS	Specified minimum yield stress
UNS	Unified numbering system
UT	Ultrasonic testing

2.0 APPLICABLE CODES AND STANDARDS

2.1 Revisions

Only the latest issues of the relevant standards, codes, statutory regulations and specifications referenced shall be applied to the WORK being performed.

2.2 Compliance

This specification is complementary to the requisition for individual item(s) of equipment, legislative requirements and guidance notes issued by any relevant authority and specifications referenced herein.

2.3 Conflict of Information

If there is any conflict between this specification or any other specification and related data sheets or with any applicable codes, standards and regulations, CONTRACTOR shall inform COMPANY in writing. Written clarification must be given by the COMPANY before CONTRACTOR commences work.

2.4 Project Specifications and Data Sheets

It is the responsibility of the CONTRACTOR to ensure that it has received from the COMPANY all specifications, etc, which are referenced within applicable specifications, to enable it to understand and comply with all aspects of work it is performing for the COMPANY.

2.5 Codes and Standards

It is the responsibility of the CONTRACTOR to ensure that only the latest issues of the following codes, standards and regulations shall be used in conjunction with this specification. Specific reference should be made to the following.

2.5.1 American Petroleum Institute

API 5LC	Specification for CRA Linepipe

2.5.2 British Standards

BS 4515	Specification for Welding of Steel Pipelines on Land or Offshore
BS 7079/ISO 8503-1	Preparation of Steel Substrate before Application of Paint
BS 7448	Fracture Mechanics Toughness Tests Part 1 : Method for Determination of K_{ic} Critical CTOD and Critical J Values of Metallic Materials
BS 8010 Part 3	Pipelines Subsea : Design, Construction and Installation
BS EN 10204	Metallic Products - Types of Inspection Documents
BS EN ISO 6507	Metallic Materials - Vickers Hardness Test
BS EN ISO 9000	Quality Management and Quality Assurance Standards

2.5.3 American Society for Testing and Materials

ASTM A370	Mechanical Testing of Ferritic Products
ASTM A789	Seamless and Welded Tube and Pipe
ASTM A790	Seamless and Welded Ferritic/Austenitic Stainless Steel Pipe
ASTM E165	Test Method for Liquid Penetrant Examination
ASTM E562	Practice for Determining Volume Fraction by Systematic Manual Point Count
ASTM G48	Standard Test Methods for Pitting and Crevice Corrosion Resistance of Stainless Steels and Related Alloys with the Use of Ferric Chloride Solution

2.5.4 National Association of Corrosion Engineers

NACE MR-01-75	Sulphide Stress Cracking Resistant Materials for Oil Field Equipment
NACE TM-01-77	Testing of Materials for Resistance to Sulphide Stress Cracking at Ambient Temperature

2.5.5 Euronorms

EN 473	Qualification and Certification of NDT Personnel

2.5.6 EFC

EFC 17	Corrosion Resistant Alloys for Oil and Gas Production - Guidance on General Requirements and Test Methods for H_2S Service

3.0 GENERAL REQUIREMENTS

3.1 General

3.1.1 The material shall comply with the requirements of API 5LC, NACE MR-01-75 and NEN 3650, except where modified or supplemented by this specification.

3.1.2 Seamless pipe shall be manufactured by hot forming. Solution annealing heat treatment shall be conducted.

3.1.3 CONTRACTOR shall provide COMPANY representatives with unhindered inspection access to all work sites and plant used in the execution of the work, both during procedure qualification and during production.

4.0 QUALITY ASSURANCE AND QUALITY CONTROL

4.1 General

4.1.1 All certification, test results, reports or any other documentation submitted to the COMPANY shall be in the English language.

4.1.2 The CONTRACTOR shall establish and maintain a fully documented APPROVED quality control system, in accordance with the applicable parts of BS EN ISO 9000, to ensure:

- Adequate, effective inspection and objective evidence that items conform to contract requirements.
- Adequate identification and suitable handling of items.

4.1.3 A quality assurance audit schedule shall be drawn up by CONTRACTOR to cover all aspects of the work.

4.2 Quality Plan

4.2.1 CONTRACTOR shall, as part of its tender, submit a written inspection plan which describes the inspection to the performed. The inspection plan shall be re-submitted, with COMPANY comments addressed, prior to commencement of the work for COMPANY APPROVAL. The inspection plan, reference procedure and changes shall be subject to APPROVAL.

4.2.2 CONTRACTOR shall also provide COMPANY with an exhaustive list of all works procedures prior to commencement of the WORK and shall provide copies of all procedures subsequently requested by COMPANY within 5 working days of receiving any such request. CONTRACTOR shall also provide COMPANY's INSPECTORS with unhindered access to a full set of work specific and all other works procedures as COMPANY 's INSPECTORS see fit to consult.

4.2.3 The inspection plan shall include:

- A flowchart illustrating each inspection point, and its relative location in the procedure cycle, where conformance of characteristics is verified. The CONTRACTOR should include additional inspection points for CONTRACTOR's own verification of quality, which will be subject to APPROVAL.
- The characteristics to be inspected at each inspection point, the procedures , the responsible person and acceptance criteria to be used. The procedures shall be provided to the COMPANY's INSPECTOR as requested.
- Copies of specific forms used by the CONTRACTOR to record the results of each inspection.
- A column for COMPANY to identify its inspection points.

4.3 Special Process Procedures

The CONTRACTOR shall:

- Establish and maintain control of all special processes which are essential to production, inspection or safety. Equipment, processing environment and the CONTRACTOR's personnel shall be subject to appropriate qualifications, with certification, to the satisfaction of the COMPANY's INSPECTOR.
- Establish means to ensure that special processes are accomplished under controlled conditions by qualified personnel using APPROVED materials, procedures and equipment as required by specifications and THIRD PARTY requirements. APPROVAL shall be obtained prior to commencement of the work.
- Establish and maintain documented evidence of control of special processes.

- Establish and maintain documented status of personnel, processes or equipment according to the requirements of pertinent codes and standards.
- Ensure that all measuring and test equipment is calibrated. Records of all such calibrations shall be made available to the COMPANY's INSPECTOR for review and APPROVAL.

4.4 Quality Records

4.4.1 The CONTRACTOR shall maintain quality records as documentary evidence of compliance with quality requirements. Quality records shall be available to the COMPANY's INSPECTOR for analysis and review.

4.4.2 Quality records may include item identification by reference to drawing and revision number, acceptance criteria, specific inspections performed and results obtained (if measurements are not required, include, in the record, basis of acceptance), date of inspections, identification of inspector, data recorder charts, qualification of material, personnel procedures and equipment.

4.5 Final Inspection

4.5.1 The CONTRACTOR shall inspect the final item to ensure compliance with contract requirements. A check shall be made of all inspection records to verify that items were inspected at all points shown in the inspection plan. These records shall be complete and available to the COMPANY's INSPECTOR.

4.5.2 Visual inspection and dimensional checks shall be carried out at the point of discharge or receipt to confirm that no damage has occurred during transportation.

4.6 Verification

4.6.1 All CONTRACTOR inspection systems shall be subject to evaluation and surveillance by the COMPANY's INSPECTOR to ensure that the system meets the requirements of this specification and the contract documentation.

4.6.2 All CONTRACTOR operations required by this specification are subject to:

- Procedure compliance checking, at scheduled and unscheduled intervals, to determine that the CONTRACTOR's inspection system is effectively applied.
- Product verification to determine compliance with control requirements. The method of verification shall be as per the agreed standards and procedures.
- No items shall be released to COMPANY unless CONTRACTOR has been issued with an inspection release note (IRN) by COMPANY's INSPECTOR. A copy of the IRN shall form part of the delivery notes accompanying each dispatch of items.

4.7 Preparation for Shipment

4.7.1 The CONTRACTOR shall submit to the COMPANY a procedure detailing its method of packing and shipping for all items.

4.7.2 CONTRACTOR shall also detail its requirements for short (6 months) and long term storage, including any special maintenance procedures which may be required. CONTRACTOR shall proved APPROVED bevel protectors.

4.7.2 No welding of temporary attachments for handling or securing shall be permitted.

4.7.3 All handling, loading and unloading shall be performed in accordance with API recommended practices, as appropriate.

5.0 MATERIAL REQUIREMENTS

5.1 General

5.1.1 The pipe shall be seamless, as defined by Clause 2.1 of API 5LC, and supplied in the solution annealed and water quenched condition.

5.1.2 The finished straight pipe shall be suitable for the production of hot formed bends and, in such cases, shall possess the necessary dimensional and mechanical properties and chemical composition to satisfy these requirements, taking into account any changes that may occur during the bending process.

5.1.3 The pipe material shall be suitable for either manual, semi-automatic or automatic welding using inert gas shielded welding processes and conventional electrodes and filler wires. Welded joints shall be capable of meeting the metallurgical and mechanical properties and corrosion resistance as defined in this specification and specification for welding of pipelines, document number 1166-190-SN-038.

5.1.4 Pipes shall be solution annealed followed by water quenching. The heat treatment procedure shall be fully qualified as part of the manufacturing procedure, including transfer times from furnace to quenching medium and controls on quench bath.

5.2 Qualification and Manufacturing Trials

5.2.1 The CONTRACTOR shall submit for APPROVAL a complete and detailed pipe manufacturing procedure, incorporating all the requirements of this specification. This shall include procedures for steel making, casting, pipe-making, heat treatment, quality control and assurance, testing, pipe tracking and traceability for each manufacturing location. The CONTRACTOR shall also submit previous relevant pre-qualification test results for 22% chromium duplex and/or 25% chromium super duplex stainless steel linepipe produced by the same manufacturing process.

5.2.2 A manufacturing procedure specification shall be submitted immediately after award of purchase order and prior to a pre-production meeting prior to production. A manufacturing procedure qualification shall be performed on pipes from the first production run in accordance with Appendix A. After COMPANY acceptance of the manufacturing procedure qualification, no change shall be made to the manufacturing procedure specification and quality plan without written APPROVAL from the COMPANY.

5.3 Material Properties

5.3.1 General

Material properties shall be in accordance with API 5LC LC65-2205 (UNS S31803) or LC65-2506 as applicable and the modifications defined below. The following UNS designations or APPROVED equivalents are acceptable 25Cr alloys: UNS S32740, UNS S32750, UNS S32760 and UNS S39274.

5.3.2 Chemical Composition

5.3.2.1 The chemical composition shall be determined for each heat of steel used in the manufacture of linepipe specified on the data sheets. The chemical analysis shall conform to the requirements defined below.

5.3.2.2 Product analysis shall be performed for each lot of 50 pipes or once per heat as the minimum frequency as detailed in Table 5.1.

Table 5.1 Product Analysis

Element	Product Weight %	
	25 Cr	22 Cr
C	0.03 maximum	0.03 maximum
Si	0.2-0.50	0.3-0.9
Mn	1.00 maximum	1.8 maximum
S	0.015 maximum	0.015 maximum
P	0.03 maximum	0.03 maximum
Ni	6.0-8.0	5.0-6.0
Cr	24.0-26.0	21.0-23.0
Mo	3.0-5.0	2.8-3.5
N	0.24-0.32	0.14-0.2
W	2.50 maximum	N/A
Cu	1.0 maximum	0.20 maximum
Al	0.03 maximum	0.03 maximum

5.3.2.3 The results of all chemical analyses shall be supplied to the COMPANY as mill material test certificates and these shall include the results of any additional mill control analyses.

5.3.2.4 Variations to analysis outside the above limits shall not be permitted.

5.3.2.5 The product analysis for 22 Cr duplex shall have a minimum PREN value of 35. The PREN is defined in weight % as follows:

$$PREN = \%Cr + 3.3 \times \%Mo + 16 \times \%N$$

5.3.2.6 The product analysis for 25 Cr duplex shall have a minimum PREW value of 40. The PREW is defined in weight % as follows:

$$PREW = \%Cr + 3.3 \times \%Mo + 1.65 \times \%W + 16 \times \%N$$

5.3.3 Material Condition

5.3.3.1 Mechanical testing shall be performed after final heat treatment. If performed prior to hydrotesting, then at least one pipe per size per heat shall be tested before and after hydrotesting. The requirement for repeated testing may, at COMPANY 's discretion and subject to prior written APPROVAL, be waived in favour of testing after heat treatment and prior to hydrotesting, provided the CONTRACTOR can demonstrate that hydrotesting results in no cold working of the finished pipe.

5.3.3.2 All mechanical and metallurgical test properties shall be performed on a pipe selected from each lot of 50 pipes or once per heat as the minimum frequency.

5.3.4 Tensile Tests

5.3.4.1 Longitudinal and transverse room and elevate temperature tests shall be carried out in accordance with Figure 4.1 of API 5LC and ASTM A370. The minimum requirements shall be as follows, in both the longitudinal and transverse directions:

Table 5.2 Tensile Test Requirements

	5-20°C				90°C			
	Minimum		Maximum		Minimum		Maximum	
0.2% Proof Stress N/mm²	25 Cr 550	22 Cr 450	25 Cr 770	22 Cr 630	25 Cr 470	22 Cr 365	25 Cr 650	22 Cr 600
	Minimum		Maximum		Minimum		Maximum	
Tensile Strength N/mm²	25 Cr 800	22 Cr 680	25 Cr 1120	22 Cr 950	25 Cr 700	22 Cr 620	25 Cr 980	22 Cr 800

5.3.4.2 The actual yield and ultimate stress values from any tensile test shall not exceed the specified minimum values by more than 40%. CONTRACTOR may offer guaranteed minimum values in excess of those specified.

5.3.4.3 Stress/strain curves shall be provided for all qualification tests.

5.3.5 Hardness Tests

Vickers HV10 hardness tests using a 10kg load to BS 427 shall be carried out on longitudinal sections from each pipe selected for tensile testing, in accordance with Clause 4.20 of API 5LC. Hardness surveys shall be made parallel to and 2mm from each surface with 3 impressions at each location. The maximum hardness shall not exceed NACE MR-01-75 requirements, if applicable.

5.3.6 Charpy Impact Tests

Charpy impact testing shall be carried out in accordance with ASTM A370 on specimens, in accordance with Figure 4.1 of API 5LC. The test conditions, orientation of samples and acceptance criteria for each size of pipe and all grades involved are defined in Table 5.3 below.

Table 5.3 Minimum Impact Energies

Nominal Bore (inch)	Specimen Size (mm) and Orientation	Test (4) Temperature (°C)	Minimum Impact Energy (J)(1)	
			Average	Single Value
≥ 6	Transverse 10 x 10	T-10	100	80
< 6	Longitudinal 10 x 10	T-10	100	80

Note 1: Specimens and test temperatures for bends shall be as per associated pipe.
Note 2: Specimen size for small diameter pipe is the maximum which can be taken from production pipe. The energy requirements shall be factored in accordance with Table 5.4.
Note 3: Lateral expansion values shall be reported for all test pieces. The criteria of acceptance shall be 0.38mm minimum lateral expansion value for each test.
Note 4: T = minimum design temperature

Table 5.4 Energy Reduction Factors (ERFs)

Specimen Size	ERF
10 x 10mm	1
10 x 7.5mm	0.83
10 x 5mm	0.67

5.3.7 Metallographic Examination

5.3.7.1 Longitudinal and transverse sections shall be prepared for metallographic examination and etched to reveal the microstructure in accordance with ASTM E3 and E407 using APPROVED procedures.

5.3.7.2 One production pipe per heat shall be subject to metallographic examination.

The microstructure shall be consistent with that of solution annealed type UNS S31803 or UNS S32740/32750/32760/32974 duplex, as applicable, and free of grain boundary carbides and inter-metallic phases, eg sigma, chi, Laves, etc phases.

5.3.7.3 Macros shall be handed over to COMPANY for retention.

5.3.8 Ferrite Determination

5.3.8.1 Ferrite determinations shall be carried out on the metallographic specimens prepared as for Section 6.3.7 using the intercept method in accordance with ASTM E562, except that 30 fields shall be sampled per determination.

5.3.8.2 Ferrite levels shall be in the range 35-55%.

5.3.8.3 The ferrite lath size shall be taken into account when selecting the field size and magnification.

5.3.8.4 Photomacrographs of the areas sampled for ferrite determination shall be produced and included in the reports.

5.3.9 Ferric Chloride Test

5.3.9.1 A ferric chloride test shall be performed on each procedure qualification and production test pipe, in accordance with ASTM G48, with a test temperature of 35°C for 25 Cr and 25°C for 22 Cr.

5.3.9.2 Samples 50mm x 40mm shall be exposed for 24 hours.

5.3.9.3 Visual examination aided by a low power microscope shall be carried out after exposure and likely corrosion sites probed with a sharp instrument.

5.3.9.4 Acceptance shall be based on no pitting being present on either the internal or external surface of the pipe when viewed with a microscope at 20 times magnification. End and side grain attack may be ignored.

5.3.10 Flattening Test

Flattening tests shall be carried out in accordance with Clause 4.13 of API 5LC on each seamless pipe selected for evaluation for procedure qualification and production control.

5.3.11 Re-Tests

In the event of one pipe failing to meet the chemical composition, micro-structural or mechanical property specified acceptance criteria, a re-test on four additional pipes from the same lot of 50 pipes shall be carried out. If these results are all acceptable, then only the pipe which gave the unacceptable results shall be rejected.

6.0 MANUFACTURING REQUIREMENTS

6.1 Hydrostatic Tests

6.1.1 Each length of pipe shall be hydrostatically tested in accordance with Section 5 of API 5LC.

6.1.2 The pipe shall be hydrostatically tested at a test pressure calculated to produce an outer fibre stress of 95% of the specified minimum yield stress. The test pressure shall be calculated using the following formula:

$$P = \frac{2\,\sigma_y\,t_{min}}{D} \times 0.95$$

Where:

	P	=	minimum hydrostatic test pressure (N/mm^2)
	σ_y	=	minimum specified yield stress (N/mm^2)
	t_{min}	=	minimum wall thickness (mm)
	D	=	nominal outside diameter (mm) as per API 5L

6.1.3 The minimum time at test pressure shall be 10 seconds.

6.2 Dimensional Requirements

6.2.1 General

6.2.1.1 All procedures used for dimensional checks on finished pipe shall be subject to APPROVAL by the COMPANY prior to commencement of pipe production.

6.2.1.2 The dimensional checks detailed in Sections 6.2.2, 6.2.3 (pipe ends), 6.2.4 and 6.2.5 shall be carried out on each production pipe.

6.2.2 Pipe Length

All pipes shall be supplied in lengths as shown in Table 6.1 below. Jointers shall not be permitted.

Table 6.1 Pipe Lengths

Minimum 95%	Maximum 5%
11.7-12.5m	10.7-11.7m

6.2.3 Diameter and Out-of-Roundness

6.2.3.1 Diameter

Pipe Body: All pipes shall be checked and shall be within ±1.0% of the nominal outside diameter.

Pipe Ends: The ID for a length of 100mm from each end of the pipe shall be within ±0.8mm of the nominal internal diameter with.

Nominal ID = nominal OD - 2 x nominal wall thickness

Pipe ends may be machined to achieve these tolerances. Machining shall be to a 1 in 20 taper.

Machining/dressing of pipe ends shall be performed to remove internal lips, burrs, etc that may give false indications on radiographs.

6.2.3.2 Out of Roundness

The out of roundness measured at any point along the pipe length shall be within ±1% of specified nominal outside diameter.

The out of roundness over the length 100mm from each end measured internally shall not exceed ±0.5% of the nominal internal diameter.

6.2.4 Wall Thickness

6.2.4.1 Both ends of each pipe shall be checked for thickness with a limit gauge.

The specified thickness tolerance range shall be met along the whole length of the finished pipe which shall be checked using an ultrasonic method.

6.2.4.2 The tolerances on wall thickness shall be +15%, -12.5% of the specified nominal wall thickness.

6.2.5 Weight

The weight on car load shall not be less than 98.25% of the calculated weight based on nominal wall thickness. Each pipe shall be within +10% and -3.5% of the calculated weight. Each pipe shall be weighed.

6.2.6 Straightness

The deviation from a straight line shall not exceed 1.5mm per metre length over the length of pipe joint.

6.2.7 Pipe Ends

All pipe ends shall be supplied with a machined standard 30° bevel, in accordance with Clause 7.8 of API 5LC.

6.2.8 Gauge Plate

A gauging pig shall be passed through all pipes in the finished supply condition. The gauge shall consist of two parallel 6mm thick stainless steel circular plates each 98% of the minimum pipe ID (pipe minimum ID = minimum OD - 2 x maximum WT) spaced by rigid spacers to give a distance of twice the nominal pipe OD overall. The gauge shall pass through without deforming the plates.

7.0 TESTING AND INSPECTION

7.1 General

7.1.1 All procedures proposed for non-destructive testing shall be submitted for APPROVAL.

7.1.2 NDE shall be carried out after final heat treatment of the pipe. Where NDE is performed before hydrostatic test, then the first 30 production pipes shall be subject to NDE before and after hydrotest and the results submitted to the COMPANY for review and APPROVAL.

7.2 Personnel

NDE operators shall be qualified to EN 473 level 2 minimum. The supervisor shall be level 3. All operator qualification certificates shall be subject to APPROVAL by the COMPANY prior to commencing pipe production.

7.3 Visual Inspection

The full length of each pipe shall be visually inspected on the external surface for defects and surface finish.

7.4 Ultrasonic Inspection

7.4.1 Each length of pipe shall be fully examined in accordance with Section 8.16 (seamless pipe) of API 5LC.

7.4.2 The ultrasonic test equipment shall be calibrated using internal and external N5 notches in representative pipe material. Any defect indication in excess of that given by an N5 notch shall be cause for rejection.

7.4.3 The wall thickness shall also be checked by a compression probe scan along the whole length of the pipe. The test shall cover at least 25% of the pipe surface.

7.5 Radiographic Inspection

Not required for seamless pipe.

7.6 Dye Penetrant Inspection

7.6.1 The end 100m of each pipe and the bevel ends shall be examined by dye penetrant (DP).

7.6.2 DP shall be performed in accordance with ASME Section V Article 6 and Appendix 6.

7.6.3 Acceptance shall be in accordance with ASME Section VIII Appendix 8.

7.6.4 For pipe end bevel faces, indications of 3mm and greater shall be cause for rejection and such pipe shall be cut back and a new end bevel machined.

7.7 Magnetic Particle Inspection

7.7.1 The outside surface of the pipe body shall be inspected by fluorescent magnetic particle inspection (MPI).

7.7.2 MPI shall be performed in accordance with ASME Section V Article 7.

7.7.3 Acceptance shall be in accordance with ASME Section VIII Appendix 8.

7.8 Acceptance Limits

7.8.1 The requirements of API 5LC shall apply, together with the following:

- Any linear discontinuity or any other imperfections having a depth greater than 5% of the specified nominal wall thickness or which, on removal by grinding, cause the wall to be reduced locally below the minimum specified shall be cause for rejection.
- Surface laps, shells, slivers laminations and all sharp edged imperfections, eg gouges are unacceptable defects (see also Section 7.8.2 of this specification).
- Laminations in the pipe body exceeding 30mm length or a total area of $500mm^2$ shall be cause for rejection.

7.8.2 Bulges, dents and flat areas. Deviations from the original contour of the pipe shall not exceed 3mm depth nor shall they extend in any direction greater than 25% of the pipe outside diameter.

7.9 Workmanship

7.9.1 All pipe defect indications shall be assessed in accordance with Section 9 of API 5LC and Section 8.7 of this specification.

7.9.2 The entire external surface of each pipe shall be machine ground to St3 of BS 7079, with a surface roughness of:

- Ra = 60μm maximum
- Rz = 80μm maximum

7.9.3 Internal finish to be ground or blast finished.

7.10 Repair of Defects

7.10.1 Weld repair of seamless pipe shall not be permitted.

7.10.2 Surface defects such as laps, slivers, shells may be removed by local grinding to a shallow surface contour, provided that defect removal is confirmed by dye penetrant examination and the wall thickness in the ground area is checked by ultrasonics to show that this has not been reduced below the design minimum.

7.10.3 All repairs to be APPROVED by COMPANY. Localised defects in weld bevels may be repaired by re-bevelling or by localised grinding to remove defects up to 3mm in depth, provided ground area is blended to a smooth transition suitable for welding. All repairs are to be subject to repeated NDT and wall thickness checks in the presence of COMPANY.

8.0 DOCUMENTATION

8.1 Documentation to be Provided with Tender

CONTRACTOR shall submit the following with its tender:

- Manufacturing details.
- Quality plan.
- Quality documentation (BS EN ISO 9000 and/or API).
- Packing and marking proposals.
- Proposed chemical analyses.
- Proposed mechanical properties.
- Any qualifications to this specification.
- Sample pipe tracking report.
- Level 1 schedule.

8.2 Documentation Required Prior to Commencement of WORK

All documents to be presented for APPROVAL prior to commencement of pipe production or production qualification, whichever is earliest:

- Quality plan (including inspection plan).
- Manufacturing procedures.
- NDE procedures.
- Handling procedures.
- Production schedule.
- Pipe tracking procedure.

8.3 Documentation/Certification Requirements on Completion of WORK

The following documentation is required with the supplied pipe:

- APPROVED copies of documents cited in Sections 9.1 and 9.2.
- Unique identification number of each pipe joint.
- Heat, heat treatment/lot (50 pipes) numbers from which the pipe joint originates.
- Length of bevelled pipes.
- Weight of pipe.
- Pipe material certificates according to BS EN 10204 3.2.
- Manufacturing procedure qualification reports.
- Complete statistics of chemical analysis and material properties.

APPENDIX A

MANUFACTURING PROCEDURE QUALIFICATION

A1 General

Prior to production or at CONTRACTOR's risk at the start of production, three pipes in each diameter and wall thickness shall be selected by the COMPANY and tested as follows.

A2 Tensile Tests

One longitudinal specimen shall be taken from each pipe and tested at room temperature and 90°C in accordance with Section 5.3.4 of this specification. Stress/strain curves shall be produced for each tensile test.

A3 Charpy Impact Tests

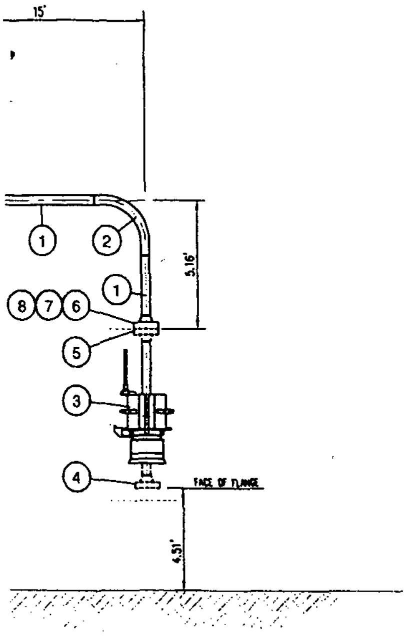
A Charpy transition curve shall be developed for each pipe by taking a set of 3 tests at 10°C intervals over the range -80°C to +20°C.

A4 Pitting Corrosion Tests

ASTM G48 pitting corrosion tests in accordance with Section 5.3.9 of this specification shall be carried out on a sample from each of the selected pipes.

A5 Micro-Structural Examination and Ferrite Count

A sample from each pipe shall be examined for ferrite content and presence of inter-metallic phases in accordance with Sections 5.3.7 and 5.3.8 of this specification.



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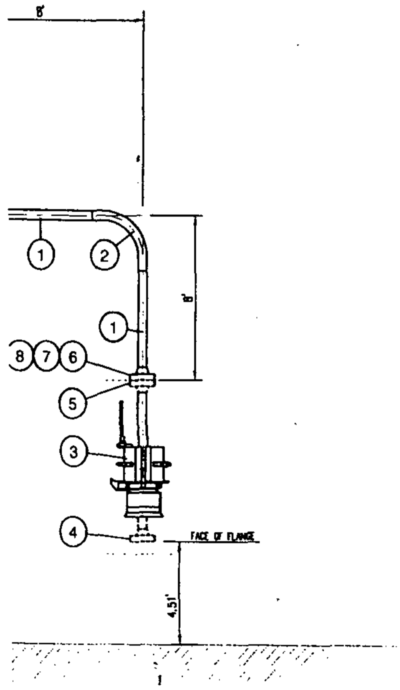

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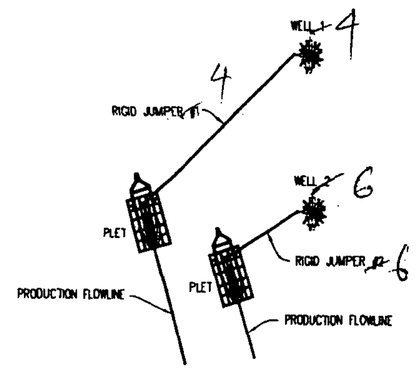
BILL OF MATERIAL - JUMPER SPOOL

ITEM	QTY.	DESCRIPTION
1	225 LF	4.500" O.D. x 0.438" W.T. UNS S32740/50/60 DUPLEX SMLS LINE PIPE, WITH 18 MILS FBE COATING
2	12	4.500" O.D. x 0.438" W.T. UNS S32740/50/60 DUPLEX SMLS INDUCTION BEND, 90 DEG, 5D (20") RAD, 12" TANGENT, WITH 18 MILS FBE COATING
3	4	FEMALE 4"-10,000# RAC (REMOTE ARTICULATED CONNECTOR) IS MANUFACTURED BY OIL STATES (FREE ISSUE)
4	4	MALE 4"-10,000# RAC (REMOTE ARTICULATED CONNECTOR) IS MANUFACTURED BY OIL STATES (TWO ON WELLHEAD, TWO ON PRODUCTION PLETs)
5	4	4 1/16" API 10000# RTJ WN FLANGE, 4.09" DIA. BORE, AISI 4130 (FREE ISSUE BY OIL STATES)
6	4	4 1/16" API 10000# RTJ WN FLANGE, 3.624" DIA. BORE TAPER TO 4.09" DIA. AT FLANGE FACE END, A182 F53, F54, F55, UNS 32760
7	4	RING TYPE METALLIC GASKET, R-155, TYPE BX, FOR API 4 1/16" 10000# RTJ FLANGE, UNS N06625
8	4	SET OF (8) 1 1/8" DIA. x 8" LG. FLG. STUDS, ASTM A320 L7M, W/ 2 HEAVY HEX NUTS, ASTM A194 2HM

NOTES:
1. ITEM 4 IS NOT IN THE SCOPE OF WORK FOR THE JUMPERS. THEY ARE SHOWN FOR INFORMATION PURPOSES ONLY.
2. 76FT. ADDITIONAL PIPE TO BE PROCURED FOR FIELD DETERMINED LENGTHS.
3. THE FLANGES ON THE FEMALE HUBS (FREE ISSUE) WILL BE OVERLAID WITH UNS N06625.

* NOTE: FIELD DETERMINATION OF VALUES.



SEABED LAYOUT AT WELLS #1 & #2

DATE	BY	REVISION DESCRIPTION
05/16/05	RKA	APPROVED FOR CONSTRUCTION
5/13/2005	RKA	ADDED PIPE COATING
3/24/2005	RKA	ISSUED FOR REVIEW AND COMMENT

ENGINEER'S STAMP:

DRAWN BY: R. ACREE
DATE: 03/10/05
CHECKED BY: P.F.
DATE: 04/19/05
APPROVED BY: N.G.D.
DATE: 04/21/05
PLOT SCALE: 1=1
SCALE: N.T.S.

ATP OIL & GAS CORPORATION
BLUEWATER INDUSTRIES
PEGASUS International

MC-711 FIELD DEVELOPMENT

PRODUCTION JUMPERS

JOB NO.	DWG NO.	SHEET NO.	REV.
1166190	1166190N006	00	0

BILL OF MATERIAL - JUMPER SPOOL

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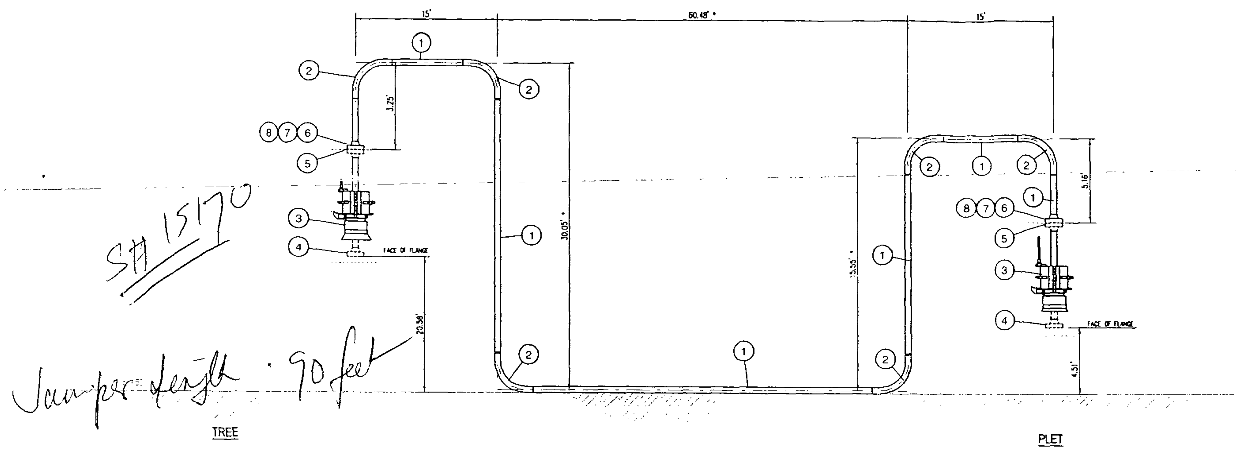
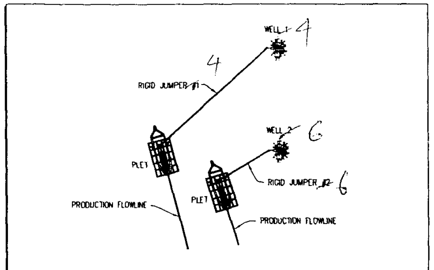
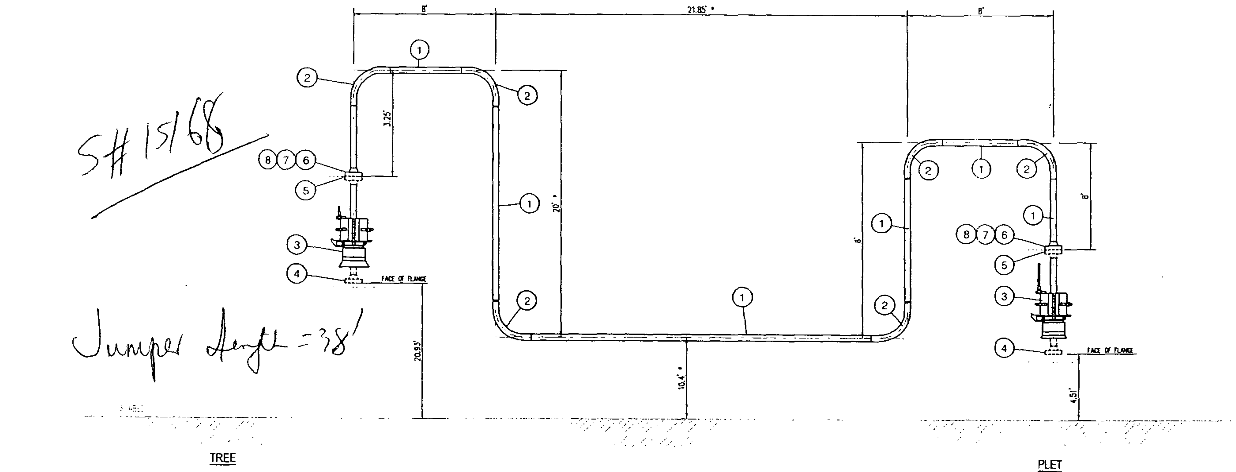
* NOTE: FIELD DETERMINATION OF VALUES.



PRODUCTION JUMPER TYPE 1 - SEABED SUPPORTED



SEABED LAYOUT AT WELLS #1 & #2



PRODUCTION JUMPER TYPE 2 - UNSUPPORTED SPAN

NOTE: THE DIMENSIONS PROVIDED FOR PRODUCTION JUMPER TYPE 2 ARE THE MAXIMUM ALLOWABLE LENGTHS FOR AN UNSUPPORTED SPAN. IF ANY OF THE DIMENSIONS ARE INCREASED, THEN THE NON FIELD DETERMINED DIMENSIONS OF JUMPER TYPE 1 SHOULD BE USED AND THE JUMPER SHOULD BE GROUND SUPPORTED.

BEST AVAILABLE COPY

NO.	DATE	BY	REVISION DESCRIPTION
0	05/16/05	RKA	APPROVED FOR CONSTRUCTION
A2	05/13/2005	RKA	ADDED PIPE COATING
A1	03/24/2005	RKA	ISSUED FOR REVIEW AND COMMENT

THE INFORMATION PROVIDED ON THIS DRAWING IS NOT TO BE ACCEPTED AS VALID UNLESS AN ORIGINAL PROFESSIONAL ENGINEER'S STAMP IS INCLUDED IN THE SPACE PROVIDED AND THE STAMP IS ACCOMPANIED BY THE ORIGINAL DATE AND SIGNATURE OF THE ENGINEER.

ENGINEER'S STAMP:

DRAWN BY: R. ACREE
DATE: 03/10/05
CHECKED BY: P.F.
DATE: 04/19/05
APPROVED BY: N.G.D.
DATE: 04/21/05
PLOT SCALE: 1=1
SCALE: N.T.S.
SCALE VALID FOR D-SIZE DRAWING ONLY (24"x36")

ATP OIL & GAS CORPORATION
BLUEWATER INDUSTRIES
PEGASUS International

MC-711 FIELD DEVELOPMENT

PRODUCTION JUMPERS

JOB NO.	DWG NO.	SHEET NO.	REV.
1166190	1166190N006	00	0

J. Connor Consulting, Inc.

DOCUMENT TRANSMITTAL

DATE: **June 7, 2005**

Attention:	**From:**
Bimal Shrestha	**Sharon DeSimoni**
Company Name: **Minerals Management Service.**	
1201 Elmwood Park Boulevard **New Orleans, Louisiana 70123-2394**	

Bimal,

Enclosed please find eight copies each of the technical specifications and drawing of the RIGID Jumpers for Pipeline Segment No.'s 15168 and 15170.

Please include same in the applications previously submitted.

Thanks again for your assistance!

Sharon

From the desk of:

Sharon DeSimoni
Regulatory Consultant
J. Connor Consulting, Inc.
Telephone: 281-578-3388
Fax: 281-578-8895
E-mail: Sharon.desimoni@jccteam.com

BLUEWATER INDUSTRIES

MC-711

SPECIFICATION FOR DUPLEX PIPE

PEGASUS International

0	Approved for Tender	04/05/05	G .Stevenson	O. Mauvoisin	J. Hines		
Rev	Description	Date	Originator	Checker	Project Approval	Pegasus Approval	Client Approval

DOCUMENT NO.: 1166-190-SN-036

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1.0 INTRODUCTION

1.1 Scope

This specification, when read in conjunction with the contract referenced standards, specifications, and other listed documents, defines the minimum requirements for the application, inspection and testing of duplex or super duplex pipe to specification API 5LC, as modified by this specification.

CONTRACTOR shall be responsible for the manufacture, fabrication, certification, test and delivery of the pipe, as outlined in this specification.

1.2 Abbreviations

Within this document the following abbreviations are used:

API	American Petroleum Institute
ASTM	American Society for Testing of Materials
AWS	American Welding Society
BS	British Standards
DPI	Dye penetrant inspection
EN	Euronorm
EPIC	Engineer, procure, install and commission
MPI	Magnetic particle inspection
NDE/T	Non-destructive examination/testing
NPS	Nominal pipe size
PREN	Pitting resistance equivalent - nitrogen
PREW	Pitting resistance equivalent - tungsten
SMYS	Specified minimum yield stress
UNS	Unified numbering system
UT	Ultrasonic testing

2.0 APPLICABLE CODES AND STANDARDS

2.1 Revisions

Only the latest issues of the relevant standards, codes, statutory regulations and specifications referenced shall be applied to the WORK being performed.

2.2 Compliance

This specification is complementary to the requisition for individual item(s) of equipment, legislative requirements and guidance notes issued by any relevant authority and specifications referenced herein.

2.3 Conflict of Information

If there is any conflict between this specification or any other specification and related data sheets or with any applicable codes, standards and regulations, CONTRACTOR shall inform COMPANY in writing. Written clarification must be given by the COMPANY before CONTRACTOR commences work.

2.4 Project Specifications and Data Sheets

It is the responsibility of the CONTRACTOR to ensure that it has received from the COMPANY all specifications, etc, which are referenced within applicable specifications, to enable it to understand and comply with all aspects of work it is performing for the COMPANY.

2.5 Codes and Standards

It is the responsibility of the CONTRACTOR to ensure that only the latest issues of the following codes, standards and regulations shall be used in conjunction with this specification. Specific reference should be made to the following.

2.5.1 American Petroleum Institute

API 5LC	Specification for CRA Linepipe

2.5.2 British Standards

BS 4515	Specification for Welding of Steel Pipelines on Land or Offshore
BS 7079/ISO 8503-1	Preparation of Steel Substrate before Application of Paint
BS 7448	Fracture Mechanics Toughness Tests Part 1 : Method for Determination of K_{ic} Critical CTOD and Critical J Values of Metallic Materials
BS 8010 Part 3	Pipelines Subsea : Design, Construction and Installation
BS EN 10204	Metallic Products - Types of Inspection Documents
BS EN ISO 6507	Metallic Materials - Vickers Hardness Test
BS EN ISO 9000	Quality Management and Quality Assurance Standards

2.5.3 American Society for Testing and Materials

ASTM A370	Mechanical Testing of Ferritic Products
ASTM A789	Seamless and Welded Tube and Pipe
ASTM A790	Seamless and Welded Ferritic/Austenitic Stainless Steel Pipe
ASTM E165	Test Method for Liquid Penetrant Examination
ASTM E562	Practice for Determining Volume Fraction by Systematic Manual Point Count
ASTM G48	Standard Test Methods for Pitting and Crevice Corrosion Resistance of Stainless Steels and Related Alloys with the Use of Ferric Chloride Solution

2.5.4 National Association of Corrosion Engineers

NACE MR-01-75	Sulphide Stress Cracking Resistant Materials for Oil Field Equipment
NACE TM-01-77	Testing of Materials for Resistance to Sulphide Stress Cracking at Ambient Temperature

2.5.5 Euronorms

EN 473	Qualification and Certification of NDT Personnel

2.5.6 EFC

EFC 17	Corrosion Resistant Alloys for Oil and Gas Production - Guidance on General Requirements and Test Methods for H_2S Service

3.0 GENERAL REQUIREMENTS

3.1 General

3.1.1 The material shall comply with the requirements of API 5LC, NACE MR-01-75 and NEN 3650, except where modified or supplemented by this specification.

3.1.2 Seamless pipe shall be manufactured by hot forming. Solution annealing heat treatment shall be conducted.

3.1.3 CONTRACTOR shall provide COMPANY representatives with unhindered inspection access to all work sites and plant used in the execution of the work, both during procedure qualification and during production.

4.0 QUALITY ASSURANCE AND QUALITY CONTROL

4.1 General

4.1.1 All certification, test results, reports or any other documentation submitted to the COMPANY shall be in the English language.

4.1.2 The CONTRACTOR shall establish and maintain a fully documented APPROVED quality control system, in accordance with the applicable parts of BS EN ISO 9000, to ensure:

- Adequate, effective inspection and objective evidence that items conform to contract requirements.
- Adequate identification and suitable handling of items.

4.1.3 A quality assurance audit schedule shall be drawn up by CONTRACTOR to cover all aspects of the work.

4.2 Quality Plan

4.2.1 CONTRACTOR shall, as part of its tender, submit a written inspection plan which describes the inspection to the performed. The inspection plan shall be re-submitted, with COMPANY comments addressed, prior to commencement of the work for COMPANY APPROVAL. The inspection plan, reference procedure and changes shall be subject to APPROVAL.

4.2.2 CONTRACTOR shall also provide COMPANY with an exhaustive list of all works procedures prior to commencement of the WORK and shall provide copies of all procedures subsequently requested by COMPANY within 5 working days of receiving any such request. CONTRACTOR shall also provide COMPANY's INSPECTORS with unhindered access to a full set of work specific and all other works procedures as COMPANY 's INSPECTORS see fit to consult.

4.2.3 The inspection plan shall include:

- A flowchart illustrating each inspection point, and its relative location in the procedure cycle, where conformance of characteristics is verified. The CONTRACTOR should include additional inspection points for CONTRACTOR's own verification of quality, which will be subject to APPROVAL.
- The characteristics to be inspected at each inspection point, the procedures , the responsible person and acceptance criteria to be used. The procedures shall be provided to the COMPANY's INSPECTOR as requested.
- Copies of specific forms used by the CONTRACTOR to record the results of each inspection.
- A column for COMPANY to identify its inspection points.

4.3 Special Process Procedures

The CONTRACTOR shall:

- Establish and maintain control of all special processes which are essential to production, inspection or safety. Equipment, processing environment and the CONTRACTOR's personnel shall be subject to appropriate qualifications, with certification, to the satisfaction of the COMPANY's INSPECTOR.
- Establish means to ensure that special processes are accomplished under controlled conditions by qualified personnel using APPROVED materials, procedures and equipment as required by specifications and THIRD PARTY requirements. APPROVAL shall be obtained prior to commencement of the work.
- Establish and maintain documented evidence of control of special processes.

- Establish and maintain documented status of personnel, processes or equipment according to the requirements of pertinent codes and standards.
- Ensure that all measuring and test equipment is calibrated. Records of all such calibrations shall be made available to the COMPANY's INSPECTOR for review and APPROVAL.

4.4 Quality Records

4.4.1 The CONTRACTOR shall maintain quality records as documentary evidence of compliance with quality requirements. Quality records shall be available to the COMPANY's INSPECTOR for analysis and review.

4.4.2 Quality records may include item identification by reference to drawing and revision number, acceptance criteria, specific inspections performed and results obtained (if measurements are not required, include, in the record, basis of acceptance), date of inspections, identification of inspector, data recorder charts, qualification of material, personnel procedures and equipment.

4.5 Final Inspection

4.5.1 The CONTRACTOR shall inspect the final item to ensure compliance with contract requirements. A check shall be made of all inspection records to verify that items were inspected at all points shown in the inspection plan. These records shall be complete and available to the COMPANY's INSPECTOR.

4.5.2 Visual inspection and dimensional checks shall be carried out at the point of discharge or receipt to confirm that no damage has occurred during transportation.

4.6 Verification

4.6.1 All CONTRACTOR inspection systems shall be subject to evaluation and surveillance by the COMPANY's INSPECTOR to ensure that the system meets the requirements of this specification and the contract documentation.

4.6.2 All CONTRACTOR operations required by this specification are subject to:

- Procedure compliance checking, at scheduled and unscheduled intervals, to determine that the CONTRACTOR's inspection system is effectively applied.
- Product verification to determine compliance with control requirements. The method of verification shall be as per the agreed standards and procedures.
- No items shall be released to COMPANY unless CONTRACTOR has been issued with an inspection release note (IRN) by COMPANY's INSPECTOR. A copy of the IRN shall form part of the delivery notes accompanying each dispatch of items.

4.7 Preparation for Shipment

4.7.1 The CONTRACTOR shall submit to the COMPANY a procedure detailing its method of packing and shipping for all items.

4.7.2 CONTRACTOR shall also detail its requirements for short (6 months) and long term storage, including any special maintenance procedures which may be required. CONTRACTOR shall proved APPROVED bevel protectors.

4.7.2 No welding of temporary attachments for handling or securing shall be permitted.

4.7.3 All handling, loading and unloading shall be performed in accordance with API recommended practices, as appropriate.

5.0 MATERIAL REQUIREMENTS

5.1 General

5.1.1 The pipe shall be seamless, as defined by Clause 2.1 of API 5LC, and supplied in the solution annealed and water quenched condition.

5.1.2 The finished straight pipe shall be suitable for the production of hot formed bends and, in such cases, shall possess the necessary dimensional and mechanical properties and chemical composition to satisfy these requirements, taking into account any changes that may occur during the bending process.

5.1.3 The pipe material shall be suitable for either manual, semi-automatic or automatic welding using inert gas shielded welding processes and conventional electrodes and filler wires. Welded joints shall be capable of meeting the metallurgical and mechanical properties and corrosion resistance as defined in this specification and specification for welding of pipelines, document number 1166-190-SN-038.

5.1.4 Pipes shall be solution annealed followed by water quenching. The heat treatment procedure shall be fully qualified as part of the manufacturing procedure, including transfer times from furnace to quenching medium and controls on quench bath.

5.2 Qualification and Manufacturing Trials

5.2.1 The CONTRACTOR shall submit for APPROVAL a complete and detailed pipe manufacturing procedure, incorporating all the requirements of this specification. This shall include procedures for steel making, casting, pipe-making, heat treatment, quality control and assurance, testing, pipe tracking and traceability for each manufacturing location. The CONTRACTOR shall also submit previous relevant pre-qualification test results for 22% chromium duplex and/or 25% chromium super duplex stainless steel linepipe produced by the same manufacturing process.

5.2.2 A manufacturing procedure specification shall be submitted immediately after award of purchase order and prior to a pre-production meeting prior to production. A manufacturing procedure qualification shall be performed on pipes from the first production run in accordance with Appendix A. After COMPANY acceptance of the manufacturing procedure qualification, no change shall be made to the manufacturing procedure specification and quality plan without written APPROVAL from the COMPANY.

5.3 Material Properties

5.3.1 General

Material properties shall be in accordance with API 5LC LC65-2205 (UNS S31803) or LC65-2506 as applicable and the modifications defined below. The following UNS designations or APPROVED equivalents are acceptable 25Cr alloys: UNS S32740, UNS S32750, UNS S32760 and UNS S39274.

5.3.2 Chemical Composition

5.3.2.1 The chemical composition shall be determined for each heat of steel used in the manufacture of linepipe specified on the data sheets. The chemical analysis shall conform to the requirements defined below.

5.3.2.2 Product analysis shall be performed for each lot of 50 pipes or once per heat as the minimum frequency as detailed in Table 5.1.

Table 5.1 Product Analysis

Element	Product Weight %	
	25 Cr	22 Cr
C	0.03 maximum	0.03 maximum
Si	0.2-0.50	0.3-0.9
Mn	1.00 maximum	1.8 maximum
S	0.015 maximum	0.015 maximum
P	0.03 maximum	0.03 maximum
Ni	6.0-8.0	5.0-6.0
Cr	24.0-26.0	21.0-23.0
Mo	3.0-5.0	2.8-3.5
N	0.24-0.32	0.14-0.2
W	2.50 maximum	N/A
Cu	1.0 maximum	0.20 maximum
Al	0.03 maximum	0.03 maximum

5.3.2.3 The results of all chemical analyses shall be supplied to the COMPANY as mill material test certificates and these shall include the results of any additional mill control analyses.

5.3.2.4 Variations to analysis outside the above limits shall not be permitted.

5.3.2.5 The product analysis for 22 Cr duplex shall have a minimum PREN value of 35. The PREN is defined in weight % as follows:

PREN = %Cr + 3.3 x %Mo + 16 x %N

5.3.2.6 The product analysis for 25 Cr duplex shall have a minimum PREW value of 40. The PREW is defined in weight % as follows:

PREW = %Cr + 3.3 x %Mo + 1.65 x %W + 16 x %N

5.3.3 Material Condition

5.3.3.1 Mechanical testing shall be performed after final heat treatment. If performed prior to hydrotesting, then at least one pipe per size per heat shall be tested before and after hydrotesting. The requirement for repeated testing may, at COMPANY 's discretion and subject to prior written APPROVAL, be waived in favour of testing after heat treatment and prior to hydrotesting, provided the CONTRACTOR can demonstrate that hydrotesting results in no cold working of the finished pipe.

5.3.3.2 All mechanical and metallurgical test properties shall be performed on a pipe selected from each lot of 50 pipes or once per heat as the minimum frequency.

5.3.4 Tensile Tests

5.3.4.1 Longitudinal and transverse room and elevate temperature tests shall be carried out in accordance with Figure 4.1 of API 5LC and ASTM A370. The minimum requirements shall be as follows, in both the longitudinal and transverse directions:

Table 5.2 Tensile Test Requirements

	5-20°C				90°C			
	Minimum		Maximum		Minimum		Maximum	
0.2% Proof Stress N/mm^2	25 Cr	22 Cr	25 Cr	22 Cr	25 Cr	22 Cr	25 Cr	22 Cr
	550	450	770	630	470	365	650	600
	Minimum		Maximum		Minimum		Maximum	
Tensile Strength N/mm^2	25 Cr	22 Cr	25 Cr	22 Cr	25 Cr	22 Cr	25 Cr	22 Cr
	800	680	1120	950	700	620	980	800

5.3.4.2 The actual yield and ultimate stress values from any tensile test shall not exceed the specified minimum values by more than 40%. CONTRACTOR may offer guaranteed minimum values in excess of those specified.

5.3.4.3 Stress/strain curves shall be provided for all qualification tests.

5.3.5 Hardness Tests

Vickers HV10 hardness tests using a 10kg load to BS 427 shall be carried out on longitudinal sections from each pipe selected for tensile testing, in accordance with Clause 4.20 of API 5LC. Hardness surveys shall be made parallel to and 2mm from each surface with 3 impressions at each location. The maximum hardness shall not exceed NACE MR-01-75 requirements, if applicable.

5.3.6 Charpy Impact Tests

Charpy impact testing shall be carried out in accordance with ASTM A370 on specimens, in accordance with Figure 4.1 of API 5LC. The test conditions, orientation of samples and acceptance criteria for each size of pipe and all grades involved are defined in Table 5.3 below.

Table 5.3 Minimum Impact Energies

Nominal Bore (inch)	**Specimen Size (mm) and Orientation**	**Test [4] Temperature (°C)**	**Minimum Impact Energy (J)[1]**	
			Average	**Single Value**
≥ 6	Transverse 10 x 10	T-10	100	80
< 6	Longitudinal 10 x 10	T-10	100	80

Note 1: Specimens and test temperatures for bends shall be as per associated pipe.

Note 2: Specimen size for small diameter pipe is the maximum which can be taken from production pipe. The energy requirements shall be factored in accordance with Table 5.4.

Note 3: Lateral expansion values shall be reported for all test pieces. The criteria of acceptance shall be 0.38mm minimum lateral expansion value for each test.

Note 4: T = minimum design temperature

Table 5.4 Energy Reduction Factors (ERFs)

Specimen Size	**ERF**
10 x 10mm	1
10 x 7.5mm	0.83
10 x 5mm	0.67

5.3.7 Metallographic Examination

5.3.7.1 Longitudinal and transverse sections shall be prepared for metallographic examination and etched to reveal the microstructure in accordance with ASTM E3 and E407 using APPROVED procedures.

5.3.7.2 One production pipe per heat shall be subject to metallographic examination.

The microstructure shall be consistent with that of solution annealed type UNS S31803 or UNS S32740/32750/32760/32974 duplex, as applicable, and free of grain boundary carbides and inter-metallic phases, eg sigma, chi, Laves, etc phases.

5.3.7.3 Macros shall be handed over to COMPANY for retention.

5.3.8 Ferrite Determination

5.3.8.1 Ferrite determinations shall be carried out on the metallographic specimens prepared as for Section 6.3.7 using the intercept method in accordance with ASTM E562, except that 30 fields shall be sampled per determination.

5.3.8.2 Ferrite levels shall be in the range 35-55%.

5.3.8.3 The ferrite lath size shall be taken into account when selecting the field size and magnification.

5.3.8.4 Photomacrographs of the areas sampled for ferrite determination shall be produced and included in the reports.

5.3.9 Ferric Chloride Test

5.3.9.1 A ferric chloride test shall be performed on each procedure qualification and production test pipe, in accordance with ASTM G48, with a test temperature of 35°C for 25 Cr and 25°C for 22 Cr.

5.3.9.2 Samples 50mm x 40mm shall be exposed for 24 hours.

5.3.9.3 Visual examination aided by a low power microscope shall be carried out after exposure and likely corrosion sites probed with a sharp instrument.

5.3.9.4 Acceptance shall be based on no pitting being present on either the internal or external surface of the pipe when viewed with a microscope at 20 times magnification. End and side grain attack may be ignored.

5.3.10 Flattening Test

Flattening tests shall be carried out in accordance with Clause 4.13 of API 5LC on each seamless pipe selected for evaluation for procedure qualification and production control.

5.3.11 Re-Tests

In the event of one pipe failing to meet the chemical composition, micro-structural or mechanical property specified acceptance criteria, a re-test on four additional pipes from the same lot of 50 pipes shall be carried out. If these results are all acceptable, then only the pipe which gave the unacceptable results shall be rejected.

6.0 MANUFACTURING REQUIREMENTS

6.1 Hydrostatic Tests

6.1.1 Each length of pipe shall be hydrostatically tested in accordance with Section 5 of API 5LC.

6.1.2 The pipe shall be hydrostatically tested at a test pressure calculated to produce an outer fibre stress of 95% of the specified minimum yield stress. The test pressure shall be calculated using the following formula:

$$P = \frac{2\,\sigma_y\,t_{min}}{D} \times 0.95$$

Where:			
	P	=	minimum hydrostatic test pressure (N/mm^2)
	σ_y	=	minimum specified yield stress (N/mm^2)
	t_{min}	=	minimum wall thickness (mm)
	D	=	nominal outside diameter (mm) as per API 5L

6.1.3 The minimum time at test pressure shall be 10 seconds.

6.2 Dimensional Requirements

6.2.1 General

6.2.1.1 All procedures used for dimensional checks on finished pipe shall be subject to APPROVAL by the COMPANY prior to commencement of pipe production.

6.2.1.2 The dimensional checks detailed in Sections 6.2.2, 6.2.3 (pipe ends), 6.2.4 and 6.2.5 shall be carried out on each production pipe.

6.2.2 Pipe Length

All pipes shall be supplied in lengths as shown in Table 6.1 below. Jointers shall not be permitted.

Table 6.1 Pipe Lengths

Minimum 95%	Maximum 5%
11.7-12.5m	10.7-11.7m

6.2.3 Diameter and Out-of-Roundness

6.2.3.1 Diameter

Pipe Body: All pipes shall be checked and shall be within ±1.0% of the nominal outside diameter.

Pipe Ends: The ID for a length of 100mm from each end of the pipe shall be within ±0.8mm of the nominal internal diameter with.

Nominal ID = nominal OD - 2 x nominal wall thickness

Pipe ends may be machined to achieve these tolerances. Machining shall be to a 1 in 20 taper.

Machining/dressing of pipe ends shall be performed to remove internal lips, burrs, etc that may give false indications on radiographs.

6.2.3.2 Out of Roundness

The out of roundness measured at any point along the pipe length shall be within ±1% of specified nominal outside diameter.

The out of roundness over the length 100mm from each end measured internally shall not exceed ±0.5% of the nominal internal diameter.

6.2.4 Wall Thickness

6.2.4.1 Both ends of each pipe shall be checked for thickness with a limit gauge.

The specified thickness tolerance range shall be met along the whole length of the finished pipe which shall be checked using an ultrasonic method.

6.2.4.2 The tolerances on wall thickness shall be +15%, -12.5% of the specified nominal wall thickness.

6.2.5 Weight

The weight on car load shall not be less than 98.25% of the calculated weight based on nominal wall thickness. Each pipe shall be within +10% and -3.5% of the calculated weight. Each pipe shall be weighed.

6.2.6 Straightness

The deviation from a straight line shall not exceed 1.5mm per metre length over the length of pipe joint.

6.2.7 Pipe Ends

All pipe ends shall be supplied with a machined standard 30° bevel, in accordance with Clause 7.8 of API 5LC.

6.2.8 Gauge Plate

A gauging pig shall be passed through all pipes in the finished supply condition. The gauge shall consist of two parallel 6mm thick stainless steel circular plates each 98% of the minimum pipe ID (pipe minimum ID = minimum OD - 2 x maximum WT) spaced by rigid spacers to give a distance of twice the nominal pipe OD overall. The gauge shall pass through without deforming the plates.

7.0 TESTING AND INSPECTION

7.1 General

7.1.1 All procedures proposed for non-destructive testing shall be submitted for APPROVAL.

7.1.2 NDE shall be carried out after final heat treatment of the pipe. Where NDE is performed before hydrostatic test, then the first 30 production pipes shall be subject to NDE before and after hydrotest and the results submitted to the COMPANY for review and APPROVAL.

7.2 Personnel

NDE operators shall be qualified to EN 473 level 2 minimum. The supervisor shall be level 3. All operator qualification certificates shall be subject to APPROVAL by the COMPANY prior to commencing pipe production.

7.3 Visual Inspection

The full length of each pipe shall be visually inspected on the external surface for defects and surface finish.

7.4 Ultrasonic Inspection

7.4.1 Each length of pipe shall be fully examined in accordance with Section 8.16 (seamless pipe) of API 5LC.

7.4.2 The ultrasonic test equipment shall be calibrated using internal and external N5 notches in representative pipe material. Any defect indication in excess of that given by an N5 notch shall be cause for rejection.

7.4.3 The wall thickness shall also be checked by a compression probe scan along the whole length of the pipe. The test shall cover at least 25% of the pipe surface.

7.5 Radiographic Inspection

Not required for seamless pipe.

7.6 Dye Penetrant Inspection

7.6.1 The end 100m of each pipe and the bevel ends shall be examined by dye penetrant (DP).

7.6.2 DP shall be performed in accordance with ASME Section V Article 6 and Appendix 6.

7.6.3 Acceptance shall be in accordance with ASME Section VIII Appendix 8.

7.6.4 For pipe end bevel faces, indications of 3mm and greater shall be cause for rejection and such pipe shall be cut back and a new end bevel machined.

7.7 Magnetic Particle Inspection

7.7.1 The outside surface of the pipe body shall be inspected by fluorescent magnetic particle inspection (MPI).

7.7.2 MPI shall be performed in accordance with ASME Section V Article 7.

7.7.3 Acceptance shall be in accordance with ASME Section VIII Appendix 8.

7.8 Acceptance Limits

7.8.1 The requirements of API 5LC shall apply, together with the following:

- Any linear discontinuity or any other imperfections having a depth greater than 5% of the specified nominal wall thickness or which, on removal by grinding, cause the wall to be reduced locally below the minimum specified shall be cause for rejection.
- Surface laps, shells, slivers laminations and all sharp edged imperfections, eg gouges are unacceptable defects (see also Section 7.8.2 of this specification).
- Laminations in the pipe body exceeding 30mm length or a total area of 500mm^2 shall be cause for rejection.

7.8.2 Bulges, dents and flat areas. Deviations from the original contour of the pipe shall not exceed 3mm depth nor shall they extend in any direction greater than 25% of the pipe outside diameter.

7.9 Workmanship

7.9.1 All pipe defect indications shall be assessed in accordance with Section 9 of API 5LC and Section 8.7 of this specification.

7.9.2 The entire external surface of each pipe shall be machine ground to St3 of BS 7079, with a surface roughness of:

- Ra = 60μm maximum
- Rz = 80μm maximum

7.9.3 Internal finish to be ground or blast finished.

7.10 Repair of Defects

7.10.1 Weld repair of seamless pipe shall not be permitted.

7.10.2 Surface defects such as laps, slivers, shells may be removed by local grinding to a shallow surface contour, provided that defect removal is confirmed by dye penetrant examination and the wall thickness in the ground area is checked by ultrasonics to show that this has not been reduced below the design minimum.

7.10.3 All repairs to be APPROVED by COMPANY. Localised defects in weld bevels may be repaired by re-bevelling or by localised grinding to remove defects up to 3mm in depth, provided ground area is blended to a smooth transition suitable for welding. All repairs are to be subject to repeated NDT and wall thickness checks in the presence of COMPANY.

8.0 DOCUMENTATION

8.1 Documentation to be Provided with Tender

CONTRACTOR shall submit the following with its tender:

- Manufacturing details.
- Quality plan.
- Quality documentation (BS EN ISO 9000 and/or API).
- Packing and marking proposals.
- Proposed chemical analyses.
- Proposed mechanical properties.
- Any qualifications to this specification.
- Sample pipe tracking report.
- Level 1 schedule.

8.2 Documentation Required Prior to Commencement of WORK

All documents to be presented for APPROVAL prior to commencement of pipe production or production qualification, whichever is earliest:

- Quality plan (including inspection plan).
- Manufacturing procedures.
- NDE procedures.
- Handling procedures.
- Production schedule.
- Pipe tracking procedure.

8.3 Documentation/Certification Requirements on Completion of WORK

The following documentation is required with the supplied pipe:

- APPROVED copies of documents cited in Sections 9.1 and 9.2.
- Unique identification number of each pipe joint.
- Heat, heat treatment/lot (50 pipes) numbers from which the pipe joint originates.
- Length of bevelled pipes.
- Weight of pipe.
- Pipe material certificates according to BS EN 10204 3.2.
- Manufacturing procedure qualification reports.
- Complete statistics of chemical analysis and material properties.

APPENDIX A

MANUFACTURING PROCEDURE QUALIFICATION

A1 General

Prior to production or at CONTRACTOR's risk at the start of production, three pipes in each diameter and wall thickness shall be selected by the COMPANY and tested as follows.

A2 Tensile Tests

One longitudinal specimen shall be taken from each pipe and tested at room temperature and 90°C in accordance with Section 5.3.4 of this specification. Stress/strain curves shall be produced for each tensile test.

A3 Charpy Impact Tests

A Charpy transition curve shall be developed for each pipe by taking a set of 3 tests at 10°C intervals over the range -80°C to +20°C.

A4 Pitting Corrosion Tests

ASTM G48 pitting corrosion tests in accordance with Section 5.3.9 of this specification shall be carried out on a sample from each of the selected pipes.

A5 Micro-Structural Examination and Ferrite Count

A sample from each pipe shall be examined for ferrite content and presence of inter-metallic phases in accordance with Sections 5.3.7 and 5.3.8 of this specification.

BS

J. Connor Consulting, Inc.

DOCUMENT TRANSMITTAL

DATE: November 17, 2005

TIME: 3:55 pm

Attention:	From:
Bimal Shrestha	Sharon DeSimoni
Company Name: Minerals Management Service	
1201 Elmwood Park New Orleans, Louisiana 70123-2394	

Bimal,

Enclosed please find the certified plats for ATP Oil & Gas Corporation's proposed flowline and umbilical Segment No.'s 15168, 15169, 15170, & 15171 to be located in MC 711.

I think that I sent you everything that you needed except for the Corrosion Inhibition Program and I am still waiting for that. I will forward to you upon receipt

Please let me know if you need additional information.

Thanks

From the desk of: Sharon

Sharon DeSimoni
Regulatory Consultant
J. Connor Consulting, Inc.
Telephone: 281-578-3388
Fax: 281-578-8895
E-mail: Sharon.desimoni@jccteam.com

Minerals Management Service
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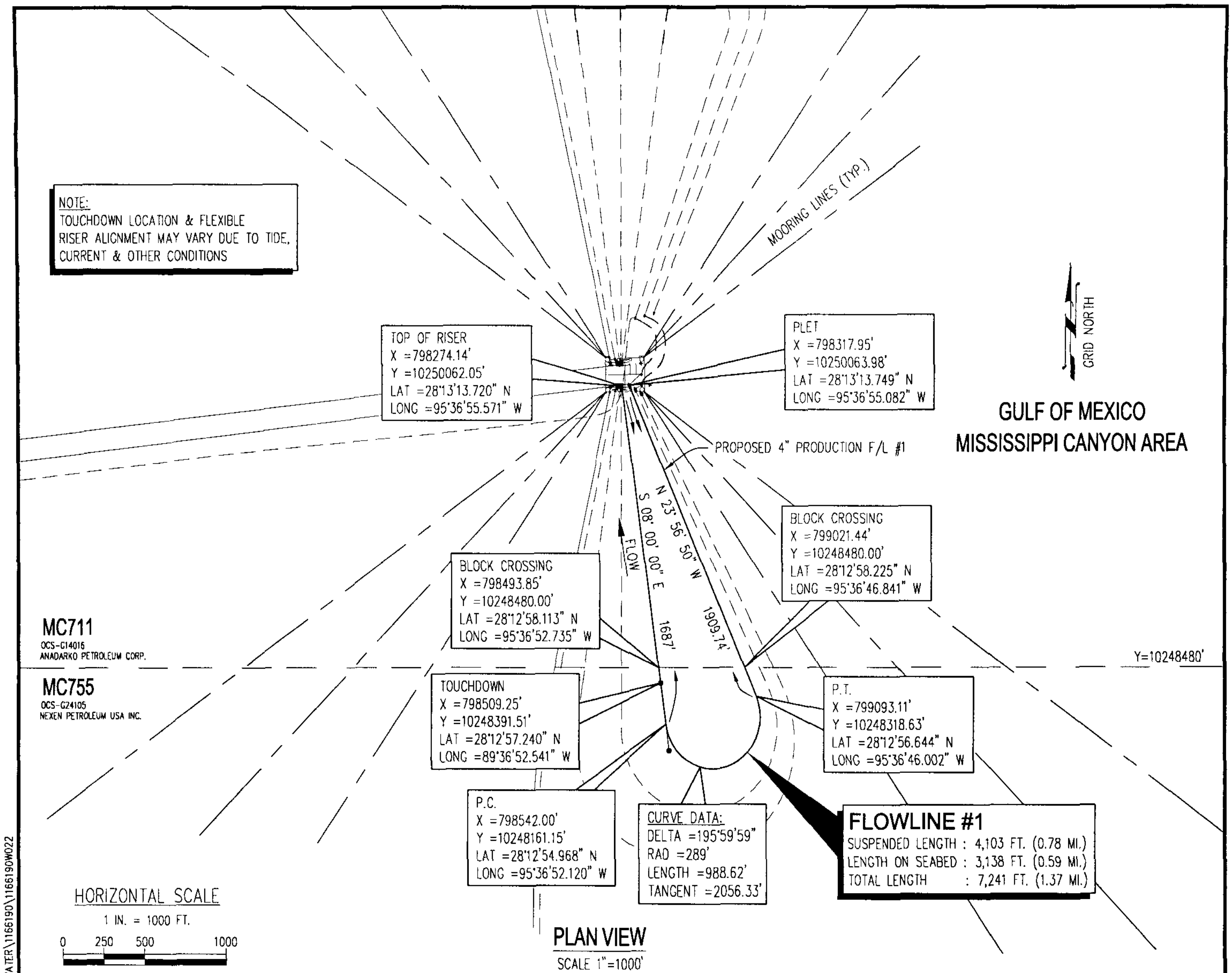
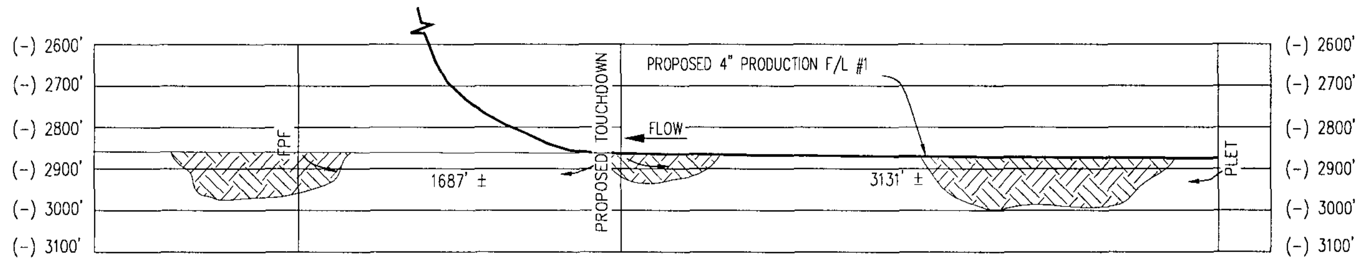
Office of Field Operations
Pipeline Section



PLAN VIEW

SCALE 1"=1000'



PROFILE

HORIZONTAL SCALE: 1"=1000'
VERTICAL SCALE: 1"=500'

D. E. West
D.E.WEST 10/17/05

REGISTERED PROFESSIONAL LAND SURVEYOR
TEXAS REGISTRATION No. 1229
9821 KATY FREEWAY, SUITE 750
HOUSTON, TX. 77024
713-465-5777
EMPLOYEE OF PEGASUS INTERNATIONAL

HORIZONTAL SCALE
1 IN. = 1000 FT.
0 250 500 1000

MAP EXPLANATION

MAP PROJECTION BASED UPON UNIVERSAL TRANSVERSE MERCATOR GRID SYSTEM, ZONE 15. (GRID UNITS IN US SURVEY FEET) NAD 27 ALL LATITUDE / LONGITUDE COORDINATES ARE BASED ON NAD 27, CLARKE 1866 SPHEROID.

VERTICAL SCALE
1 IN. = 500 FT.
0 175 250 500

PLOT: Thursday, November 17, 2005 9:15:35 AM BY: RICK ACREE LAST SAVE: 6/23/2005 10:11:15 AM BY: ---- FILE NAME: I:\BLUEWATER\1166190\1166190W022

PEGASUS International	ATP OIL & GAS CORPORATION / BLUEWATER INDUSTRIES	MC-711 FIELD DEVELOPMENT	DWG NO. 1166190W022
			JOB NO. 1166190
		PROPOSED 4" PRODUCTION FLOWLINE TO WELL #4ST01	SCALE: AS SHOWN
DRAWN BY: R. ACREE	ORIGIN. DATE: 02/24/05	REV. DATE: 06/06/05	SCALE VALID FOR A-SIZE DRAWING (8.5" x 11") ONLY. REV. A2

Shrestha, Bimal

From: Shrestha, Bimal
Sent: Friday, August 12, 2005 12:51 PM
To: 'Sharon DeSimoni'
Subject: RE: Pipeline Segments No. 15168, 15169, 15170, 15171

Sharon:

1. We need Letter of no objection from Nexen.

2. Louisiana CZM approval is not received yet.

3. I need the following info for jumpers from each well (Segment number 15168, 15170) to the PLET:

a. Length of the jumpers
b. Diameter, Thickness, Grade of the pipe used for jumpers.

4. Need Cathodic protection design

5. Need Corrosion inhibition Program

6. We had received VIV Analysis for export risers. Please confirm if you are using the same analysis for production risers.

Bimal Shrestha
Minerals Management Services
1201 Elmwood Park Blvd.
New Orleans, LA 70123

Phone: 504-736-2548
FAX: (504) 736-2408

-----Original Message-----
From: Sharon DeSimoni [mailto:Sharon.DeSimoni@jccteam.com]
Sent: Thursday, August 11, 2005 4:22 PM
To: Shrestha, Bimal
Subject: Pipeline Segments No. 15168, 15169, 15170, 15171

Bimal,

Are you waiting on me for anything on these pipelines?

Sharon

Sharon DeSimoni
J.Connor Consulting, Inc.
16225 Park Ten Place, Suite 700
Houston, Texas 77084
281-578-3388

M I OR O
S# 15170, 71
9268 6b

Shrestha, Bimal

From: Sharon DeSimoni [Sharon.DeSimoni@jccteam.com]

Sent: Tuesday, August 09, 2005 1:55 PM

To: Dunlap, Karen; Shrestha, Bimal

Cc: Wetzel, Nick; Gregory Roland

Subject: ATP - (Gomez) MC 711- Plan Control No. N-8389 & Pipeline Segment No's 15168, 15169, 15170 & 15171

To all,

Please be advised that ATP met with Nexen last week regarding their objection to ATP's MC 711 Gomez Project and came to a tentative agreement. As a result Nexen will (soon) withdraw their objection to the Project.

At this time it does not appear that a meeting will be necessary.

I will keep you posted.

Thanks
Sharon
Sharon DeSimoni
J.Connor Consulting, Inc.
16225 Park Ten Place, Suite 700
Houston, Texas 77084
281-578-3388

Shrestha, Bimal

Bimal,

Please find attached the VIV analysis for the subject pipelines. I will try to get the remainder of the information needed today. Also, Gregg Roland and I will be in New Orleans on Wednesday, June 8th and would like to sit down with you (and Alex if possible) to see how we can get these applications approved. I haven't heard anything this morning yet, but last week ATP was thinking that Cal-Dive would be on Location sometime toward the end of the week.

Thanks for all your assistance.
Sharon

Sharon DeSimoni
J.Connor Consulting, Inc.
16225 Park Ten Place, Suite 700
Houston, Texas 77084
281-578-3388

VORTEX INDUCED VIBRATIONS (VIV) ANALYSIS FOR THE FLEXIBLE RISER SYSTEM IN MC-711 FIELD DEVELOPMENT

1.0 INTRODUCTION AND SUMMARY

1.1 Introduction

The riser system applied in the MC-711 field development consists of three 4 in flexible production risers, one 6 in oil export riser, one 8 in gas export riser and three steel tube umbilical risers. The Pegasus document entitled Riser Dynamic Analysis Design Premise [2] specified that VIV induced fatigue damage analysis should be conducted. Based on this requirement of the scope of work, the vendors of flexible pipe were required to perform VIV analysis on the corresponding risers and establish the VIV fatigue damage.

This document provides a summary of the methodology and results of VIV analysis undertaken by the flexible suppliers NKT and Wellstream.

Section 2 .0, **Vortex Induced Vibrations for Export Flexible Risers**, is adopted directly from NKT technical report of Dynamic Analysis Design Report, Doc. 2513—DOC-310-rev-A [5].

Section 3.0, **VIV Analysis for Production Risers,** is adopted from Wellstream technical report of Design Premise for Fatigue Analysis Technical Notes, B808E010 [3].

1.2 Summary

NKT conducted VIV analysis for export risers; Wellstream addressed VIV for the production risers.

The methodology applied by NKT to perform the VIV analysis and its induced fatigue damage is presented in Section 2.0. NKT concluded in its report that vortex induced vibration (VIV) will not lead to a contribution in fatigue damage on the export risers.

The same methodology could be applied in the VIV analysis for production risers. However, Wellstream (Vendor for production riser flexible pipe) stated in its report that in their experience the fatigue damage induced by VIV to flexible risers in Gulf of Mexico is negligible compared with the damage induced by waves and vessel RAO motions [3].

Therefore, based on the VIV analysis results for export flexible risers and Wellstream experiences in GoM for flexible pipes, it can be concluded that VIV induced fatigue damage is negligible for production risers and it is acceptable that further analysis work is unnecessary to confirm this conclusion.

2.0 VORTEX INDUCED VIBRATIONS FOR EXPORT FLEXIBLE RISERS:- BY NKT

2.1 VIV Definition

A cylinder which is exposed to steady flow (current) or oscillating flow (waves) may experience oscillation forces induced by the vortex motions around the cylinder due to the effect of the vortex shedding.

Large and damaging amplitudes of oscillation may occur at critical flow velocities by a complicated mechanism of resonance when interaction between the flow and the structure's motion cause the frequency of excitation, i.e. the vortex shedding frequency may coincide with the natural frequency of the motion of the pipe.
A long flexible riser may see a very complex response to vortex shedding as flow velocities may vary considerably over the length, thus different levels of excitation may occur simultaneously. Through experimental investigation VIV is observed to occur for flexible risers though the resulting amplitudes is considered to be insufficient due to the following:

- Relative small amplitude as a result of the structural damping
- The complexity of the flow along the riser flexible structure
- Hydrodynamic damping

The following summarizes the proposed model for assessing the susceptibility of a riser configuration at deep water to Vortex Induced Vibrations.

2.2 Theoretical Background

That outlined below is based on the general description for VIV in DNV 30.5[1], the vortex shedding frequency is given as following equation:

$$f_v = St\frac{v}{D}$$

- where:
fv = vortex shedding frequency
St = Strouhal's number (St generally equal to 0.2)
v = flow velocity normal to the pipe axis
D = outer diameter of the pipe
The term Reduced Velocity, V_r is used to determine the velocity ranges where the vortex shedding may occur and will coincide with the natural frequency of the riser configuration, also denoted the *lock-in* range. The reduced velocity is defined as:

$$V_r = \frac{v}{f_i \cdot D}$$

- where:
v = flow velocity normal to the pipe axis
f_i = the i'th natural frequency of the riser configuration
D = outer diameter of the pipe

The definition *lock-in* covers that over a range of conditions the vortex shedding is triggered by the motion of the cylinder and the excitation is thereby 'locked in' to the response at, or very close to, the natural frequency. Hence, the resonance is observed at a range of flow velocities and not only for a critical velocity.

The flow range where significant cross-flow motion occurs generally depends on the structural mass and damping, and on the displaced mass. The so-called non-dimensional stability parameter (mass-damping parameter), K_s comprises these influences.

$$K_s = \frac{2 \cdot m_e \cdot \delta}{\rho \cdot D^2}$$

- where:
m_e = equivalent mass per unit length
d = logarithmic decrement of structural damping (= *2p?*)
? = ratio between damping and critical damping
? = mass density of water

The stability parameter influences the maximum amplitude of vibrations.
The orbital motion in waves may generate vortex shedding for critical velocities.
For vortex shedding due to waves the Keulegan-Carpenter number (KC) is used defined as:

$$KC = \frac{U_m \cdot T}{D}$$

-where:
Um = maximum orbital velocity due to wave motion
T = wave period

The above parameters are the governing variables in the determination of the influence of the vortex shedding.

2.3 Current Induced Vortex Shedding

For vortex shedding due to steady current the following regions for vortex shedding shall be considered.

The drag force may induce *in-line* vibrations (flow parallel) in the following velocity range:

$1.0 \leq V_r \leq 3.5$
$K_s \leq 1.8$

The above range includes both first- and second-instability range.

The lift force may induce *cross-flow* vibrations (flow perpendicular) for a significantly broader velocity range:

$3.0 \leq V_r \leq O(10)$
$K_s \leq 18$

However, the critical velocities with maximum amplitudes occurring are for a narrow region of:

$4.8 \leq V_r \leq 8.0$

For a given stability parameter, K_s the maximum amplitude relative to the diameter may be estimated from Figure 7.3 in [1].

2.4 Wave Induced Vortex Shedding

Depending on the Keulegan-Carpenter number the locking-on for vortex shedding is defined for two regions:

$KC < 40$
For in-line vibrations:

$V_r > 1.0$

For cross-flow vibrations:

$3.0 \leq V_r \leq 9.0$

$KC > 40$
Vortex shedding occurs for the same regions as defined for steady current.

2.5 VIV Analysis for Export Risers

Generally, by use of the above parameters, vortex shedding is observed to occur in different regions for the given Lazy-Wave configuration. Conservatively, the different current velocities listed in [2] are applied over the entire depth in order to simplify the approach for the determination of the significance of the vortex shedding vibrations.

The force contribution generated by the vortex shedding is considered insignificant compared to the effective riser tension and therefore not considered. The maximum amplitude relative to the diameter for cross flow vibrations is found to be governing relative to the in-line vibrations. For different values of structural damping the following maximum amplitudes are estimated, see Table 1.

Table 1 Maximum Amplitude Relative to Diameter, Cross-Flow Vibration, [Figure 7.3, 1].

Max. amplitude relative to the diameter	6" OER [m]	8" GER [m]
Structural damping equal 0.05	0.018	0.026
Structural damping equal 0.07	0.013	0.018
Structural damping equal 0.1	0.009	0.013

It must be emphasized that the amplitude will decrease with increasing effective tension and for increasing number of natural frequency modes.

In order to verify the significance of the maximum amplitude with regard to the riser fatigue the amplitude is compared with the natural frequency mode number of the configuration.

The natural frequencies of the configuration are determined by use of OrcaFlex and included in Appendix A The reported modes are based on the length from hang-off to the touch down point.

Details of the VIV calculation are included in Appendix A.

If the modes are considered equally spaced over the entire length from hang-off to TDP the minimum length between each mode is approximately 10 m for the maximum frequency considered of 0.65 Hz. The maximum amplitude is in the order of 2 cm.

The above indicates that the maximum curvature occurring from the vortex shedding is insignificant when considering the fatigue assessment.

The above described approach is considered conservative due to several factors:

• Most often the velocity profile is complex and may vary over the water column and not uniformly over the entire depth as considered. The complexity of the velocity profile leads to different excitations over the length and for some regions there may not be any excitations, i.e. the hydrodynamic loading opposes the oscillations.

• Only one frequency of the riser is excited. It is most likely to assume that several frequencies may occur over the entire length depending on the flow velocity and the hydrodynamic damping.

• The damping coefficient of the pipe used is for unpressurized riser. When considering pressurized riser the damping coefficient increases significantly, this leads to decreased maximum amplitude.

• When considering the maximum amplitude relative to the diameter the riser tension and frequency modes are not taken into account. The amplitude will decrease as function of the tension and modes and thereby reducing the significance when comparing the fatigue of the riser.

The overall conclusion is that the vortex induced excitations will not lead to a contribution in fatigue damage of the export risers.

3.0 VIV ANALYSIS FOR PRODUCTION RISERS:- BY WELLSTREAM

By Wellstream (Vendor for production riser flexible pipe) experience, the fatigue damage induced by VIV to flexible riser in Gulf of Mexico is negligible compared with the damage induced by waves and vessel RAO motions [3]. Therefore, it is not necessary to run analysis for evaluating the damage by VIV.

4.0 REFERENCE

1. Environmental Conditions and Environmental Loads DNV Classification Notes – No.: 30.5.

2. Riser Dynamic Analysis Design Premise, Doc. No. 1166190-TR-305, Pegasus International, 11-22-04.

3. Design Premise for Fatigue Analysis Technical Notes, B808E010, Wellstream, 21-01-05.

4. Average Annual Surface Current and Typical Variation of Current Versus Depth: 3000 foot Mean Lower Depth, Mississippi Cannyon Block 711: Offshore Louisiana., A. H. Glenn and Associates Services, 04-11-05.

5. Dynamic Analysis Design Report, Doc. No.: 2513-DOC-310, rev A., NKT, 01-21-05.

APPENDIX – A : Vortex Induced Vibration (VIV) Calculations

Modal analysis for 6 inch oil

Mode	Period (s)	Frequency (Hz)
1	97,4	0,010
2	78,7	0,013
3	55,9	0,018
4	49,5	0,020
5	36,6	0,027
6	33,5	0,030
7	26,9	0,037
8	25,9	0,039
9	23,1	0,043
10	20,8	0,048
11	19,1	0,052
12	18,2	0,055
13	15,9	0,063
14	15,4	0,065
15	13,6	0,074
16	13,2	0,076
17	12,1	0,083
18	11,9	0,084
19	10,8	0,092
20	10,8	0,093
21	9,7	0,103
22	9,6	0,104
23	9,0	0,111
24	8,8	0,114
25	8,2	0,121
26	8,2	0,123
27	7,7	0,130
28	7,5	0,133
29	7,2	0,139
30	7,0	0,142
31	6,7	0,149
32	6,6	0,152
33	6,3	0,158
34	6,2	0,162
35	6,0	0,168
36	5,8	0,171
37	5,7	0,176
38	5,5	0,181
39	5,4	0,185
40	5,2	0,191
41	5,1	0,195
42	5,0	0,200
43	4,9	0,204
44	4,8	0,209
45	4,7	0,213

46	4,6	0,219
47	4,5	0,223
48	4,4	0,228
49	4,3	0,232
50	4,2	0,238
51	4,1	0,242
52	4,0	.0,247
53	4,0	0,251
54	3,9	0,256
55	3,9	0,259
56	3,8	0,266
57	3,7	0,269
58	3,6	0,275
59	3,6	0,278
60	3,5	0,285
61	3,5	0,288
62	3,4	0,294
63	3,4	0,297
64	3,3	0,303
65	3,3	0,305
66	3,2	0,313
67	3,2	0,315
68	3,1	0,322
69	3,1	0,324
70	3,0	0,331
71	3,0	0,333
72	2,9	0,340
73	2,9	0,343
74	2,9	0,349
75	2,8	0,351
76	2,8	0,359
77	2,8	0,361
78	2,7	0,368
79	2,7	0,370
80	2,7	0,377
81	2,6	0,379
82	2,6	0,386
83	2,6	0,388
84	2,5	0,396
85	2,5	0,397
86	2,5	0,405
87	2,5	0,407
88	2,4	0,415
89	2,4	0,416
90	2,4	0,423
91	2,4	0,425
92	2,3	0,432
93	2,3	0,434
94	2,3	0,442

95	2,3	0,443
96	2,2	0,451
97	2,2	0,452
98	2,2	0,460
99	2,2	0,461
100	2,1	0,469
101	2,1	0,470
102	2,1	0,478
103	2,1	0,479
104	2,1	0,488
105	2,0	0,489
106	2,0	0,497
107	2,0	0,497
108	2,0	0,505
109	2,0	0,506
110	1,9	0,515
111	1,9	0,515
112	1,9	0,523
113	1,9	0,524
114	1,9	0,533
115	1,9	0,534
116	1,8	0,542
117	1,8	0,543
118	1,8	0,550
119	1,8	0,551
120	1,8	0,560
121	1,8	0,560
122	1,8	0,568
123	1,8	0,569
124	1,7	0,574
125	1,7	0,578
126	1,7	0,578
127	1,7	0,587
128	1,7	0,587
129	1,7	0,595
130	1,7	0,595
131	1,7	0,604
132	1,7	0,605
133	1,6	0,613
134	1,6	0,614
135	1,6	0,622
136	1,6	0,622
137	1,6	0,632
138	1,6	0,632
139	1,6	0,639
140	1,6	0,639
141	1,5	0,648
142	1,5	0,649
143	1,5	0,658

144	1,5	0,658
145	1,5	0,666
146	1,5	0,666
147	1,5	0,676
148	1,5	0,676
149	1,5	0,683
150	1,5	0,683
151	1,4	0,692
152	1,4	0,692
153	1,4	0,702
154	1,4	0,702
155	1,4	0,709
156	1,4	0,709
157	1,4	0,719
158	1,4	0,719
159	1,4	0,726
160	1,4	0,726
161	1,4	0,735
162	1,4	0,735
163	1,3	0,745
164	1,3	0,745
165	1,3	0,752
166	1,3	0,752
167	1,3	0,762
168	1,3	0,762
169	1,3	0,768
170	1,3	0,769
171	1,3	0,779
172	1,3	0,779
173	1,3	0,786
174	1,3	0,786
175	1,3	0,794
176	1,3	0,795
177	1,2	0,804
178	1,2	0,804
179	1,2	0,810
180	1,2	0,810
181	1,2	0,821
182	1,2	0,821
183	1,2	0,827
184	1,2	0,827
185	1,2	0,836
186	1,2	0,837
187	1,2	0,844
188	1,2	0,844
189	1,2	0,850
190	1,2	0,851
191	1,2	0,861
192	1,2	0,862
193	1,2	0,866
194	1,2	0,866
195	1,1	0,877
196	1,1	0,878
197	1,1	0,881
198	1,1	0,881
199	1,1	0,892
200	1,1	0,893

Modal analysis for 8 inch gas

Mode	Period (s)	Frequency (Hz)
1	100,1	0,010
2	81,7	0,012
3	59,7	0,017
4	52,8	0,019
5	40,4	0,025
6	35,1	0,028
7	29,4	0,034
8	27,1	0,037
9	25,4	0,039
10	22,1	0,045
11	20,6	0,048
12	19,2	0,052
13	17,3	0,058
14	16,6	0,060
15	14,5	0,069
16	14,3	0,070
17	12,8	0,078
18	12,7	0,078
19	11,6	0,086
20	11,5	0,087
21	10,5	0,096
22	10,4	0,096
23	9,7	0,103
24	9,4	0,106
25	8,9	0,113
26	8,7	0,115
27	8,2	0,121
28	8,1	0,124
29	7,7	0,130
30	7,5	0,133
31	7,2	0,139
32	7,1	0,141
33	6,8	0,147
34	6,6	0,151
35	6,4	0,156
36	6,3	0,160
37	6,1	0,165
38	5,9	0,169
39	5,8	0,173
40	5,6	0,178
41	5,5	0,181
42	5,4	0,186
43	5,3	0,190
44	5,1	0,195
45	5,0	0,198

46	4,9	0,204
47	4,8	0,207
48	4,7	0,212
49	4,6	0,216
50	4,5	0,221
51	4,5	0,224
52	4,4	0,230
53	4,3	0,233
54	4,2	0,239
55	4,1	0,241
56	4,0	0,248
57	4,0	0,250
58	3,9	0,256
59	3,9	0,259
60	3,8	0,264
61	3,8	0,267
62	3,7	0,273
63	3,6	0,275
64	3,5	0,282
65	3,5	0,284
66	3,4	0,290
67	3,4	0,292
68	3,3	0,299
69	3,3	0,301
70	3,3	0,307
71	3,2	0,309
72	3,2	0,316
73	3,2	0,317
74	3,1	0,325
75	3,1	0,327
76	3,0	0,333
77	3,0	0,335
78	2,9	0,342
79	2,9	0,343
80	2,9	0,350
81	2,8	0,352
82	2,8	0,358
83	2,8	0,360
84	2,7	0,367
85	2,7	0,369
86	2,7	0,376
87	2,7	0,377
88	2,6	0,384
89	2,6	0,385
90	2,5	0,393
91	2,5	0,394
92	2,5	0,401
93	2,5	0,402
94	2,4	0,409

95	2,4	0,410
96	2,4	0,418
97	2,4	0,418
98	2,3	0,426
99	2,3	0,426
100	2,3	0,434
101	2,3	0,435
102	2,3	0,442
103	2,3	0,443
104	2,2	0,452
105	2,2	0,452
106	2,2	0,459
107	2,2	0,459
108	2,1	0,468
109	2,1	0,468
110	2,1	0,476
111	2,1	0,476
112	2,1	0,483
113	2,1	0,484
114	2,0	0,493
115	2,0	0,493
116	2,0	0,500
117	2,0	0,500
118	2,0	0,508
119	2,0	0,509
120	1,9	0,516
121	1,9	0,516
122	1,9	0,524
123	1,9	0,524
124	1,9	0,533
125	1,9	0,533
126	1,9	0,540
127	1,9	0,540
128	1,8	0,549
129	1,8	0,549
130	1,8	0,553
131	1,8	0,555
132	1,8	0,555
133	1,8	0,565
134	1,8	0,565
135	1,8	0,571
136	1,8	0,571
137	1,7	0,579
138	1,7	0,579
139	1,7	0,587
140	1,7	0,587
141	1,7	0,593
142	1,7	0,594
143	1,7	0,603

144	1,7	0,603
145	1,6	0,608
146	1,6	0,608
147	1,6	0,619
148	1,6	0,619
149	1,6	0,622
150	1,6	0,622
151	1,6	0,634
152	1,6	0,635
153	1,6	0,637
154	1,6	0,637
155	1,5	0,648
156	1,5	0,649
157	1,5	0,652
158	1,5	0,652
159	1,5	0,662
160	1,5	0,663
161	1,5	0,668
162	1,5	0,668
163	1,5	0,675
164	1,5	0,676
165	1,5	0,683
166	1,5	0,683
167	1,5	0,689
168	1,4	0,690
169	1,4	0,699
170	1,4	0,699
171	1,4	0,702
172	1,4	0,704
173	1,4	0,715
174	1,4	0,715
175	1,4	0,715
176	1,4	0,717
177	1,4	0,729
178	1,4	0,731
179	1,4	0,731
180	1,4	0,731
181	1,3	0,742
182	1,3	0,744
183	1,3	0,747
184	1,3	0,747
185	1,3	0,756
186	1,3	0,758
187	1,3	0,764
188	1,3	0,764
189	1,3	0,770
190	1,3	0,772
191	1,3	0,780
192	1,3	0,780
193	1,3	0,784
194	1,3	0,787
195	1,3	0,797
196	1,3	0,797
197	1,3	0,798
198	1,2	0,800
199	1,2	0,812
200	1,2	0,814

[illegible] analysis approach
Formulas taken from DNV 30.5

VORTEX INDUCED VIBRATIONS

OD 6" OER	0,2256	m	OD 8" GER	0,285	m
ID 6" OER	0,1596	m	ID 8" GER	0,2123	m
Internal density	865	kg/m^3	Internal density	95	kg/m^3
Mass empty 6" OER	79,2	kg/m	Mass empty 8" GER	121,7	kg/m
Mass prod filled 6" OER	96,5	kg/m	Mass prod filled 8" GER	125,1	kg/m
Added mass 6" OER	41,0	kg/m	Added mass 8" GER	65,4	kg/m
Critical struc damp	0,1	-	Critical struc damp	0,1	-
Struc damp 6" OER	0,07	-	Struc damp 8" GER	0,07	-
Ratio betwe damp / crit damp	0,7	-	Ratio betwe damp / crit damp	0,7	-

Steady current velocity	0,8	m/s	Steady current velocity	0,8	m/s
Freq. system	0,2	Hz	Freq. system	0,4	Hz
Mode shape factor*	1,16	-	Mode shape factor	1,16	-
Density water	1025	kg/m^3	Density water	1025	kg/m^3
Viscosity water	1,00E-05				
Wave height	23	m	Wave height	23	m
Wave period	15	s	Wave period	17	s
Max. vel. due to wave motion	4,8	m/s	Max. vel. due to wave motion	4,3	m/s

6" OER			8" OER		
Reduced velocity Vr	[illegible]	m/s	Reduced velocity Vr	[illegible]	m/s
Stability parameter Ks	[illegible]	-	Stability parameter Ks	[illegible]	-
Keulegan-Carpenter KC	[illegible]	-	Keulegan-Carpenter KC	[illegible]	-

Steady current: In-line excitations may occur for 1.0<Vr<3.5 and Ks<1.8
Steady current: Cross-line excitations may occur for 3<Vr<16 - thogh max. response 4.8<Vr<8
Waves: In-line and Cross flow excitations may occur for Vr>1.0 and KC>3.0

[illegible]

VORTEX INDUCED RISER AMPLITUDES
For each mode number the maximum amplitude for cross flow oscillations motions is determined from Figure 7.3 p. 34 DNV 30.5

Max. cross flow amp. (Ks)	[illegible]	m	Max. cross flow amp. (Ks)	[illegible]	m

* mode factor, see Table 7.2 p. 35, DNV 30.5

VORTEX INDUCED VIBRATIONS FOR EACH MODE - ESTIMATE OF LOCK-IN														
Natural frequency for each mode is estimated from OrcaFlex														
Mode	1	17	21	31	42	53	64	74	85	96	107	118	131	142
6" OER														
Current Velocity	2,38	2,38	2,38	2,38	2,38	2,38	2,38	2,38	2,38	2,38	2,38	2,38	2,38	2,38
Natural frequency	0,0103	0,0825	0,1026	0,149	0,2	0,2507	0,3028	0,3493	0,3973	0,4509	0,4974	0,5501	0,6044	0,6487
Reduced velocity Vr	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
Current Velocity	1,89	1,89	1,89	1,89	1,89	1,89	1,89	1,89	1,89	1,89	1,89	1,89	1,89	1,89
Natural frequency	0,0103	0,0825	0,1025	0,149	0,2	0,2507	0,3028	0,3493	0,3973	0,4509	0,4974	0,5501	0,6044	0,6487
Reduced velocity Vr	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
Current Velocity	1,4	1,4	1,4	1,4	1,4	1,4	1,4	1,4	1,4	1,4	1,4	1,4	1,4	1,4
Natural frequency	0,0103	0,0825	0,1026	0,149	0,2	0,2507	0,3028	0,3493	0,3973	0,4509	0,4974	0,5501	0,6044	0,6487
Reduced velocity Vr	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
Current Velocity	0,91	0,91	0,91	0,91	0,91	0,91	0,91	0,91	0,91	0,91	0,91	0,91	0,91	0,91
Natural frequency	0,0103	0,0825	0,1026	0,149	0,2	0,2507	0,3028	0,3493	0,3973	0,4509	0,4974	0,5501	0,6044	0,6487
Reduced velocity Vr	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	8	7	7	6
Current Velocity	0,58	0,58	0,58	0,58	0,58	0,58	0,58	0,58	0,58	0,58	0,58	0,58	0,58	0,58
Natural frequency	0,0103	0,0825	0,1026	0,149	0,2	0,2507	0,3028	0,3493	0,3973	0,4509	0,4974	0,5501	0,6044	0,6487
Reduced velocity Vr	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	8	7	6	6	[illegible]	[illegible]	[illegible]	[illegible]
Current Velocity	0,34	0,34	0,34	0,34	0,34	0,34	0,34	0,34	0,34	0,34	0,34	0,34	0,34	0,34
Natural frequency	0,0103	0,0825	0,1026	0,149	0,2	0,2507	0,3028	0,3493	0,3973	0,4509	0,4974	0,5501	0,6044	0,6487
Reduced velocity Vr	[illegible]	[illegible]	[illegible]	[illegible]	8	6	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
Current Velocity	0,15	0,15	0,15	0,15	0,15	0,15	0,15	0,15	0,15	0,15	0,15	0,15	0,15	0,15
Natural frequency	0,0103	0,0825	0,1026	0,149	0,2	0,2507	0,3028	0,3493	0,3973	0,4509	0,4974	0,5501	2,49	3,49
Reduced velocity Vr	[illegible]	8	6	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]

VORTEX INDUCED VIBRATIONS FOR EACH MODE - ESTIMATE OF LOCK-IN														
Natural frequency for each mode is estimated from OrcaFlex														
Mode	1	18	23	34	45	57	68	80	92	104	116	129	143	156
8" GER														
Current Velocity	2,38	2,38	2,38	2,38	2,38	2,38	2,38	2,38	2,38	2,38	2,38	2,38	2,38	2,38
Natural frequency	0,01	0,0784	0,1035	0,1509	0,1984	0,2499	0,2993	0,3505	0,4006	0,4516	0,4997	0,5488	0,6032	0,6486
Reduced velocity Vr	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
Current Velocity	1,89	1,89	1,89	1,89	1,89	1,89	1,89	1,89	1,89	1,89	1,89	1,89	1,89	1,89
Natural frequency	0,01	0,0784	0,1035	0,1509	0,1984	0,2499	0,2993	0,3505	0,4006	0,4516	0,4997	0,5488	0,6032	0,6486
Reduced velocity Vr	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
Current Velocity	1,4	1,4	1,4	1,4	1,4	1,4	1,4	1,4	1,4	1,4	1,4	1,4	1,4	1,4
Natural frequency	0,01	0,0784	0,1035	0,1509	0,1984	0,2499	0,2993	0,3505	0,4006	0,4516	0,4997	0,5488	0,6032	0,6488
Reduced velocity Vr	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	8	8
Current Velocity	0,91	0,91	0,91	0,91	0,91	0,91	0,91	0,91	0,91	0,91	0,91	0,91	0,91	0,91
Natural frequency	0,01	0,0784	0,1035	0,1509	0,1984	0,2499	0,2993	0,3505	0,4006	0,4516	0,4997	0,5488	0,6032	0,6486
Reduced velocity Vr	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	9	8	7	6	6	[illegible]	[illegible]
Current Velocity	0,58	0,58	0,58	0,58	0,58	0,58	0,58	0,58	0,58	0,58	0,58	0,58	0,58	0,58
Natural frequency	0,01	0,0784	0,1035	0,1509	0,1984	0,2499	0,2993	0,3505	0,4006	0,4516	0,4997	0,5488	0,6032	0,6486
Reduced velocity Vr	[illegible]	[illegible]	[illegible]	[illegible]	10	8	7	6	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
Current Velocity	0,34	0,34	0,34	0,34	0,34	0,34	0,34	0,34	0,34	0,34	0,34	0,34	0,34	0,34
Natural frequency	0,01	0,0784	0,1035	0,1509	0,1984	0,2499	0,2993	0,3505	0,4006	0,4516	0,4997	0,5488	0,6032	0,6486
Reduced velocity Vr	119	[illegible]	[illegible]	8	6	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
Current Velocity	0,15	0,15	0,15	0,15	0,15	0,15	0,15	0,15	0,15	0,15	0,15	0,15	0,15	0,15
Natural frequency	0,01	0,0784	0,1035	0,1509	0,1984	0,2499	0,2993	0,3505	0,4006	0,4516	0,4997	0,5488	2,49	3,49
Reduced velocity Vr	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]

MICRO

ST# 15170,71
G 26816

ATP OIL & GAS CORPORATION

MINERALS MANAGEMENT SERVICE
RECEIVED
JUN 07 2005
FIELD OPERATIONS
GOM OCS Region, New Orleans, LA

May 23, 2005
Revised 06/06/05

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

Attention: Mr. Alex Alvarado
MS 5232

RE: Application for a 6.895-Inch OD Bulk Oil Right-of-Way Pipeline, Production Riser, Rigid Jumper And Associated Umbilical To Be Installed In and/or Through Blocks 711 and 755, Mississippi Canyon Area, OCS Federal Waters, Gulf of Mexico, Offshore, Louisiana

Gentlemen:

Pursuant to the authority granted in Section 5 (e) of the Outer Continental Shelf Lands Act (67 Stat. 462) (43 U.S.C. 1331), as amended (92 Sta. 629), and in compliance with the regulations contained in Title 30 CFR, Part 250, Subpart J, ATP Oil & Gas Corporation (ATP) is filing this application in quadruplicate (original and three copies) for a right-of-way easement two hundred feet (200') in width for the construction, maintenance and operation of a 6.895-inch bulk oil right-of-way pipeline with a flexible production riser, rigid jumper and associated umbilical to be installed in and/or through Blocks 711 and 755, Mississippi Canyon Area, OCS Federal Waters, Gulf of Mexico, Offshore, Louisiana. ATP agrees that said right-of-way, if approved, will be subject to the terms and conditions of said regulations.

The proposed right-of-way pipeline and umbilical will originate at Subsea Well No. 004ST01 located on ATP' Oil & Gas Corporation's (ATP'S) Lease OCS-G 14016, Mississippi Canyon Block 711, also known as Gomez, and proceed in a southernly direction, looping back to the host facility, ATP's proposed Floating Offshore Installation (FOI) "A", also located on ATP's Lease OCS-G 14016, Mississippi Canyon Block 711. Total length of the proposed right-of-way pipeline is approximately ***7241-feet (1.24 miles).*** The associated umbilical will originate at the host facility and terminate at the PLET (Pipeline End Termination) also located in Mississippi Canyon Block 711.

The proposed oil pipeline, one of two to be constructed, will transport production from Subsea Well No. 004ST01, Lease OCS-G 14016 to the Gomez FOI "A" (described above) for processing and measurement. Once processed and measured, the produced hydrocarbons will depart the platform via a 8-inch oil right of way pipeline to a tie-in point with Equilon's existing oil right-of-way

4600 POST OAK PLACE SUITE 200 HOUSTON, TEXAS 77027-9726 713-622-3311 FAX: 713-622-5101

A	B	C	D	E
Right-of-Way Pipeline Application			Segment No.:	
Instructions:				
1. Complete one form for the pipeline segment submitted in your application. A ROW application may only contain one proposed pipeline segment.				
2. Complete one form for each unattached umbilical submitted in your application.				
3. Provide response/data for all items that are shaded. Other items as required.				
4. Provide one original and three identical copies of all application materials.				
Pipeline Route Data				
List all blocks and lease numbers contacted by the pipeline. (Insert rows as needed)	**Area**	**Block No.**	**Lease No.**	**Operator**
(If block is unleased, so note.)				
	Mississippi Canyon	711	G14016	Anadarko E&P Company LP/ ATP Oil and Gas Corporation
	Mississippi Canyon	755	G24105	Nexen Petroleum U.S.A. Inc.
Contact Information				
Applicant company name (ROW permittee/holder)	ATP Oil and Gas Corporation			
Name of company representative signing application	Mickey W. Shaw			
Phone No.	713-622-3311			
Fax	713-403-7002			
E-Mail	mshaw@atpog.com			
Mailing address	4600 Post Oak Place Suite 200			
	Houston, Texas 77027-9726			
ROW holder's MMS code (five digit)	1819			
Designated operator company name	ATP Oil and Gas Corporation			
Phone No.	713-622-3311			
Fax	NA			
E-Mail				
Mailing address	4600 Post Oak Place Suite 200			
	Houston, Texas 77027-9726			
Operator's MMS code (five digit)	1819			
Regulatory contact (Name)	Sharon DeSimoni			
Company name	J. Connor Consulting, Inc.			
Phone No.	281-578-3388			
Fax	281-578-8895			
E-Mail	sharon.desimoni@jcrteam.com			
Technical contact (Name)	Daniel H. Longwell, P.E.			
Company name	Bluewater Industries			
Phone No.	713-802-2060			
Fax	713-802-2063			
E-Mail	dlongwell@bluewaterindustries.com			
Fees				
Application fee of $2,350 enclosed? (Required)	Yes			
Rental fee of $15 per mile or every fraction thereof enclosed? (Required)	Yes			
Right-of-way length (miles) e.g., 5.71	1.24			
Total check amount	$2,380.00			
Check date	5/18/2005			
Check number	415721			
Name of financial institution upon which check is written	Chase Bank Of Texas			
Basic Pipeline Data				

	A	B	C	D	E	F	G	H
59	Line service, e.g.: oil, gas, bulk gas, lift, injection, service, etc.	Oil & gas						
60	Total pipeline length (feet) - excluding riser(s)	7,241						
61	Length of pipeline in Federal waters (feet)	7,241						
62	Length of pipeline in State waters (feet/NA)	0						
63	Pipeline designed for bi-directional flow? (Y/N)	No						
64	Alternate line service, e.g., oil, gas, bulk gas, lift, injection, service, etc.	N/A						
65	Supervisor Control and Data Acquisition system for leak detection installed? (Y/N)	No						
66	If yes, system type, e.g., over/short, pressure point analysis, volumetric, etc.	N/A						
67								
68	**Pipeline Origin**							
69	Type Facility, e.g., Platform, Well, Subsea Well, PLEM, Subsea Manifold, Subsea Tie-in	MC 711 Subsea Well No 004ST01						
70	Number/Identifier, e.g. A, 1, 4-B, 13336 (Number/Segment Number/Identifier/NA)	Well No 004ST01						
71	Manned platform? (Y/N/NA)	Yes - Floating Offshore Installation						
72	Area	Mississippi Canyon						
73	Block	711						
74	OCS Lease	OCS-G-14016						
75	Pig launcher? (Y/N)	No						
76	System designed for "smart" pigs? (Y/N/NA)	No						
77								
78	**Pipeline Destination**							
79	Type Facility, e.g., Platform, Well, Subsea Well, PLEM, Subsea Manifold, Subsea Tie-in	MC 711 Gomez FOI						
80	Number/Identifier, e.g. A, 1, 4-B (Number/Segment Number/Identifier/NA)	"A"						
81	Manned platform? (Y/N/NA)	Yes						
82	Area	Mississippi Canyon						
83	Block	711						
84	OCS Lease	OCS-G-14016						
85	Pig receiver? (Y/N/NA)	No						
86								
87	**Pipeline Appurtenances**							
88	Manifold/subsea templates/etc. along pipeline other than at origin or destination? (Y/N)	Yes						
89	If yes, specify appurtenant type	Umbilical						
90	If yes, specify appurtenant area and block location, e.g., MP 134	MC 711						
91								
92	**Construction/Air Quality Data**							
93	Pipeline installation method, e.g., lay barge, DP vessel, jack up	DP vessel						
94	Maximum anchor spread (feet or NA)	NA						
95	Onshore Facility Location	Amelia, LA						
96	Pipeline construction duration (days)	42 Days						
97	Construction start date (projected)	8/1/2005						
98								
99	**Pipeline product data**							
100	Design maximum flow rate of gas (mmcf/d)	50						
101	Gravity of gas (Air = 1.0)	0.813						
102	Design maximum flow rate of oil/condensate (b/d)	6,000						
103	API or specific gravity of oil/condensate	0.88						
104	H2S concentration (ppm)	Nil						
105	Maximum anticipated pipeline temperature (degrees F)	120						
106	CO_2 concentration (ppm)	4200						
107	Inhibition program planned? (Y/N)	Yes						
108	Hydrates anticipated (Y/N)	No						
109	Paraffin anticipated (Y/N)	No						
110								
111	**Submerged Component Design Data**	**Diameter 1**	**Diameter 2**	**Diameter 3**				
112	Outside diameter (inches)	6.895" - dynamic flexible pipe						
113	Wall thickness (inches)	1.4475 - layers, as per riser data						
114	Grade	NA						
115	Hydrostatic test pressure (psig)	9,375						
116	HTP duration (hours) (Must be equal to or greater than eight)	8						

	A	B	C	D	E	F	G	H
117	Type external corrosion coating	polypropylene						
118	Corrosion coating thickness (mils)	236						
119	Concrete coating density (pcf)	NA						
120	Coating thickness (inches)	NA						
121	Type internal corrosion coating (Type/NA)	NA						
122	Coating thickness (mils) (Mils/NA)	NA						
123	Bare pipe specific gravity	1.83						
124	Weighted pipe specific gravity	NA						
125	Pipe is non-standard? (Y/N)	Yes						
126	If yes, note type, e.g., coil tubing, pipe-in-pipe, flexible pipe, other (specify) (Type/NA)	Flexible Pipe						
127								
128	**Cathodic Protection Design Data**							
129	Design Type, e.g., bracelet anodes, anode sleds	NA						
130	Anode Type, e.g. Galvalum III, Aluminum, etc.	NA						
131	Net anode weight (pounds)	NA						
132	Spacing (feet)	NA						
133	Number of anodes	NA						
134	Anode life (years)	NA						
135	Designs for systems other than bracelet anodes required. (Attached/NA)	NA						
136								
137								
138	**Departing Riser Design Data**	**Diameter 1**	**Diameter 2**	**Diameter 3**				
139	Outside diameter (inches)	6.895" - flexible pipe						
140	Wall thickness (inches)	1.4475 - layers, as per riser data						
141	Grade	NA						
142	Hydrostatic test pressure (psig)	9,375						
143	HTP duration (hours) (Must be equal to or greater than eight)	8						
144	splash zone=S.Z.	**Below S.Z.**	**In S.Z.**	**Above S.Z.**				
145	Type external corrosion coating	same						
146	Coating thickness (mils or inches)							
147	Type internal corrosion coating (Type/NA)							
148	Coating thickness (mils) (Mils/NA)							
149	Riser guard design attached? Required if origin is caisson or platform (Y/NA)							
150	Catenary riser? (Y/N)							
151	If yes, VIV reduction, installation tension, anchoring, tension monitoring attached? (Y/NA)							
152								
153	**Receiving Riser Design Data**	**Diameter 1**	**Diameter 2**	**Diameter 3**				
154	Outside diameter (inches)	N/A						
155	Wall thickness (inches)							
156	Grade							
157	Hydrostatic test pressure (psig)							
158	HTP duration (hours) (Must be equal to or greater than eight)							
159	splash zone=S.Z.	**Below S.Z.**	**In S.Z.**	**Above S.Z.**				
160	Type external corrosion coating							
161	Coating thickness (mils or inches)							
162	Type internal corrosion coating (Type/NA)							
163	Coating thickness (mils) (Mils/NA)							
164	Riser guard design attached? Required if origin is caisson or platform (Y/NA)							
165	Catenary riser? (Y/N)							
166	If yes, VIV reduction, installation tension, anchoring, tension monitoring attached? (Y/NA)							
167								
168	**Flange and Valve Data**							
169	Flange type (ANSI/API)	API 10K						
170	Flange pressure rating (psig)	10,000						
171	Derated pressure rating (psig/NA)	N/A						
172	Valve type (ANSI/API)	API 10K						
173	Valve pressure rating (psig)	10,000						
174	Derated pressure rating (psig/NA)	N/A						
175								

	A	B	C	D	E	F	G	H
176	**Pipeline Burial Data**							
177	Buried minimum of three feet? Y/N/Self (Burial required if less than 200' water depth)	No						
178	Burial method (jet, plow, self, other(specify))	N/A						
179	If self burial, provide seafloor strength in ksf. (Must be less than 0.2 ksf) (kips/NA)	N/A						
180	Data supporting self burial attached? (Y/NA)	N/A						
181								
182	**Miscellaneous Data**							
183	Non-discrimination in employment form attached? (Required)	Yes						
184								
185	**Oil Spill Financial Responsibility Requirement Determination**							
186	Static Pipeline Volume (Bbls.) If greater than 1,000 then WCD volume required.	111						
187	Worst case discharge volume (Bbls.) If greater than 1,000 then OSFR required.	NA						
188	Proposed Right-of-Way included under company OSFR coverage? (Yes/Pending/NA)	NA						
189								
190	Certified plat attached? Plat is required.	Yes						
191	Diskette per NTL 98-09 attached? Diskette is required.	Yes						
192								
193	Does pipeline cross into State waters (Y/N)	No						
194	If yes, State permit required (Attached/Applied For/NA)	N/A						
195	If yes, COE permit required (Attached/Applied For/NA)	N/A						
196								
197	Minimum water depth (feet below sea level)	2940						
198	Maximum water depth (feet below sea level)	2975						
199								
200	Water depth greater than 400 meters? (Y/N)	Yes						
201	If Yes, Chemo study required (see NTL 2000-G20) (Attached/NA)	previously submitted						
202								
203	Deep Water Operations Plan submitted to MMS? (See NTL 2000-N06) (Y/NA)	Yes						
204	If yes, date submitted (Date/NA)	25-Mar-05						
205								
206	Pipeline to be towed to location? (Y/N)	No						
207	If yes, dragged on bottom? (Y/N/NA)							
208								
209	Artificial reef in vicinity? (Y/N)	No						
210	If Yes and PL in La., PL must be > 500' away. Confirm Y/NA							
211	Distance to reef (feet).							
212	If Yes and PL in TX., PL must be > seven times water depth away. Confirm Y/NA							
213	Distance to reef (feet).							
214								
215	Hazard Report submitted? (Yes) Hazard Report is required.	Yes						
216								
217	Shallow Hazards Analysis Statement included? (Yes) SHAS is required in cover letter.	Yes						
218								
219	Umbilical associated with pipeline? (Y/N)	Yes						
220	Umbilical type, e.g., hydraulic, electric, other(specify) (Type or NA)	hydraulic/gas lift						
221	Umbilical outside diameter (inches) (Diameter or NA)	4-inch						
222	Attached to pipeline? (Y/N/NA; If No, will be assigned a unique segment number)	No						
223	If no, separate application form attached? (Yes/NA)	No - Considered Appurtenance						
224								
225	Does pipeline contact anchorage area or fairways? (Y/N)	No						
226	If Yes, burial depth in anchorage areas or fairways consistent with COE permit? (Y/NA)	NA						
227	If yes, COE permit attached? (Y/NA/Pending)	NA						
228								
229	**Pipeline Crossing Data**							
230	Does proposed pipeline cross an existing pipeline (Y/N)	No						
231	If yes, enter noted data, adding data rows as required.	**Operator**	**Segment No.**	**Size (inches)**	**Service**	**Notified?**		
232								
233	If yes, minimum clearance between lines must be 18". (Yes/NA)	N/A						

	A	B	C	D	E	F	G	H
234	If yes and < 500' water depth, must have 3' cover or concrete mats. (Confirm cover or concrete mat.)	N/A						
235	If sand bags, slope is 3/1. (Confirm Yes/NA)	N/A						
236	If concrete mat, specify manufacturer	N/A						
237	If concrete mats, mat edges jetted below mudline. (Yes/NA)	N/A						
238	Crossed pipeline operator notified? (Y/N/O O = crossed pipeline owned by applicant)	N/A						
239								
240	**H_2S Contingency Plan and Modeling Data**							
241	H_2S Operations Contingency Plan attached as H_2S concentration greater than 20 ppm (Y/Pending/NA)	NA						
242	Air Dispersion Model attached as H_2S concentration greater than 500 ppm (Y/pending/NA)	NA						
243	H_2S Crossing Contingency Plan attached as crossed pipeline carries H_2S in concentrations greater than 20 ppm (Y/Pending/NA)	NA						
244								
245	**Subsea Tie-in Data**							
246	Does pipeline tie into a subsea pipeline? (Y/N)	No						
247	Ties to existing valve or hot tap? (Identify which/NA)							
248	Segment number of pipeline being tied in to (SN/NA)							
249	MAOP of pipeline being tied in to (MAOP/NA)							
250	If existing valve, letter of no objection from tie-in operator attached? (Yes/NA)							
251	If hot tap, appurtenance application submitted to MMS? (Yes/NA)							
252	Is assembly snag proofed? (Y/NA) Required if less than 500' water depth.							
253	If sand bags used, slope is 3/1. (Y/NA)							
254	If sand bags used, 3' coverage required (Y/NA)							
255								
256	**Surface Tie-in Data**							
257	Does pipeline tie directly into another pipeline at a surface location? (Y/N)	No						
258	Segment number of pipeline being tied in to (SN/NA)							
259	MAOP of pipeline being tied in to (MAOP/NA)							
260								
261	**Spill Response Plan Data**							
262	Type of spill response plan (OSCP/OSRP per NTL 98-30)	OSRP						
263	Date spill plan submitted to MMS	3/23/2005						
264	Date spill plan approved (Actual Date or "Pending")	3/29/2005						
265								
266	**Safety Schematic Information**							
267	Pressure source identified? (well, separator, pump, etc.)	Well						
268	MSP/MAWP/SITP of source shown? (psig)	6,400						
269	Origin/destination specification breaks shown on schematic. (Y/NA)	Yes						
270	Receiving segment number noted? (Segment Number or N/A)	N/A						
271	Receiving segment no. MAOP (psig) (MAOP or N/A)	N/A						
272	Calculated pipeline MAOP (psig)	7,500						
273	Operator responsibility transfer point shown? (Yes/NA)	NA						
274								
275	**Collapse Information (Deepwater Pipelines Only)**							
276	Water depth (feet)	2,975						
277	External pressure (psig)	1,333						
278	Collapse pressure (psig)	3,237						
279	Safety factor	2.4						
280	Collapse calculations are required. (Attached/NA)	Performed by Flexible Pipe manufacturer						
281								
282	**Safety Design Review**							
283	**Pipeline Origin**							
284	PSHL required at departing end of pipeline (Confirm Yes)	Yes						
285	PSHL must be downstream of choke and/or flow restrictions (Confirm Yes)	Yes						
286	For a well, if MSP > MAOP, a redundant PSH and independent SDVs required (Confirm Yes)	N/A						

	A	B	C	D	E	F	G	H
287	For production equipment, if MSP > MAOP, a redundant PSH with independent SDV is required or a vented PSV is required (Confirm Yes/NA)	N/A						
288	If bi-directional flow, SDV required (Confirm Yes/NA)	N/A						
289	If pig trap present, safety equipment can not be bypassed (Confirm True)	N/A						
290	If pump on line, must be consistent with API RP 14C A7 (Confirm Yes/NA)	N/A						
291	**Pipeline Destination**							
292	If production facility and uni-directional flow, SDV and FSV required (Confirm Yes/NA)	Yes						
293	If production facility and bi-directional flow, SDV and PSHL required (Confirm Yes/NA)	N/A						
294	If subsea tie-in and uni-directional flow, FSV and block valve required (Confirm Yes/NA)	N/A						
295	If subsea tie-in and bi-directional flow, block valve required (Confirm Yes/NA)	N/A						
296	If gas lift or water injection flowline on unmanned platform, FSV required (Confirm Yes/NA)	Yes						
297	If gas lift or water injection flowline on manned platform, SDV required (Confirm Yes/NA)	Yes						
298	If crossover platform (pipeline does not receive production), SDV required at boarding point and PSHL required at departing point (Confirm Yes/NA)	N/A						
299	If crossover platform is non-manned and non-production, FSV required (Confirm Yes/NA)	N/A						
300								
301	**Departure Data**							
302	Waiver from NTL 98-20 (buoying of hazards) requested? (Y/N)	Yes						
303	Other departures requested? (Y/N)	No						
304	If yes, specify.							
305								
306								
307								
308								
309								
310								
311								
312								
313								
314								
315	**Do Not Enter Data Below This Line - MMS Use Only**							
316								
317	**PIPELINE MASTER ENTRY SHEET**							
318	Name		MMS Engineer entry					
319	Date		MMS Engineer entry					
320	Segment Number		MMS Engineer entry					
321	Right-of-Way Number		MMS Engineer entry					
322	Right-of-Way Permittee							
323	Right-of-Way Permittee Code							
324	Operator	ATP Oil and Gas Corporation						
325	Operator Code	1819						
326	Approval Code	Right-of-Way						
327	Authority Code		MMS Engineer entry					
328	Pipe Size	6.895" - dynamic flexible pipe						
329	Product Code		MMS Engineer entry					
330								
331	ORIGIN							
332	Facility Type	MC 711 Subsea Well No 004ST01						
333	Identifier	Well No 004ST01						
334	Area	Mississippi Canyon						
335	Block	711						
336	Lease	OCS-G-14016						
337								
338	DESTINATION							
339	Facility Type	MC 711 Gomez FOI						
340	Identifier	"A"						
341	Area	Mississippi Canyon						

	A	B	C	D	E	F	G	H
342	Block	711						
343	Lease	OCS-G-14016						
344								
345	OCS Segment Length	7,241						
346	State + Federal Pipeline Length	7,241						
347	Cathodic Code	NA						
348	Cathodic Life Time (Years)		MMS Engineer entry					
349	Minimum Water Depth (feet)	2940						
350	Maximum Water Depth (feet)	2975						
351								
352	Buried Designator Flag	No						
353	Bi-directional Flag	No						
354	Alternate Service	N/A						
355	Recv Segment No. (Sub-surface)	0						
356	Recv MAOP	0						
357	Assigned MAOP		MMS Engineer entry					
358	Pipeline Status Code	*Proposed*						
359	Right-of-Way Status Code	Pending						
360								
361	Comments		MMS Engineer entry					

PIPELINE SPECIFICATIONS

1. The company person to contact for information on technical points is as follows:

Mr. Gregory D. Roland
ATP Oil & Gas Corporation
4600 Post Oak Place Suite 200
Houston, Texas 77027-9726
Telephone: 713-622-3311
Fax: 713-403-7002

2. Production Flexible Riser and Jumper Description

Riser at MC-711 and Jumper and SS Well No 4ST01, Proposed Gomez Platform

Riser Type	: Flexible Riser
Approx. Length	: 7141 ft.
Inner Diameter	: 4.00 in. ID

(Refer to Attached Data sheet for the 4.00 inch flexible riser properties)

3. Cathodic Protection System

The flowline will be protected by the sacrificial anode system described below. Neoprene lined riser clamps and insulating flange kit at the top of the riser will insulate the riser from the platform cathodic protection system. The flowline end fittings will be protected by anodes on the PLET.

4. Water Depth

Minimum Water Depth	: 2940 ft
Maximum Water Depth	: 2975 ft

5. Description of Internal Protective Measures

Internal Coating	: None
Corrosion Inhibition Program	: To Be Determined
Pigging Requirements	: To Be Determined

The analysis of the transported products will be monitored and preventive measures, such as inhibitors and pigs, will be employed as necessary.

6. *Flexible Riser Pipe and Jumper Pipe at MC-711 Proposed 'Gomez' Platform*

Pipe inner diameter = 4"
Pipe overall diameter = 6.895"
Design Pressure = 7500 psi
Operating Pressure = 4000 psi
Design Temperature = 54.4 ° C
Operating Temperature = 48.0° C

Min. Bend Radius Storage = 3.73 ft
Min. Bend Radius Service = 7.2 ft

Burst Pressure = 17,203 psi
Collapse Pressure = 3,237 psi
Max Allowable Depth = 7.282 ft
Failure Tension = 439 kips

Stiffness:
Axial Tension at 20° C = 35588 kip
Bending at 20° C = 6786 lbf ft2
Torsional at 20° C = 706 kip ft2

Weight of Pipe	Empty	Liquid Filled
In Air	38.1 lb/ft	44.2 lb/ft
In Seawater	21.5 lb/ft	27.6 lb/ft
Relative gravity in seawater	1.83	1.88

7. Specific Gravity of the Product

The anticipated specific gravity of the pipeline product (Bulk Oil and Gas) is:

Gas SG	= 0.813 (Air = 1.0)
Oil SG	= 0.88

8. Design Capacity

The design capacity for the pipeline is 50 MMSCFD and 6,000 BOPD.

9. Maximum Allowable Operating Pressure

a) Wall thickness and pressure calculations performed by flexible pipe manufacturer.

b) Flanges, Valves and Fittings

All flanges, valves and fittings shall be the following:
API 10,000#, 10,000 psig rated, 4 1/16" API Type 6BX.

c) System MAOP

Maximum allowable operating pressure (MAOP) as determined in accordance with DOI, Title 30, Part 250, Code of Federal Regulations, as applicable, is 7500 psig for the 4-inch pipeline.

Hydrostatic Test Pressure (HTP) per CFR, Title 30, Part 250. The hydrostatic test pressure for the pipeline and riser will be based as given below:

Hydrostatic Test Pressure:

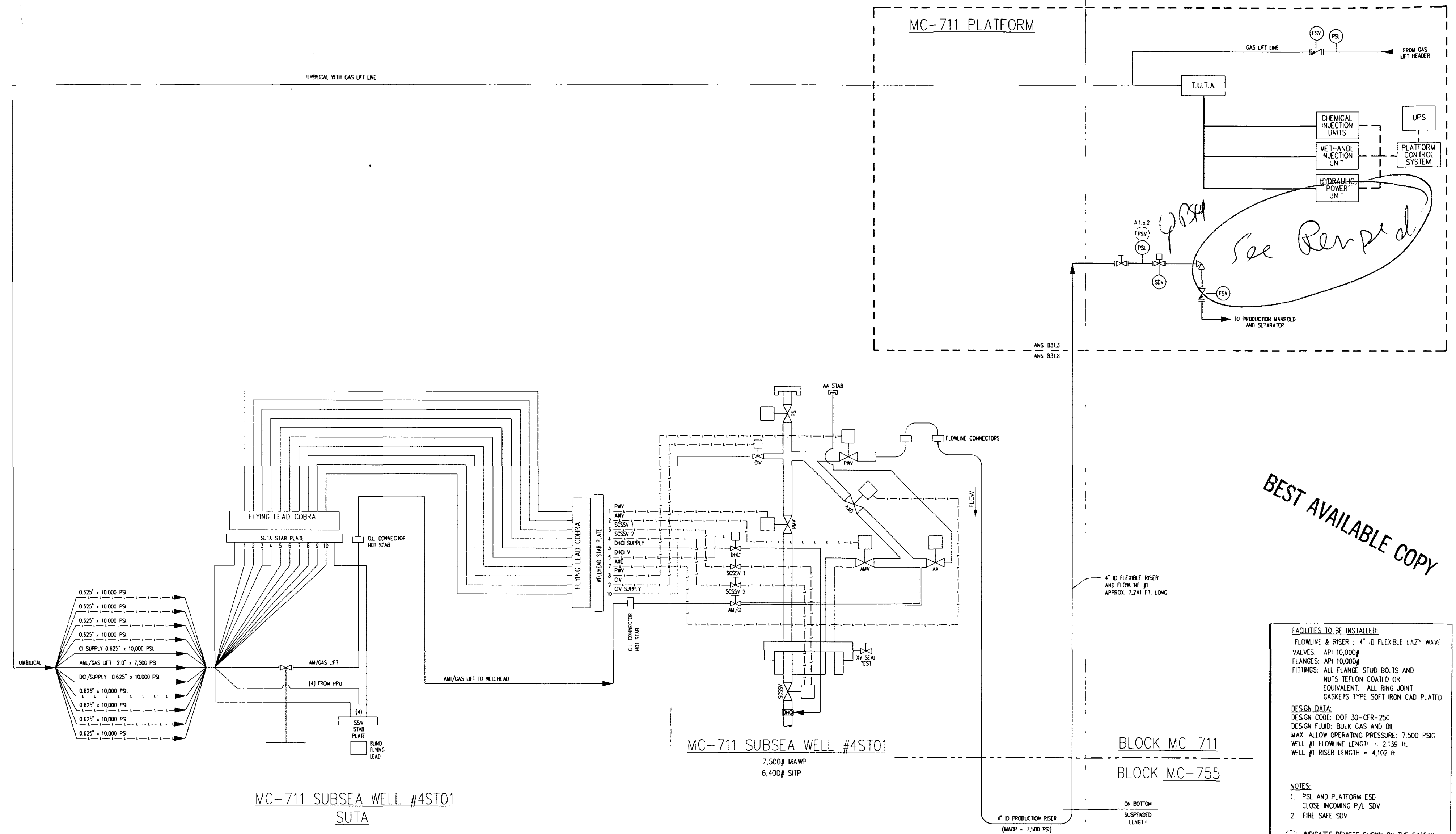
Pipeline & Riser

HTP = 1.25 x 7500 psi (MAOP) = 9375 psig, for minimum of 8 hours.

10. Design of the proposed flowline is in accordance with the "Oil and Gas and Sulphur Operations in the Outer Continental Shelf", Title 30, CFR, Part 250.

11. Construction Information

a)	Anticipated start date	:	August 1, 2005
b)	Method of construction	:	Reel Lay-barge
c)	Method of burial	:	Not Required
d)	Time required to lay pipe	:	Six (6) weeks
e)	Time required to complete the project	:	Four (4) months
f)	Shore base for construction	:	Mobile, Ala.



FACILITIES TO BE INSTALLED:

FLOWLINE & RISER : 4" ID FLEXIBLE LAZY WAVE
VALVES: API 10,000#
FLANGES: API 10,000#
FITTINGS: ALL FLANGE STUD BOLTS AND NUTS TEFLON COATED OR EQUIVALENT. ALL RING JOINT GASKETS TYPE SOFT IRON CAD PLATED

DESIGN DATA:

DESIGN CODE: DOT 30-CFR-250
DESIGN FLUID: BULK GAS AND OIL
MAX. ALLOW OPERATING PRESSURE: 7,500 PSIG
WELL #1 FLOWLINE LENGTH = 2,139 ft.
WELL #1 RISER LENGTH = 4,102 ft.

NOTES:

1. PSL AND PLATFORM ESD CLOSE INCOMING P/L SDV
2. FIRE SAFE SDV

( ) INDICATES DEVICES SHOWN ON THE SAFETY ANALYSIS TABLE (SAT) WHICH ARE NOT REQUIRED AS DEFINED BY THE SAFETY ANALYSIS CHECKLIST (SAC) IN API RP14C.

NO.	DATE	BY	REVISION DESCRIPTION
B	05/18/05	NAA	ISSUED FOR PERMIT
A1	05/17/05	NAA	ISSUED FOR REVIEW AND COMMENT

THE INFORMATION PROVIDED ON THIS DRAWING IS NOT TO BE ACCEPTED AS VALID UNLESS AN ORIGINAL PROFESSIONAL ENGINEER'S STAMP IS INCLUDED IN THE SPACE PROVIDED AND THE STAMP IS ACCOMPANIED BY THE ORIGINAL DATE AND SIGNATURE OF THE ENGINEER

ENGINEER'S STAMP:

DRAWN BY: N. AVERY
DATE: 05/16/05
CHECKED BY: N. DRISKILL
DATE: 05/16/05
APPROVED BY: J. HINES
DATE: 5/18/05
PLOT SCALE: 1=1
SCALE: N.T.S.
SCALE VALID FOR D-SIZE DRAWING ONLY (24"x36")

ATP OIL & GAS CORPORATION
BLUEWATER INDUSTRIES
PEGASUS International

MC-711 FIELD DEVELOPMENT
PHASE 1

WELL #4ST01 PRODUCTION RISER
R.O.W. FLOWLINE SAFETY SCHEMATIC

JOB NO. 1166190
DWG NO. 1166190W029
SHEET NO. 00
REV. B

S A11 5170
1517
MICRO

ATP OIL & GAS CORPORATION

May 23, 2005

MINERALS MANAGEMENT SERVICE
RECEIVED
MAY 24 2005
FIELD OPERATIONS
GOM OCS Region, New Orleans, La.

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

Attention: Mr. Alex Alvarado
MS 5232

RE: Application for a 6.895-Inch OD Bulk Oil Right-of-Way Pipeline, Production Riser, Rigid Jumper And Associated Umbilical To Be Installed In and/or Through Blocks 711 and 755, Mississippi Canyon Area, OCS Federal Waters, Gulf of Mexico, Offshore, Louisiana

Gentlemen:

Pursuant to the authority granted in Section 5 (e) of the Outer Continental Shelf Lands Act (67 Stat. 462) (43 U.S.C. 1331), as amended (92 Sta. 629), and in compliance with the regulations contained in Title 30 CFR, Part 250, Subpart J, ATP Oil & Gas Corporation (ATP) is filing this application in quadruplicate (original and three copies) for a right-of-way easement two hundred feet (200') in width for the construction, maintenance and operation of a 6.895-inch bulk oil right-of-way pipeline with a flexible production riser, rigid jumper and associated umbilical to be installed in and/or through Blocks 711 and 755, Mississippi Canyon Area, OCS Federal Waters, Gulf of Mexico, Offshore, Louisiana. ATP agrees that said right-of-way, if approved, will be subject to the terms and conditions of said regulations.

The proposed right-of-way pipeline and umbilical will originate at Subsea Well No. 004ST01 located on ATP' Oil & Gas Corporation's (ATP'S) Lease OCS-G 14016, Mississippi Canyon Block 711, also known as Gomez, and proceed in a southernly direction, looping back to the host facility, ATP's proposed Floating Offshore Installation (FOI) "A", also located on ATP's Lease OCS-G 14016, Mississippi Canyon Block 711. Total length of the proposed right-of-way pipeline is approximately 7833-feet (1.48 miles). The associated umbilical will originate at the host facility and terminate at the PLET (Pipeline End Termination) also located in Mississippi Canyon Block 711.

The proposed oil pipeline, one of two to be constructed, will transport production from Subsea Well No. 004ST01, Lease OCS-G 14016 to the Gomez FOI "A" (described above) for processing and measurement. Once processed and measured, the produced hydrocarbons will depart the platform via a 8-inch oil right of way pipeline to a tie-in point with Equilon's existing oil right-of-way

4600 POST OAK PLACE SUITE 200 HOUSTON, TEXAS 77027-9726 713-622-3311 FAX: 713-622-5101

pipeline (Segment No. 11433) located in Grand Isle Block 115 or a 10-inch gas pipeline to a tie-in point with the Williams Energy, LLC's existing 20-inch gas right-of-way pipeline (Segment No. 11175) also located in Grand Isle Block 115, Offshore, Louisiana for ultimate delivery to shore. Other transportation facilities associated with the development of the Gomez field include an 8-inch oil right of way pipeline and a 10-inch gas right-of-way pipeline, infield flowlines, rigid jumpers, umbilical and flying leads. Applications for these facilities will be submitted under separate cover.

Upon assignment of a segment number to this application, ATP will proceed with covering the right-of-way pipeline under its current Certification of Oil Spill Financial Responsibility.

ATP will review the approved Regional Oil Spill Response Plan to determine if the installation of the subject right-of-way pipeline will affect the current worst case discharge, and, if applicable, will modify the plan to include the pipeline at the next scheduled update.

Installation of the proposed pipeline and flexible riser will be accomplished by utilizing an installation vessel with dynamic positioning capabilities specifically designed for service in deepwater and certified by the U.S. Coast Guard. The pipeline will be installed using the reel method. The flexible riser will be installed using the Lazy Wave method. The water depths along the route range from 2940-feet to 2980-feet; therefore, the pipeline will not be buried.

There are no foreign pipeline crossings along the proposed route.

The water depth in this area is 2975-feet. The flexible riser at the Gomez FOI "A" in Mississippi Canyon Block 711 will be protected by the pull tube.

ATP hereby requests a waiver from NTL 98-20, Section IV.B, which requires the buoying of all potential hazards located within 150 meters (490) feet of the proposed operations. Utilizing the on-board graphic system during construction operations, ATP will comply with the recommended avoidance criteria of the magnetic anomalies identified in the Fugro Geoservices, Inc. Archaeological , Engineering and Hazard Survey Report previously submitted with the export pipeline applications (Segments 15051 and 15052). Also, an additional report was prepared for ATP for the anchor locations that is included herewith.

During the performance of the engineering and hazard survey in water depths exceeding 1312-feet, the minimum depth for chemosynthetic community potential outlined in NTL2000-G20, some areas of potential active gas expulsion or hydrate mounds were identified in Mississippi Canyon Blocks 711 and 755.

Based on data from the side-scan sonar, subbottom data and magnetic data, the probability of disturbing significant prehistoric cultural resources within the corridor for this proposed pipeline is not probable. Ten magnetic anomalies were recorded in the course of this survey, one of which is considered of an unknown nature, age or significance and could possibly represent a wrecked barge with coordinates as previously discussed herein. The remaining nine (9) are pipelines and one well, all considered modern debris from oil and/or gas activity.

The proposed activities will occur outside the Live Bottom (Pinnacle Trend) Stipulation Area.

The proposed pipeline route does not lie within any areas designated as having a high potential for historical archeological resources, prehistoric archaeological sites, or historic period shipwrecks. Therefore, an archeological assessment was not required.

The proposed construction operations will be supported by a crewboat and tug, each making approximately two (2) trips per week, respectively, from an onshore facility located in Amelia, Louisiana.

ATP anticipates commencing installation on approximately August 1, 2005. Estimated time to complete installation of the right-of-way flexible pipeline, flexible riser and umbilical associated with the Gomez project is 42 days. Estimated overall completion time for the entire Gomez project, including installation of right-of-way lines, flexible risers, umbilicals, anchors, the FOI, subsea trees and completion of the wells is 90 days.

ATP will be the operator of the subject right-of-way pipeline.

This application (and any amendments made hereto) is made with our full knowledge and concurrence with the OCS Lands Act (43 U.S.C. 1331, et. seq.), as amended (P.L. 95-372), including the following: Sec. 5(e) addressing pipeline rights-of-way, requirements of the Federal Energy Regulatory Commission relating to notice of hearing, transportation and purchase of oil and gas without discrimination; Sec. 5(f)(1) addressing operation of pipelines in accordance with competitive principles, including open and nondiscriminatory access to both owner and non-owner shippers; Sec. 5(f)(2) which may allow exemption of the requirements in Sec. 5(f)(1); Sec. 5(e) addressing the assuring of maximum environmental protection, including the safest practices for pipeline installation; and Sec. 5(f)(1)(B) which may require expansion of throughput capacity of any pipeline except for the Gulf of Mexico or the Santa Barbara Channel.

Additionally, we expressly agree that if any site, structure, or object of historical or archaeological significance should be discovered during the conduct of any operations within the permitted right-of-way, we shall report immediately such findings to the Director, Gulf of Mexico OCS Region, and

Minerals Management Service
6.895-Inch Bulk Oil Right-of-Way Pipeline
Production Riser, Rigid Jumper and Associated Umbilical
Mississippi Canyon Area Block 711 & 755
Offshore, Louisiana
May 23, 2005

make every reasonable effort to preserve and protect the cultural resource from damage until said Director has given directions as to its preservation.

In accordance with applicable regulations, we have forwarded information regarding the proposed project by certified mail, return receipt requested, to each designated oil and gas lease operator, right-of-way or easement holder whose lease, right-of-way or easement is so affected. A list of such designated operators, right-of-way or easement holders is included as Attachment A and copies of the return receipts showing date and signature as evidence of service upon such operators, right-of-way or easement holders will be forwarded to your office when received.

In order to expedite the permit process, we have requested a letter from the operator, right-of-way or easement holder expressing no objection to the proposed project. When obtained, these letters will be forwarded to your office. The proposed right-of-way does not adjoin or subsequently cross state submerged lands, or any designated shipping fairways/anchorage areas.

ATP agrees to be bound by the foregoing regulations, and further agrees to comply with the applicable stipulations as set forth in Title 30 CFR 250 (Subpart J) and that certain Letter to Lessees dated April 18, 1991.

In support of our application and for your review and use, the following maps, drawings and documents have been enclosed herewith and made a part hereof:

1. Originally signed copy of Nondiscrimination in Employment Stipulation;
2. Designated Oil & Gas Lease Operators and Right-of-Way Holders (Attachment A);
3. Plan and Profile Pipeline Route Map Pipeline and Umbilical (Sheet 1 of 1;
4. Pipeline Specifications & Calculations for the pipeline, flexible riser & rigid jumper;
5. Flexible Riser Details (Wellstream);
6. Production Lazy Wave Riser from the PLET to the FOI;
7. Production PLET – General Arramgement
8. Umbilical Cross-section Drawing;
9. Umbilical Lazy Wave Riser Drawing;
10. Subsea Umbilical Termination:
11. Subsea Infield Layout Schematic;
12. Safety Flow Schematic (Dwg. No. 166190W029);
13. Chemosynthetic Community Analysis by Fugro Geosciences, Inc.
14. MMS Pipeline Spreadsheet.
15. Check in the amount of $2,380 covering the application fee of $2,350 plus $30 for the first year rental on 1.49 miles of right-of-way.

Contact on technical points or other information:

Sharon DeSimoni
J. Connor Consulting, Inc.
16225 Park Ten Place, Suite 700
Houston, Texas 77084
(281) 578-3388
e-mail address: sharon.desimoni@jccteam.com

ATP Oil & Gas Corporation hereby agrees to keep open at all reasonable times for inspection by the Minerals Management Service, the area covered by this right-of-way and all improvements, structures, and fixtures thereon and all records relative to the design, construction, operation, maintenance, and repairs, or investigations on or with regard to such area."

Please refer to your New Orleans Miscellaneous File No. 01819 for a copy of a resolution approved by the Board of Directors authorizing the undersigned to sign for and on behalf of ATP Oil & Gas Corporation. Additionally, ATP Oil & Gas Corporation has an approved $300,000 Right-of-Way Grant Bond on file with MMS, covering installation of right-of-way pipelines in Federal Waters, Gulf of Mexico.

Sincerely,

Mickey W. Shaw

Mickey W. Shaw
Vice President, Production Operations

MWS:GDR:SD
Attachments and Enclosures

cc: Nexen Petroleum U.S.A. Inc.
Mr. Larry D. McRae
12790 Merit Drive, Suite 800
Dallas, Texas 75251-1270

(Certified Mail No. 7003 2260 0003 0201 0912)

ATP OIL & GAS CORPORATION
4600 POST OAK PLACE, SUITE 200
HOUSTON, TEXAS 77027-9726

OPERATING ACCOUNT

CHASE BANK OF TEXAS - SAN ANGELO, N.A.
SAN ANGELO, TEXAS 76903

415721

88-88
1113

PAY

TWO THOUSAND THREE HUNDRED EIGHTY DOLLARS AND NO CENTS

CHECK NO	DATE	PAY EXACTLY
415721	05/18/05	*****2,380.00

VOID IF NOT PRESENTED FOR PAYMENT WITHIN 180 DAYS

TO THE ORDER OF
Minerals Management Service
1201 Elmwood Park Blvd.
New Orleans, LA 70123-2394

AUTHORIZED SIGNATURE

⑈415721⑈ ⑆111300880⑆ ⑈06300050955⑈

PAYEE	PAYEE NO.	CHECK NO.	DATE
Minerals Management Service	1331	415721	05/18/05

VOUCHER	VENDOR INV #	INV DATE	TOTAL AMOUNT	PRIOR PMTS & DISCOUNTS	NET AMOUNT
05-AP-49021	051805A	05/17/05	2,380.00	0.00	2,380.00
TOTAL INVOICES PAID					2,380.00

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HOUSTON, TEXAS 77027-9726

DETACH AND RETAIN FOR TAX PURPOSES

ATTACHMENT A

The following Designated Oil & Gas Lease Operators and Right-of-Way Holders have been furnished information regarding the proposed pipeline installation by Certified Mail, Return Receipt Requested. (Note: The status of blocks listed below is current, per research of MMS records by J. Connor Consulting, Inc.).

Mississippi Canyon Area

BLOCK 711

ATP Oil & Gas Corporation	OCS-G 14016	Oil & Gas Lease

BLOCK 755

Nexen Petroleum U.S.A. Inc.	OCS-G 24105	Oil & Gas Lease

NONDISCRIMINATION IN EMPLOYMENT

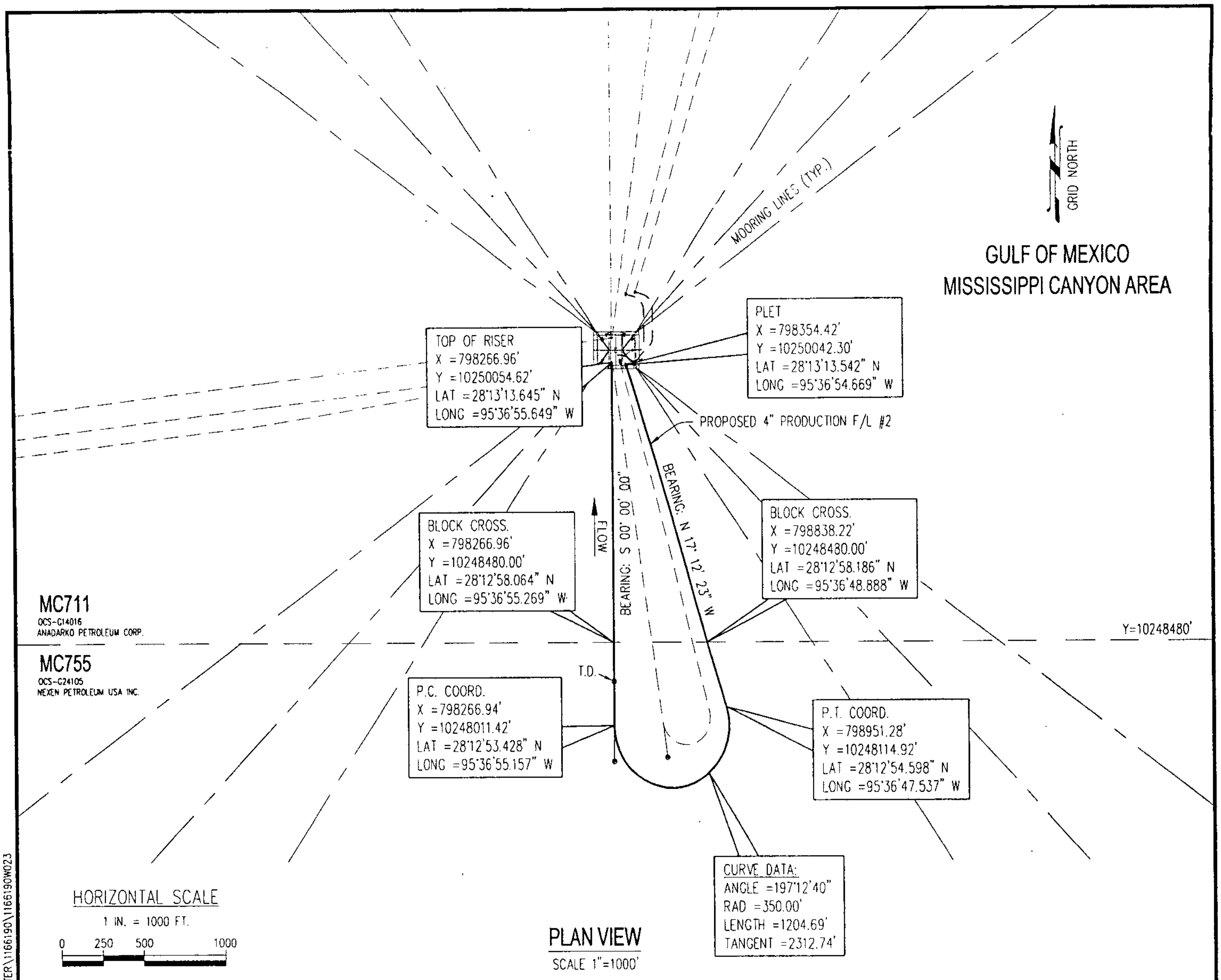
As a condition precedent to the approval of the granting of the subject pipeline right-of-way, the grantee, ATP Oil & Gas Corporation hereby agrees and consents to the following stipulation, which is to be incorporated into the application for said right-of-way.

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

> During the performance under this grant, the grantee shall fully 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.

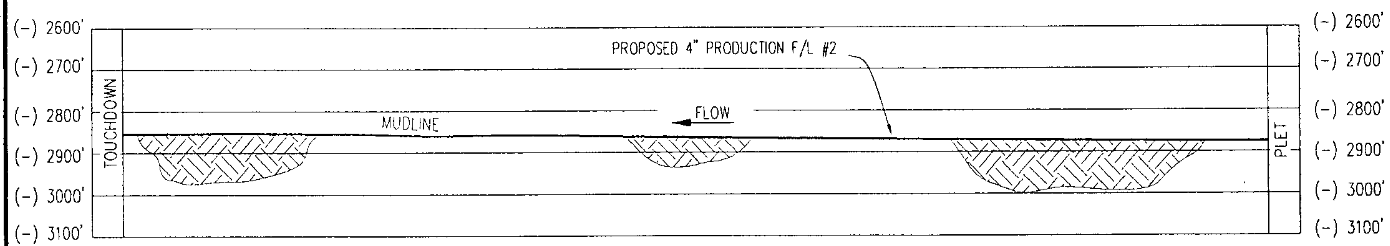
Mickey W. Sasw
Signature

23 May 2005
Date



PLAN VIEW

SCALE 1"=1000'



PROFILE

HORIZONTAL SCALE: 1"=1000'
VERTICAL SCALE: 1"=1000'

D. E. West 03/31/05
D.E.WEST

REGISTERED PROFESSIONAL LAND SURVEYOR
TEXAS REGISTRATION No. 1229
9821 KATY FREEWAY, SUITE 750
HOUSTON, TX. 77024
713-465-5777
EMPLOYEE OF PEGASUS INTERNATIONAL

HORIZONTAL SCALE
1 IN. = 1000 FT.
0 250 500 1000

MAP EXPLANATION

MAP PROJECTION BASED UPON UNIVERSAL TRANSVERSE MERCATOR GRID SYSTEM, ZONE 15. (GRID UNITS IN US SURVEY FEET) NAD 27 ALL LATITUDE / LONGITUDE COORDINATES ARE BASED ON NAD 27, CLARKE 1866 SPHEROID.

VERTICAL SCALE
1 IN. = 1000 FT.
0 250 500

PEGASUS International	ATP OIL & GAS CORPORATION BLUEWATER INDUSTRIES	MC-711 FIELD DEVELOPMENT	DWG NO. 1166190W023
			JOB NO. 1166190
		PROPOSED 4" PRODUCTION FLOWLINE TO WELL **#4ST01**	SCALE: AS SHOWN
DRAWN BY: R. ACREE	ORIGIN. DATE: 02/24/05	REV. DATE:		SCALE VALID FOR A-SIZE DRAWING (8.5" x 11") ONLY.	REV. A1

PLOT: Thursday, March 31, 2005 10:27:31 AM BY: RICK ACREE LAST SAVE: 3/31/2005 10:27:26 AM BY: ---- FILE NAME: I:\BLUEWATER\1166190\1166190W023

MMS PERMIT APPLICATION

ATTACHMENT "B"
ATP OIL & GAS CORPORATION
WELL #4ST01 PRODUCTION RISER AND FLOWLINE
MISSISSIPPI CANYON AREA, BLOCK 711, PROPOSED GOMEZ PLATFORM THROUGH
MISSISSIPPI CANYON AREA, BLOCK 755

PIPELINE SPECIFICATIONS

1. The company person to contact for information on technical points is as follows:

Mr. Gregory D. Roland
ATP Oil & Gas Corporation
4600 Post Oak Place Suite 200
Houston, Texas 77027-9726
Telephone: 713-622-3311
Fax: 713-403-7002

2. Production Flexible Riser and Jumper Description

Riser at MC-711 and Jumper at Well no 2, Proposed Gomez Platform

Riser Type	: Flexible Riser
Approx. Length	: 7833 ft.
Inner Diameter	: 4.00 in. ID

(Refer to Attached Data sheet for the 4.00 inch flexible riser properties)

3. Cathodic Protection System

The flowline will be protected by the sacrificial anode system described below. Neoprene lined riser clamps and insulating flange kit at the top of the riser will insulate the riser from the platform cathodic protection system. The flowline end fittings will be protected by anodes on the PLET.

4. Water Depth

Minimum Water Depth	: 2940 ft
Maximum Water Depth	: 2980 ft

5. Description of Internal Protective Measures

Internal Coating	: None
Corrosion Inhibition Program	: To Be Determined
Pigging Requirements	: To Be Determined

The analysis of the transported products will be monitored and preventive measures, such as inhibitors and pigs, will be employed as necessary.

6. Flexible Riser Pipe and Jumper at MC-711 Proposed 'Gomez' Platform

Pipe inner diameter = 4"
Pipe overall diameter = 6.895"
Design Pressure = 7500 psi
Operating Pressure = 4000 psi
Design Temperature = 54.4 ° C
Operating Temperature = 48.0° C

Min. Bend Radius Storage = 3.73 ft
Min. Bend Radius Service = 7.2 ft

Burst Pressure = 17,203 psi
Collapse Pressure = 3,237 psi
Max Allowable Depth = 7.282 ft
Failure Tension = 439 kips

Stiffness:
Axial Tension at 20° C = 35588 kip
Bending at 20° C = 6786 lbf ft2
Torsional at 20° C = 706 kip ft2

Weight of Pipe	Empty	Liquid Filled
In Air	38.1 lb/ft	44.2 lb/ft
In Seawater	21.5 lb/ft	27.6 lb/ft
Relative gravity in seawater	1.83	1.88

7. Specific Gravity of the Product

The anticipated specific gravity of the pipeline product (Bulk Oil and Gas) is:

Gas SG	= 0.813 (Air = 1.0)
Oil SG	= 0.88

8. Design Capacity

The design capacity for the pipeline is 10 MMSCFD and 9,000 BOPD.

9. Maximum Allowable Operating Pressure

a) Wall thickness and pressure calculations performed by flexible pipe manufacturer.

b) Flanges, Valves and Fittings

All flanges, valves and fittings shall be the following:
API 10,000#, 10,000 psig rated, 4 1/16" API Type 6BX.

c) System MAOP

Maximum allowable operating pressure (MAOP) as determined in accordance with DOI, Title 30, Part 250, Code of Federal Regulations, as applicable, is 7500 psig for the 4-inch pipeline.

Hydrostatic Test Pressure (HTP) per CFR, Title 30, Part 250. The hydrostatic test pressure for the pipeline and riser will be based as given below:

Hydrostatic Test Pressure:

Pipeline & Riser

HTP = 1.25 x 7500 psi (MAOP) = 9375 psig, for minimum of 8 hours.

10. Design of the proposed flowline is in accordance with the "Oil and Gas and Sulphur Operations in the Outer Continental Shelf", Title 30, CFR, Part 250.

11. Construction Information

a)	Anticipated start date	:	May 15, 2005
b)	Method of construction	:	Reel Lay-barge
c)	Method of burial	:	Not Required
d)	Time required to lay pipe	:	Six (6) weeks
e)	Time required to complete the project	:	Four (4) months
f)	Shore base for construction	:	Amelia, La.

Pegasus International
DYNAMIC 4 in 7500 psi 3080 ft Bluewater-ATP MC711 Project
Uninsulated Production Riser
U. S. Units Pipe Data Sheet: B808-10-A01-040921-RQI Rev 1

Prepared by:________________ **Checked by:**________________ **Approved by:**________________

Inside Diameter	4 in	**Service**	Sweet dynamic	**Max. Fluid Temp.**	130 °F
Design Pressure	7500 psi	**Conveyed Fluid**	oil/gas	**Water Depth**	3080 ft

Layer	Material	Strength [ksi]	I.D. [in]	Thick [in]	O.D. [in]	Weight [lbm/ft]
Flexbody	Stainless 316L		4.000	0.197	4.394	5.100
Flexbarrier	PA 11(Natural)		4.394	0.236	4.866	1.564
Flexlok	Carbon Steel	110	4.868	0.250	5.366	11.324
Flextape 1	PA 11 P20 Tape, 30mil		5.366	0.060	5.486	0.464
Flextensile 1	Carbon Steel	190	5.486	0.157	5.800	7.840
Flextape 2	PA 11 P20 Tape, 30mil		5.800	0.060	5.920	0.501
Flextensile 2	Carbon Steel	190	5.920	0.157	6.234	8.432
Flextape 3	Polypropylene		6.234	0.023	6.280	0.184
Flextape 4	High Strength Glass Filament		6.280	0.032	6.344	0.358
Flextape 5	Polypropylene		6.344	0.023	6.391	0.187
Flextape 6	Fabric		6.391	0.016	6.423	0.093
Flexshield	Rubber Modified Polypropylene (Black)		6.423	0.236	6.895	2.014

Layer	Raw Material Dimensions		Mfg Pitch	Wires	Angle	Filled
Flexbody	36.0mm x 1.0mm	1.417in x 0.039in			87.8	90.24%
Flexlok	14.4mm x 6.4mm	0.565in x 0.250in			88.6	91.49%
Flextensile 1	8.0mm x 4.0mm	0.315in x 0.157in	18.36in	36	44.0	91.47%
Flextensile 2	8.0mm x 4.0mm	0.315in x 0.157in	21.20in	40	42.0	91.17%

Outside Diameter	6.895 in	**Wt, Empty in Air**	38.1 lb/ft
Storage Radius, SBR	3.73 ft	**S/W filled in Air**	44.2 lb/ft
Operating Radius, OBR	7.2 ft	**Air filled in S/W**	21.5 lb/ft
Bending Stiffness, EI	6786 lbf ft^2	**S/W filled in S/W**	27.6 lb/ft
Spooling Tension	487 lbf	**Burst Pressure**	17203 psi
Therm. Cond./Length, C/L	2.86 BTU/hrft°F	**Burst/Design Ratio**	2.29
Effective Thermal Cond, ke	0.25 BTU/hrft°F	**Collapse Pressure (Wet Collapse)**	3237 psi
OHTC, Uo (based on ID)	2.73 BTU/hrft^2°F	**Collapse Depth**	7282 ft
SWDR with bore empty	3.113 lbf/ft in	**Collapse/Design ratio**	2.36
SWDR with bore filled by SW	3.996 lbf/ft in	**Failure Tension**	438969 lbf
Pipe torsional stiffness (GJ) at 20 °C:			
Limp direction	706 Kip ft^2		
Stiff direction	1492 Kip ft^2		
Axial Stiffness	35588 Kip		

Pegasus International
DYNAMIC 101.6 mm 51.711 MPa 938.8 m Bluewater-ATP MC711 Project
Uninsulated Production Riser
S.I. Units Pipe Data Sheet, B808-10-A01-040921-RQI Rev 1

Prepared by:________________ **Checked by:**________________ **Approved by:**________________

Inside Diameter	101.6 mm	**Service**	Sweet dynamic	**Max. Fluid Temp.**	54.4 °C
Design Pressure	51.711 MPa	**Conveyed Fluid**	oil/gas	**Water Depth**	938.8 m

Layer	Material	Strength [MPa]	I.D. [mm]	Thick [mm]	O.D. [mm]	Weight [kg/m]
Flexbody	Stainless 316L		101.60	5.00	111.60	7.590
Flexbarrier	PA 11(Natural)		111.60	6.00	123.60	2.328
Flexlok	Carbon Steel	758	123.60	6.35	136.30	16.853
Flextape 1	PA 11 P20 Tape, 30mil		136.30	1.52	139.34	0.691
Flextensile 1	Carbon Steel	1310	139.34	3.99	147.32	11.668
Flextape 2	PA 11 P20 Tape, 30mil		147.32	1.52	150.36	0.746
Flextensile 2	Carbon Steel	1310	150.36	3.99	158.33	12.549
Flextape 3	Polypropylene		158.33	0.59	159.52	0.274
Flextape 4	High Strength Glass Filament		159.52	0.81	161.14	0.532
Flextape 5	Polypropylene		161.14	0.59	162.32	0.279
Flextape 6	Fabric		162.32	0.41	163.14	0.139
Flexshield	Rubber Modified Polypropylene (Black)		163.14	6.00	175.14	2.997

Layer	Raw Material Dimensions		Mfg Pitch	Wires	Angle	Filled
Flexbody	36.0mm x 1.0mm	1.417in x 0.039in			87.8	90.24%
Flexlok	14.4mm x 6.4mm	0.565in x 0.250in			88.6	91.49%
Flextensile 1	8.0mm x 4.0mm	0.315in x 0.157in	466.3mm	36	44.0	91.47%
Flextensile 2	8.0mm x 4.0mm	0.315in x 0.157in	538.5mm	40	42.0	91.17%

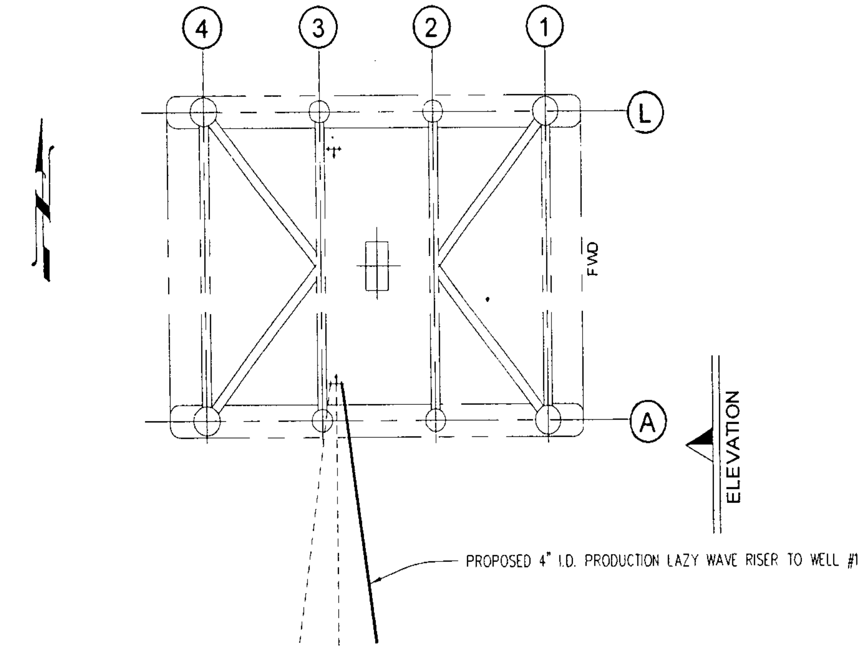
Outside Diameter	175.1 mm	**Wt, Empty in Air**	56.6 kg/m
Storage Radius, SBR	1.14 m	**S/W filled in Air**	65.7 kg/m
Operating Radius, OBR	2.2 m	**Air filled in S/W**	31.9 kg/m
Bending Stiffness, EI	2.804 kNm²	**S/W filled in S/W**	41 kg/m
Spooling Tension	2168 N	**Burst Pressure**	118.61 MPa
Therm. Cond./Length, C/L	4.9 w/m°C	**Burst/Design Ratio**	2.29
Effective Thermal Cond, ke	0.4 w/m°C	**Collapse Pressure (Wet Collapse)**	22.32 MPa
OHTC, Uo (based on ID)	15.5 w/m²°C	**Collapse Depth**	2219 m
SWDR with bore empty	1.79 N/m mm	**Collapse/Design ratio**	2.36
SWDR with bore filled by SW	2.3 N/m mm	**Failure Tension**	1952.6 kN
Pipe torsional stiffness (GJ) at 20 °C:			
Limp direction	292 kNm²		
Stiff direction	616 kNm²		
Axial Stiffness	158304 kN		

Pegasus International
DYNAMIC 101.6 mm 51.711 MPa 938.8 m Bluewater-ATP MC711 Project
Uninsulated Production Riser
Customer Pipe Data Sheet: B808-10-A01-040921-RQI Rev 1

Prepared by:__________________**Checked by:**__________________**Approved by:**__________________

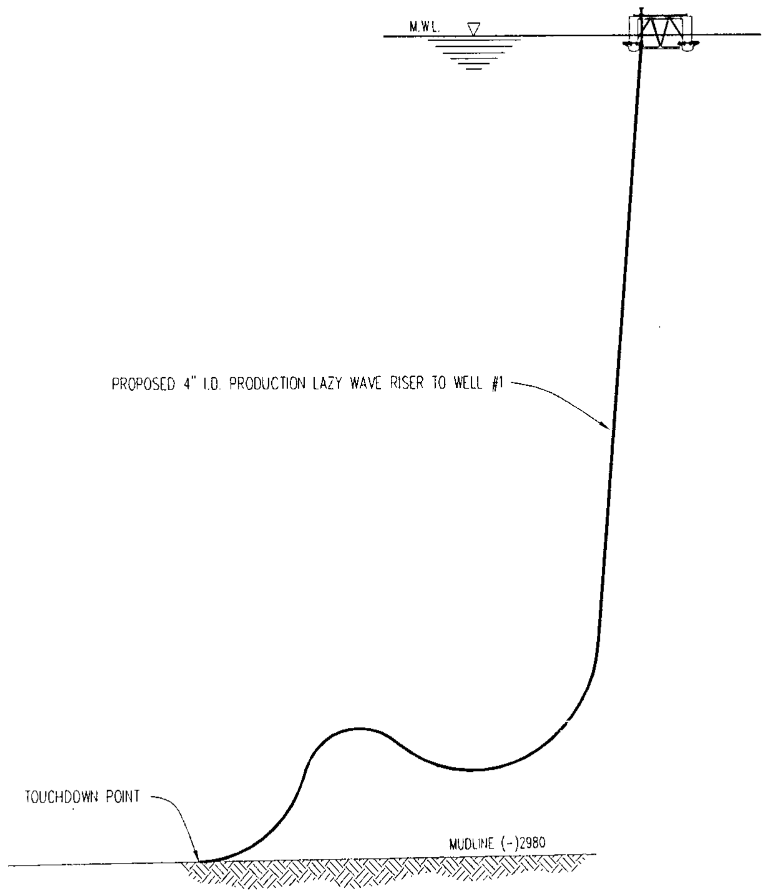
Inside Diameter	101.60 mm	4.00 in	**Conveyed Fluid**	oil/gas
Outside Diameter	175.14 mm	6.895 in	**Burst/Design Ratio**	2.29
Water Depth	938.8 m	3080 ft	**Collapse/Design Ratio**	2.36
Fluid Temperature	54.4 °C	130 °F		

Design Pressure	51.71 MPa	7500 psi
Factory Test Pressure	77.57 MPa	11250 psi
Burst Pressure	118.61 MPa	17203 psi
Collapse Pressure (Wet Collapse)	22.32 MPa	3237 psi
Collapse Depth	2219 m	7282 ft
Failure Tension	1953 kN	438969 lbf
Storage Bend Radius	1.14 m	3.73 ft
Operating Bend Radius	2.2 m	7.2 ft
Bending Stiffness	2.8 kNm²	6786 lbf ft²
Weight Empty in Air	56.65 kg/m	38.1 lb/ft
S/W filled in Air	65.7 kg/m	44.2 lb/ft
Air filled in S/W	31.9 kg/m	21.5 lb/ft
S/W filled in S/W	41 kg/m	27.6 lb/ft
Thermal Cond./Unit Length	4.95 w/m°C	2.86 BTU/hrft°F
OHTC, Uo (based on ID)	15.5 w/m²°C	2.73 BTU/hrft²°F
Pipe torsional stiffness (GJ) at 20 °C:		
Limp direction	292 kNm²	706 Kip ft²
Stiff direction	616 kNm²	1492 Kip ft²
Axial Stiffness	158304 kN	35588 Kip



KEY PLAN - "ROWAN MIDLAND"

SCALE: N.T.S.



ELEVATION

PEGASUS International

ATP OIL & GAS CORPORATION

BLUEWATER INDUSTRIES

MC-711 FIELD DEVELOPMENT

PROPOSED 4" I.D. PRODUCTION LAZY WAVE RISER TO WELL #4ST01

DWG NO. 1166190W027

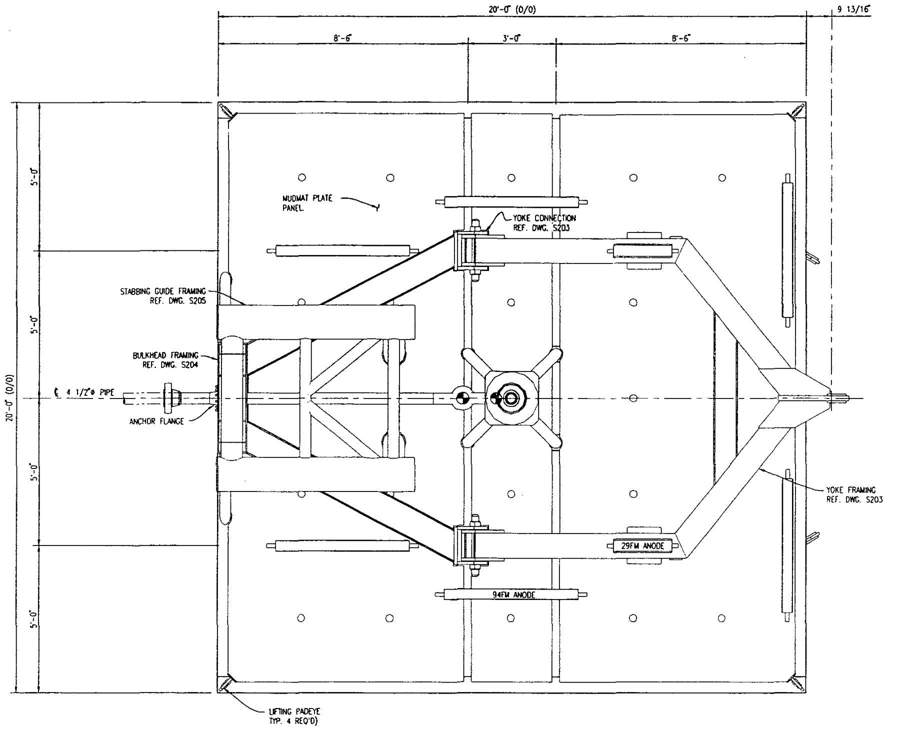
JOB NO. 1166190

SCALE: 1"=750'

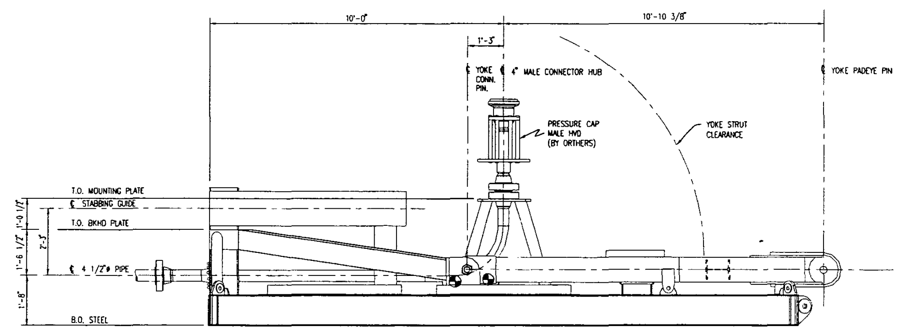
SCALE VALID FOR A-SIZE DRAWING (8.5" x 11") ONLY.

REV. A1

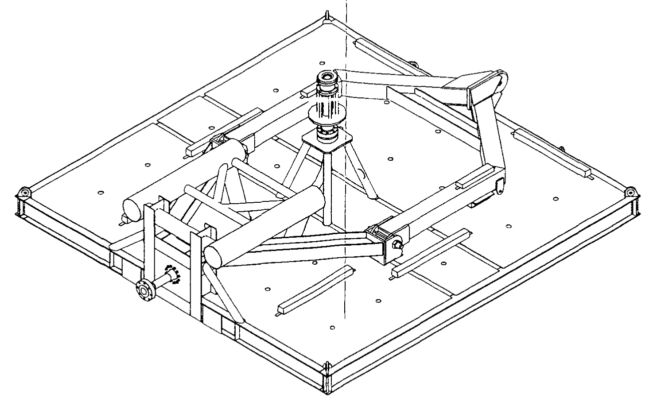
DRAWN BY: R. ACREE | ORIGIN. DATE: 02/23/05 | REV. DATE:



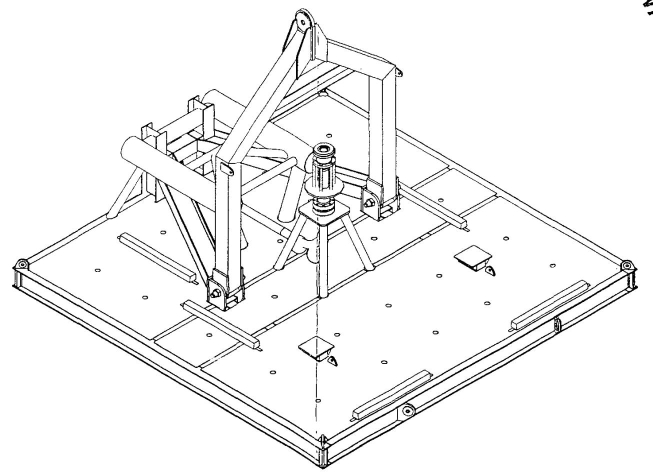
PLET PLAN VIEW
SCALE: 1/2" = 1'-0"



PLET ELEVATION
SCALE: 1/2" = 1'-0"



PLET ISOMETRIC VIEW
SCALE: 1/2" = 1'-0"



PLET ISOMETRIC VIEW - YOKE AT 90°
SCALE: 1/2" = 1'-0"

NO.	DATE	BY	REVISION DESCRIPTION
0	05/05/2005	LL/MW	APPROVED FOR CONSTRUCTION
A1	04/04/2005	CDN/MW	APPROVED FOR TENDER
A	04/01/2005	LL/MW	ISSUED FOR APPROVAL

THE INFORMATION PROVIDED ON THIS DRAWING IS NOT TO BE ACCEPTED AS VALID UNLESS AN ORIGINAL PROFESSIONAL ENGINEER'S STAMP IS INCLUDED IN THE SPACE PROVIDED AND THE STAMP IS ACCOMPANIED BY THE ORIGINAL DATE AND SIGNATURE OF THE ENGINEER.

ENGINEER'S STAMP:

DRAWN BY: LL
DATE: 03/29/2005
CHECKED BY: MW
DATE: 04/04/2005
APPROVED BY: DW
DATE: 05/05/2005
PLOT SCALE: 1:1
SCALE: AS SHOWN
SCALE VALID FOR D-SIZE DRAWING ONLY (24"x36")

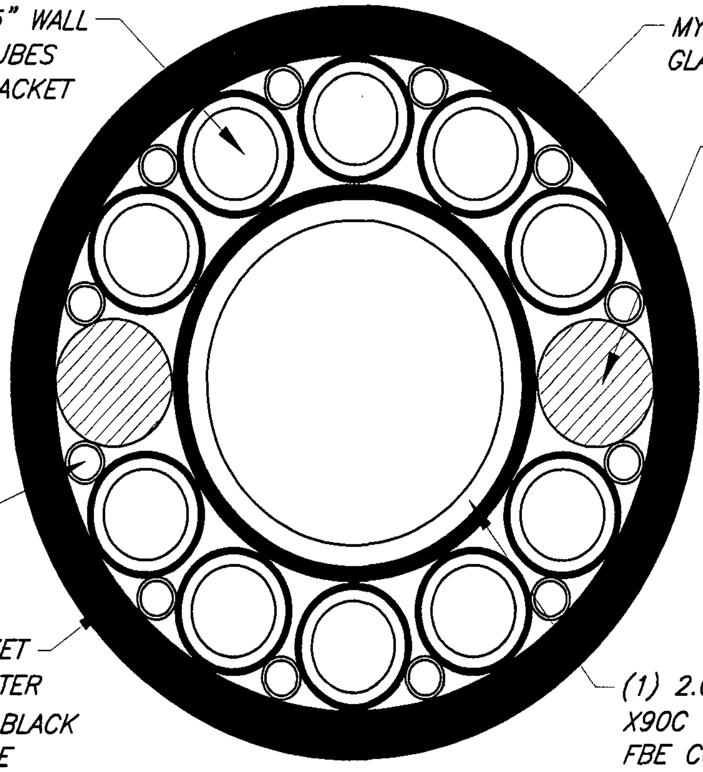
ATP OIL & GAS CORPORATION
BLUEWATER INDUSTRIES
PEGASUS International

MISSISSIPPI CANYON 711
4" PRODUCTION PLET DESIGN

GENERAL ARRANGEMENT

JOB NO.	DWG NO.	SHEET NO.	REV.
1166865	1166865S201		0

PROPOSAL DRAWING



TUBING HYDRAULIC PROPERTIES

TUBING SIZE	WORKING PRESSURE	TEST PRESSURE	BURST PRESSURE
.625" X .065" WALL	10,000 PSI	12,500 PSI	25,200 PSI
2.00" X .125" WALL	7,600 PSI	9,500 PSI	

NITRONIC 19D TUBING MANUFACTURED TO SEACAT SPECIFICATION SC80-1, REV. 12

NITRONIC 19D TUBING PER ASTM A-450
ZINC CLADDING PER ASTM B-6

TUBING SIZES INDICATED ARE OUTSIDE DIA'S.
DIAMETER TOLERANCE : +/- .005"

DIAMETER/WEIGHT RATIO : $\frac{4.04"}{8.96} = .45$

MECHANICAL PROPERTIES

FINISHED O.D. : 4.04"

WEIGHT IN AIR : (TUBING EMPTY) 13.81 LBS./FT.

WEIGHT IN AIR : (TUBING FILLED) 14.67 LBS./FT.

WEIGHT IN SEAWATER : (TUBING EMPTY) 8.10 LBS./FT.

WEIGHT IN SEAWATER : (TUBING FILLED) 8.96 LBS./FT.

SPECIFIC GRAVITY (FILLED) : IN SEAWATER 2.57

CALCULATED BREAK STRENGTH : 160,000 LBS.

MAXIMUM WORKING LOAD : 125,000 LBS.

MINIMUM BEND DIAMETER STATIC : 140"

MINIMUM BEND DIAMETER INSTALLATION : 190"

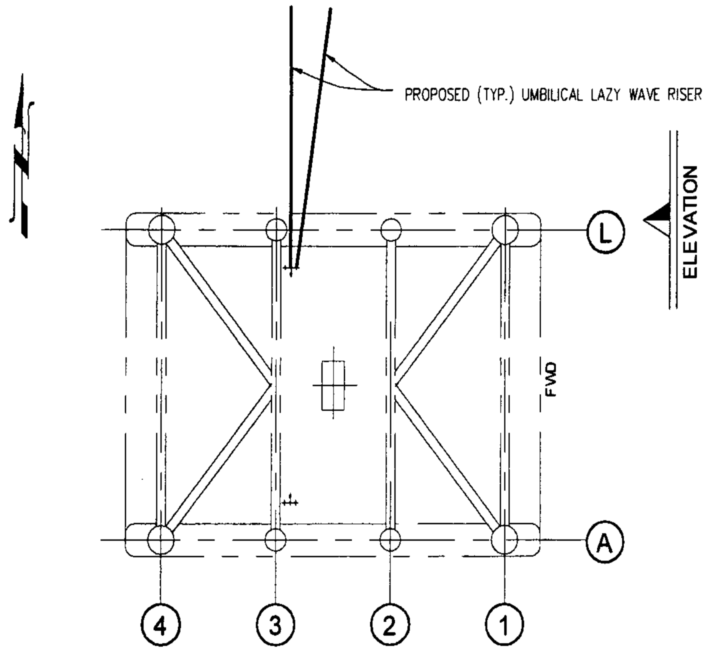
APPROX. BENDING STIFFNESS : 2,170 KIP-IN(2)

APPROX. AXIAL STIFFNESS : 78,800 KIP

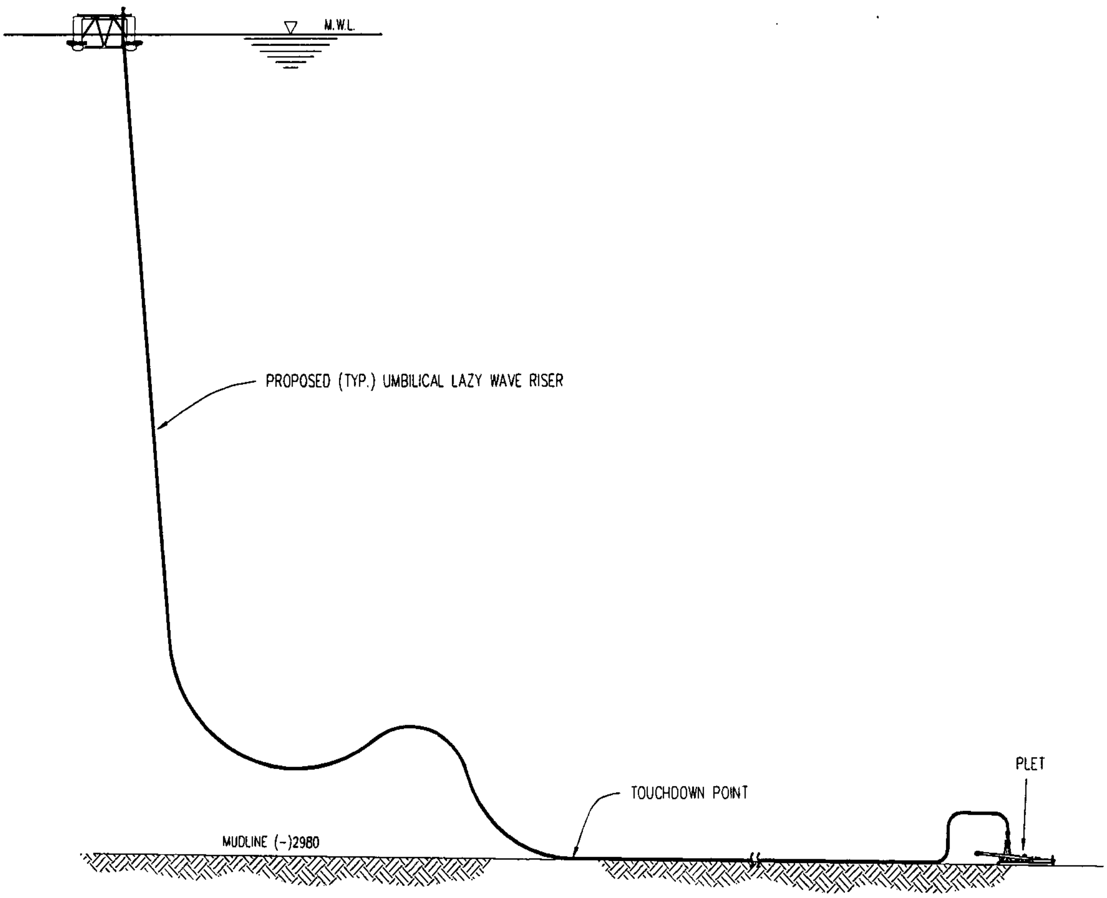
CABETT SUBSEA PRODUCTS
6827 SIGNAT DRIVE
HOUSTON, TEXAS 77041

ATP BLUEWATER MISSISSIPPI CANYON 711
STEEL TUBE HYDRAULIC CONTROL UMBILICAL
DESIGN SPECIFICATION

DATE	SHEET	DWG NO.	REV.
8/16/04	SHEET 1 OF 1	CSP-1135	-



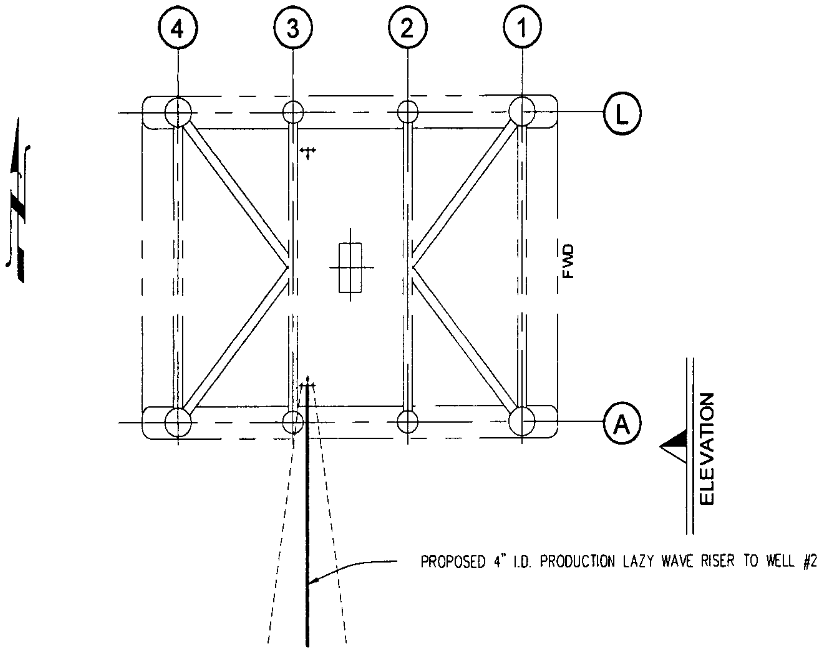
KEY PLAN - "ROWAN MIDLAND"
SCALE: N.T.S.



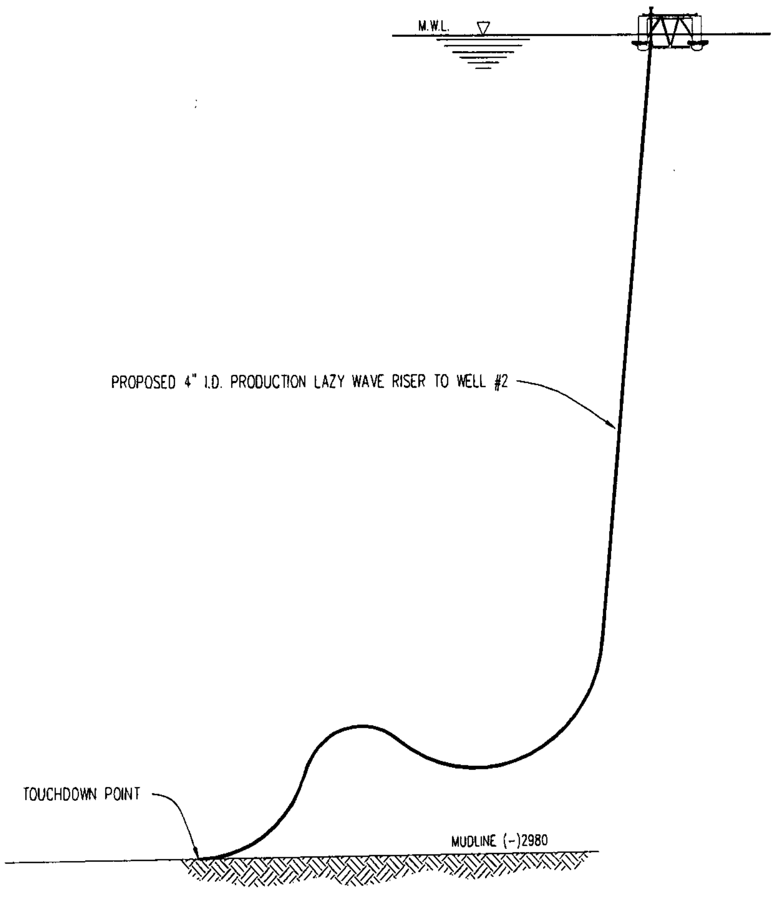
ELEVATION

PEGASUS International	ATP OIL & GAS CORPORATION BLUEWATER INDUSTRIES	MC-711 FIELD DEVELOPMENT PROPOSED (TYP.) UMBILICAL LAZY WAVE RISER	DWG NO. 1166190W020 JOB NO. 1166190 SCALE: 1"=750' SCALE VALID FOR A-SIZE DRAWING (8.5" x 11") ONLY. REV. A1
DRAWN BY: R. ACREE	ORIGIN. DATE: 02/23/05	REV. DATE:	

PLOT: Friday, March 18, 2005 9:30:00 AM BY: RICK ACREE LAST SAVE: 3/16/2005 10:08:10 AM BY: ---- FILE NAME: I:\BLUEWATER\1166190\1166190W020



KEY PLAN - "ROWAN MIDLAND"
SCALE: N.T.S.

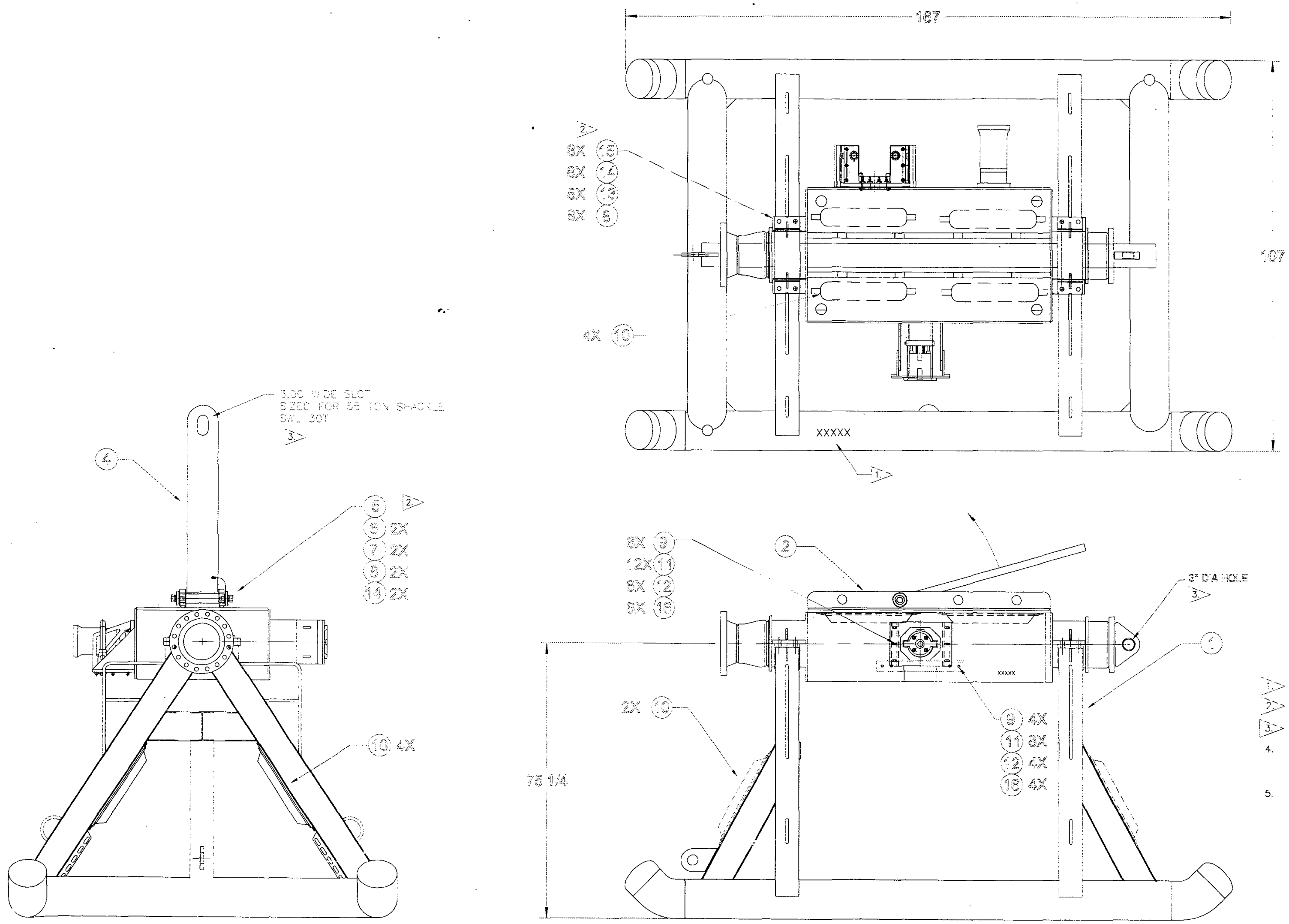


ELEVATION

PEGASUS International	ATP OIL & GAS CORPORATION BLUEWATER INDUSTRIES	MC-711 FIELD DEVELOPMENT	DWG NO. 1166190W021 JOB NO. 1166190
		PROPOSED 4" I.D. PRODUCTION LAZY WAVE RISER TO WELL #04ST01	SCALE: 1"=750' SCALE VALID FOR A-SIZE DRAWING (8.5" x 11") ONLY. REV. A2
DRAWN BY: R. ACREE	ORIGIN. DATE: 02/23/05	REV. DATE: 03/22/05	

PLOT: Tuesday, March 22, 2005 4:20:14 PM BY: RICK ACREE LAST SAVE: 3/22/2005 9:48:03 AM BY: ---- FILE NAME: I:\BLUEWATER\1166190\1166190W021

REVISIONS			
LTR	DESCRIPTION	INCORP BY	DATE
A	FOR APPROVAL	SHW	30 MAR 05



BEST AVAILABLE COPY

NOTES

1. STENCIL: WEIGHT AND JOB NO.-PART NO.-SERIAL NO. (44793-0218437) TO FRAME.
2. TORQUE ALL BODY CLAMPING BOLTS TO 200 FT./LBS. AT ASSEMBLY.
3. STENCIL SWL. ON PADEYES APPROX. WHERE SHOWN.
4. WEIGHT: MUD MAT WT: 3732 LBS.
   UTA BODY TUBE WITH YOKE – 3517 LBS.
   ASSEMBLED UTA – 7249 LBS.
5. ANODE WELDING TO BE IN ACCORDANCE WITH AWS D1.1 STRUCTURAL WELDING CODE. THESE WELDS WILL BE MADE AS PART OF ASSEMBLY PROCESS.

NOTES:

MATERIAL:	
RAW MAT'L SIZE:	
MATERIAL SPEC:	
NEXT ASSY:	
USED ON:	
CONTRACT NO:	
CAGE CODE:	2F262

OCEANEERING

OCEANEERING INTERNATIONAL, INC.
WWW.OCEANEERING.COM

TITLE
SUBSEA UMBILICAL TERMINATION
ATP MC711
ASSEMBLY

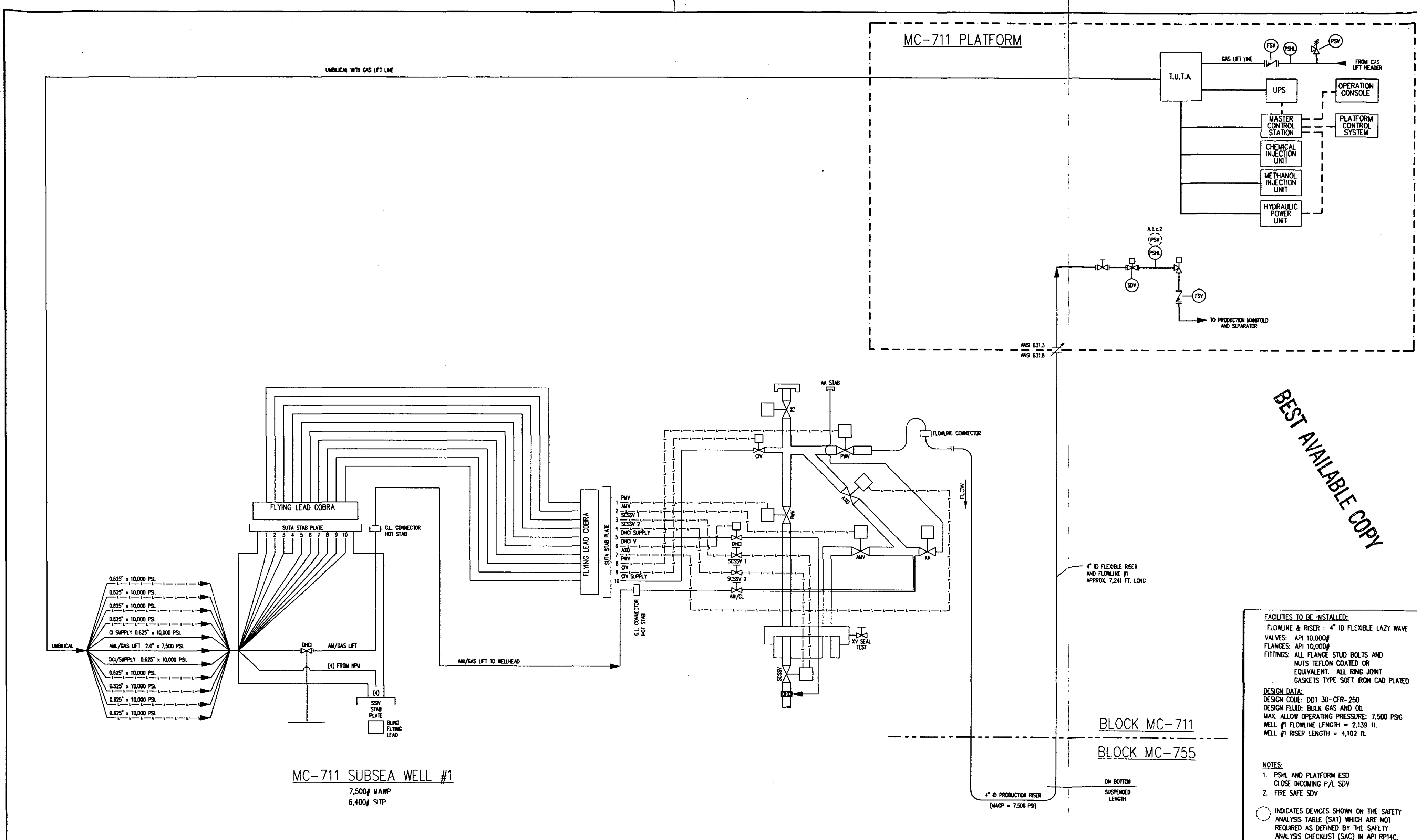
DRAWN:	S.WIBLE	DATE:	30 MAR 05
ENGR:	S.WIBLE	DATE:	30 MAR 05
PR MGR:	J.MCCRINDLE	DATE:	30 MAR 05

eSIGNATURES ON FILE

3RD ANGLE PROJECTION — DO NOT SCALE

SIZE	DWG. NO.	REV.
D	0218437	A

SCALE: NTS | WEIGHT: 7000 LBS | SHEET 1 OF 3



FACILITIES TO BE INSTALLED:

FLOWLINE & RISER : 4" ID FLEXIBLE LAZY WAVE
VALVES: API 10,000#
FLANGES: API 10,000#
FITTINGS: ALL FLANGE STUD BOLTS AND NUTS TEFLON COATED OR EQUIVALENT. ALL RING JOINT GASKETS TYPE SOFT IRON CAD PLATED

DESIGN DATA:

DESIGN CODE: DOT 30-CFR-250
DESIGN FLUID: BULK GAS AND OIL
MAX. ALLOW OPERATING PRESSURE: 7,500 PSIG
WELL #1 FLOWLINE LENGTH = 2,139 ft.
WELL #1 RISER LENGTH = 4,102 ft.

NOTES:

1. PSHL AND PLATFORM ESD CLOSE INCOMING P/L SDV
2. FIRE SAFE SDV

( ) INDICATES DEVICES SHOWN ON THE SAFETY ANALYSIS TABLE (SAT) WHICH ARE NOT REQUIRED AS DEFINED BY THE SAFETY ANALYSIS CHECKLIST (SAC) IN API RP14C.

NO.	DATE	BY	REVISION DESCRIPTION
B	05/18/05	NAA	ISSUED FOR PERMIT
A1	05/17/05	NAA	ISSUED FOR REVIEW AND COMMENT

THE INFORMATION PROVIDED ON THIS DRAWING IS NOT TO BE ACCEPTED AS VALID UNLESS AN ORIGINAL PROFESSIONAL ENGINEER'S STAMP IS INCLUDED IN THE SPACE PROVIDED AND THE STAMP IS ACCOMPANIED BY THE ORIGINAL DATE AND SIGNATURE OF THE ENGINEER.

ENGINEER'S STAMP:

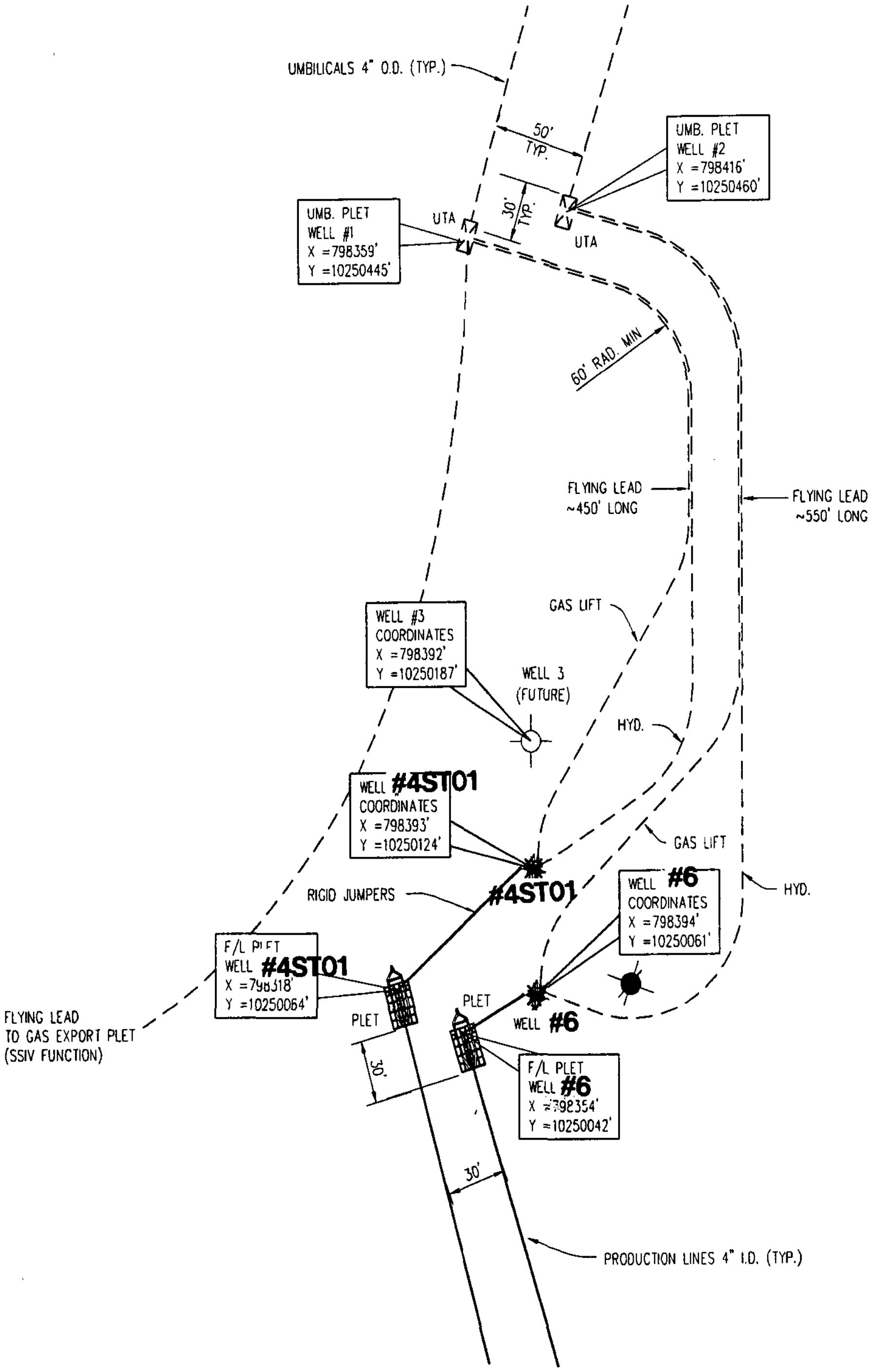
DRAWN BY: N. AVERY
DATE: 05/16/05
CHECKED BY: N. DRISKILL
DATE: 05/16/05
APPROVED BY: J. HINES
DATE: 5/18/05
PLOT SCALE: 1=1
SCALE: N.T.S.
SCALE VALID FOR D-SIZE DRAWING ONLY (24"x36")

ATP OIL & GAS CORPORATION
BLUEWATER INDUSTRIES
PEGASUS International

MC-711 FIELD DEVELOPMENT PHASE 1

WELL #04ST01 PRODUCTION RISER R.O.W. FLOWLINE SAFETY SCHEMATIC

JOB NO.	DWG NO.	SHEET NO.	REV.
1166190	1166190W029	00	B



PEGASUS International	ATP OIL & GAS CORPORATION BLUEWATER INDUSTRIES	MC-711 FIELD DEVELOPMENT	DWG NO. 1166190W025
			JOB NO. 1166190
		SUBSEA INFIELD LAYOUT	SCALE: AS SHOWN
			SCALE VALID FOR A-SIZE DRAWING (8.5" x 11") ONLY. REV. A1
DRAWN BY: R. ACREE	ORIGIN. DATE: 02/24/05	REV. DATE:	

FUGRO GEOSERVICES, INC.

Letter Report No. 2404-2081
April 13, 2005

6100 Hillcroft (77081)
P.O. Box 740010
Houston, Texas 77274
Tel: (713)369-5800
Fax: (713)369-5811

ATP Oil & Gas Corporation
4600 Post Oak Place
Houston, Texas 77027-9726

Attention: Robert M. Shivers III

Chemosynthetic Community Analysis
Gomez Development
Mississippi Canyon Blocks 711 and 755
Gulf of Mexico

Purpose and Scope

Submitted here is our analysis of the potential for disturbance of chemosynthetic communities in the vicinity of the proposed FPU (Floating Production Unit) mooring spread for the Gomez development in Mississippi Canyon Blocks 711 and 755 (OCS-G-14016 and 14017). The purpose of this analysis is to meet the requirements of MMS NTL No. 2000-G20, "Deepwater Chemosynthetic Communities" (Minerals Management Service, 2000) for deepwater development. This work was requested and authorized by ATP's Mr. Robert Shivers III via email dated 31 March 2005.

The scope of this study was limited to chemosynthetic analysis of the available pre-drilling geohazards ("site-survey"), 3-D exploration seismic, and geotechnical data. Assessment of any geohazards that may be present was beyond the scope of this study. Similarly, infrastructure, wellheads, debris, shipwrecks, and any other man-made features that may be present have not been investigated and are not shown on the map that accompanies this report.

Mooring Design

The proposed taut mooring system consists of four groups of three SEPLA anchors (Suction-Embedded PLate Anchors) each (Plate C-1). The anchor lines would include chain, extending 600 ft from each anchor, connected to poly line, which would extend to the FPU. The first 100 ft of chain from the anchor would be buried below the seafloor. The proposed anchor coordinates are as follows:

ANCHOR	WATER DEPTH (ft)	COORDINATES (NAD27; UTM16; FEET) X	Y
A1	~2,992	802,533	10,247,134
A2	~2,963	801,981	10,246,447
A3	~2,947	801,301	10,245,873
A4	~2,897	795,272	10,245,855
A5	~2,898	794,583	10,246,425
A6	~2,900	794,013	10,247,107
A7	~2,936	794,030	10,253,130
A8	~2,944	794,600	10,253,807
A9	~2,961	795,290	10,254,367
A10	~3,019	801,280	10,254,344
A11	~3,024	801,958	10,253,778
A12	~3,037	802,515	10,253,101
FPU	~2984	798,293	10,250,124

Plate C-1 shows in red the 500-ft maximum portion of each mooring chain that would lie on (or, within 100 ft of the anchor, below) the seafloor during the worst-case (that is, hurricane) conditions. The remaining 100 ft of chain and all of the poly line would always be above the seafloor in the water column, even during worst-case conditions. In practice, only the chains on the lee side of the spread would lie on the seafloor during a hurricane. Because it is a taut mooring system, the chains would not lie on the seafloor (except for the 100 ft of chain nearest to the anchor, which would always be buried) during installation or during normal (non-hurricane) operating conditions.

Data Used, Interpretive Methodology, and Mapping Criteria

1993 Pre-drilling Geohazards Data. A pre-drilling geohazards survey was done in 1993 by Kinsella, Cook & Associates covering MC Blocks 711 and 755. The grid surveyed was the standard 300 m by 900 m grid required by the MMS. Data collected included echo sounder, 3.5 kHz subbottom profiler, and analog FPUker data (no side-scan-sonar data were collected at this deepwater site). Because of the deepwater and analog data format, only the 3.5 kHz subbottom profiler (SBP) data were useful for this study. Overall, the quality of the SBP data is as good as can be expected when using near-sea-surface-deployed transducers at this deepwater site, and generally the quality is judged to be adequate for chemosynthetic community analysis.

2004 Pipeline Survey Data. In 2004 Fugro carried out a pipeline route survey between MC Block 711 and Grand Isle Block 115 using a deeptow system. Multibeam bathymetric, side-scan sonar, and subbottom profiler data were collected. The survey grid consisted of 5 parallel lines that run east-west and more-or-less straddle the boundary between blocks 711 and 755. Line spacing varies between about 850 and 1200 ft. Consequently, this data set covers only part of the anchor spread. However, all side-scan and SBP data were reviewed in the workstation as part of the chemosynthetic analysis. All of these data are judged to be of good quality.

3-D Exploration Seismic Data. A 3-D exploration seismic data volume was made available by ATP for this chemosynthetic analysis. The 3-D data coverage is shown on Plate C-1. Bin spacing is 87.5 by 87.5 ft. Although the 3-D data is of much lower vertical resolution than the SBP data, is does give useful bathymetric details, shows seafloor amplitude variations that helped to identify potential seep zones, and shows some hydrocarbon source zones. For 3-D exploration seismic data, the quality is judged to be generally good.

2005 Geotechnical Data. A jumbo piston core and a seafloor-deployed cone penetrometer test were done near the center of each of the four anchor clusters. In addition, one deep (130 ft BML) rotary boring and one seafloor-deployed cone penetrometer test were done at the center of the proposed anchor layout. This work was done in early 2005 (Fugro-McClelland, 2005a and 2005b). Data quality is very good.

Interpretive Methodology. To facilitate interpretation, the 3-D exploration seismic and deeptow data were loaded onto a PC-based workstation running SMT's Kingdom suite of interpretation software. In addition, selected lines of the 1993 analog geohazards data in the vicinity of proposed anchors were converted into SEG-Y format and also loaded onto the workstation, along with the available geotechnical data. We also reviewed all analog paper records of the 1993 SBP data. Our chemosynthetic analysis discussed here and results presented on the accompanying map were based on using and integrating all of these data.

Results of the 1993 survey as shown on the "Seafloor Features Map" included in the geophysical survey report prepared by Kinsella, Cook & Associates (1993) were supplemented and modified somewhat based on interpretation of the additional deeptow and 3-D exploration seismic data now available. Specifically, the outlines of some of the areas interpreted as possible seeps were modified from the 1993 interpretation, and some possible seeps not mapped in 1993 were added. The faults shown on Plate C-1 were copied without modification from the 1993 map.

Water depth contours shown on Plate C-1 were generated from the 3-D seismic data using the generic Advocate & Hood (1993) velocity function. Water depths are approximate and are estimated to be accurate within ±20 ft where the seafloor is flat and featureless. Depths may be less accurate elsewhere.

Mapping Criteria. Interpretation and mapping of features (possible seeps) that could support dense communities of chemosynthetic organisms were based on geomorphology, acoustic character, or a combination of the two (wipe-out zones, "gas chimneys", anomalously high amplitudes, seafloor mounds, disturbed seafloor seen on side-scan sonar data, etc.). Possible seeps were interpreted and mapped as shown on the Water Depth and Seafloor Features Map (Plate C-1) using all available subbottom profiler, side-scan sonar, and 3-D seismic data. All seep boundaries are interpretive, and actual boundaries may be somewhat different. Mapping scale was 1:12,000 (1" = 1,000 ft). Only those high-resolution tracklines that pass near possible seeps in the vicinity of the proposed anchor spread are shown on the map (Plate C-1).

Chemosynthetic Analysis

Principal Results. The principal results of our analysis show that there are several possible seafloor hydrocarbon seeps in the general vicinity of the proposed mooring spread (Plate C-1). No proposed anchor locations are within areas identified as possible seeps. Proposed locations for Anchors A-2 and A-3 are both within 450 ft of a relatively small area interpreted as a possible seep (possible seep 2 on Plate C-1), and the anchor chain for Anchor A-2 could lie on the seafloor across this same possible seep during worst-case (hurricane) conditions. The anchor chains for Anchors A-1 and A-3 could lie on the seafloor about 450 ft from possible seep 2 during worst-case (hurricane) conditions. The poly lines for Anchors A-2 and A-3 would always be in the water column in the vicinity of the nearby possible seep 3. Similarly, the poly line for Anchor A-12 would always be in the water column where it passes closest to possible seep 1.

Our judgment is that it is unlikely that there are dense chemosynthetic communities at the small possible seeps (possible seeps 2 and 3) near the locations proposed for anchors A-2 and A-3 and their associated anchor lines. Dense communities may populate the large possible seep (possible seep 1) past which the line for proposed Anchor A-12 would pass. However, the poly line for Anchor A-12 would always be well-up in the water column where it passes closest to possible seep 1.

Discussion of Possible Seeps. Many of the possible seeps in the study area, and all possible seeps within 500 ft of proposed anchor locations, are relatively small, are not always well-defined even on the high-resolution survey data, and cannot be detected using the 3-D seismic data. The notable exception is the large possible seep between proposed Anchors A-1 and A-12 (possible seep 1). All seismic data that images this feature suggest that it is a large, active, deep-seated seep.

None of the possible seeps, including possible seep 1 between Anchors A-1 and A-12, appear to be associated with deep-seated faults that could act as hydrocarbon migration pathways. All seafloor or near-seafloor faults in the area are relatively short, have small offset, and extend downward only to shallow depths. Most are slump faults that have resulted from differential consolidation and movement of shallow strata. Virtually all faults shown on Plate C-1 northeasterly of the proposed anchor spread are slump faults that toe-out within shallow buried landslide deposits that underlie this large area. We cannot determine conclusively from the available data if these faults are now active and continue to undergo slow differential offset, or if they are now stabilized. We found no evidence for leaking hydrocarbons associated with any of the faults.

The origin of the hydrocarbons that may be seeping out of the seafloor is uncertain. However, with one clear exception, possible seeps appear to overlie and be sourced from relatively small, local accumulations of hydrocarbons typically between ~500 and ~1200 ft BML rather than from deep reservoirs. These accumulations are generally seen as relatively small, scattered, isolated "bright spots", which are common on the 3-D seismic data in this interval. The notable exception is possible seep 1 between proposed Anchors A-1 and A-12, which appears to have a migration pathway that extends downward for thousands of feet.

If any of the seeps are actively venting adequate volumes of hydrocarbons, then they could support a dense community of chemosynthetic organisms. However, the data available does not allow us to conclusively determine if the seeps are active or not. Further, geophysical data alone is not capable of indicating the presence or absence of chemosynthetic organisms even if the seeps are active. None of the geotechnical sampling was done at possible seep sites.

Proposed Anchor Location A-1. Possible hydrocarbon seeps or other areas or features that could support high-density chemosynthetic communities are not located within 500 ft of any seafloor disturbances that would result from installation of Anchor A-1 at the proposed location. About 500 ft northwest of Anchor A-1, the anchor chain for Anchor A-1 would be within ~450 ft of the edge of possible seep 2 (Plate C-1). However, dense communities of chemosynthetic organisms are not expected at this possible seep because of its small areal size (~1050 ft by ~400 ft; ~6.9 acres), no clear seafloor expression, no associated deep-seated fault, and minimal acoustic signature on subbottom profiler data (it is not identifiable on the 3-D seismic data).

Proposed Anchor Location A-2. The proposed location for Anchor A-2 is ~80 ft east of possible hydrocarbon seep 2. For a distance of ~400 ft immediately northwest of Anchor A-2, the chain for Anchor A-2 could lie on the seafloor across this possible seep during worst-case (hurricane) conditions (Plate C-1). However, dense communities of chemosynthetic organisms are not expected at this possible seep because of its small areal size (~1050 ft by ~400 ft; ~6.9 acres), no clear seafloor expression, no associated deep-seated fault, and minimal acoustic signature on subbottom profiler data (it is not identifiable on the 3-D seismic data). The poly line for Anchor A-2 would always be in the water column in the vicinity of the nearby possible seep 3.

Proposed Anchor Location A-3. The proposed location for Anchor A-3 is ~450 ft southwest of possible hydrocarbon seep 2 described above. And, the anchor chain for Anchor A-3 would pass as close as ~450 ft to this possible seep zone (Plate C-1). However, dense communities of chemosynthetic organisms are not expected at this possible seep because of its small areal size (~1050 ft by ~400 ft; ~6.9 acres), no clear seafloor expression, no associated deep-seated fault, and minimal acoustic signature on subbottom profiler data (it is not identifiable on the 3-D seismic data). The poly line for Anchor A-3 would always be in the water column in the vicinity of the nearby possible seep 3.

Proposed Anchor Location A-4. Possible hydrocarbon seeps or other areas or features that could support high-density chemosynthetic communities are not located within 500 ft of any seafloor disturbances that would result from installation of Anchor A-4 or its associated anchor line at the proposed location.

Proposed Anchor Location A-5. Possible hydrocarbon seeps or other areas or features that could support high-density chemosynthetic communities are not located within 500 ft of any seafloor disturbances that would result from installation of Anchor A-5 or its associated anchor line at the proposed location.

Proposed Anchor Location A-6. Possible hydrocarbon seeps or other areas or features that could support high-density chemosynthetic communities are not located within 500 ft of any seafloor disturbances that would result from installation of Anchor A-6 or its associated anchor line at the proposed location.

Proposed Anchor Location A-7. Possible hydrocarbon seeps or other areas or features that could support high-density chemosynthetic communities are not located within 500 ft of any seafloor disturbances that would result from installation of Anchor A-7 or its associated anchor line at the proposed location.

Proposed Anchor Location A-8. Possible hydrocarbon seeps or other areas or features that could support high-density chemosynthetic communities are not located within 500 ft of any seafloor disturbances that would result from installation of Anchor A-8 or its associated anchor line at the proposed location.

Proposed Anchor Location A-9. Possible hydrocarbon seeps or other areas or features that could support high-density chemosynthetic communities are not located within 500 ft of any seafloor disturbances that would result from installation of Anchor A-9 or its associated anchor line at the proposed location.

Proposed Anchor Location A-10. Possible hydrocarbon seeps or other areas or features that could support high-density chemosynthetic communities are not located within 500 ft of any seafloor disturbances that would result from installation of Anchor A-10 or its associated anchor line at the proposed location. All seafloor or near-seafloor faults in the vicinity of proposed anchor location A-10 (Plate C-1) are small-offset slump faults that extend downward only to shallow depths. We found no evidence for leaking hydrocarbons associated with these faults.

Proposed Anchor Location A-11. Possible hydrocarbon seeps or other areas or features that could support high-density chemosynthetic communities are not located within 500 ft of any seafloor disturbances that would result from installation of Anchor A-11 or its associated anchor line at the proposed location. All seafloor or near-seafloor faults in the vicinity of proposed anchor location A-11 (Plate C-1) are small-offset slump faults that extend downward only to shallow depths. We found no evidence for leaking hydrocarbons associated with these faults.

Proposed Anchor Location A-12. Possible hydrocarbon seeps or other areas or features that could support high-density chemosynthetic communities are not located within 500 ft of any seafloor disturbances that would result from installation of Anchor A-12 at the proposed location. All seafloor or near-seafloor faults in the vicinity of proposed anchor location A-12 (Plate C-1) are small-offset slump faults that extend downward only to shallow depths. We found no evidence for leaking hydrocarbons associated with these faults. The poly line for Anchor A-12 would always be well-up in the water column where it passes closest to possible seep 1.

Conclusions

We conclude that the proposed mooring spread is unlikely to disturb dense communities of chemosynthetic organisms. This is because both of the possible seeps within 500 ft of proposed anchor or on-bottom anchor-line locations (that is, possible seeps 2 and 3) are relatively small and do not appear to have a deep-seated "reservoir" origin that would probably be required to provide adequate rates of hydrocarbon seepage necessary to support dense chemosynthetic communities.

Closing

We appreciate the opportunity to work with you on this project and look forward to working with you again as your site investigation consultants. If you have any questions concerning this report, please contact me at (713) 369-5805 or via email at kcampbell@fugro.com.

Sincerely,

FUGRO GEOSERVICES, INC.

Kerry J. Campbell, P.G.
Manager, Geoscience Consulting Services
713-369-5805 kcampbell@fugro.com

STATE OF TEXAS
Kerry J. Campbell
Geology
1904
LICENSED
PROFESSIONAL GEOSCIENTIST

REFERENCES

Advocate, D.M. and Hood, K.C., (1993), "An Empirical Time-Depth Model for Calculating Water Depth, Northwest Gulf of Mexico", in Geo-Marine Letters, Bouma, A.H., editor, Volume 13, p. 207-211.

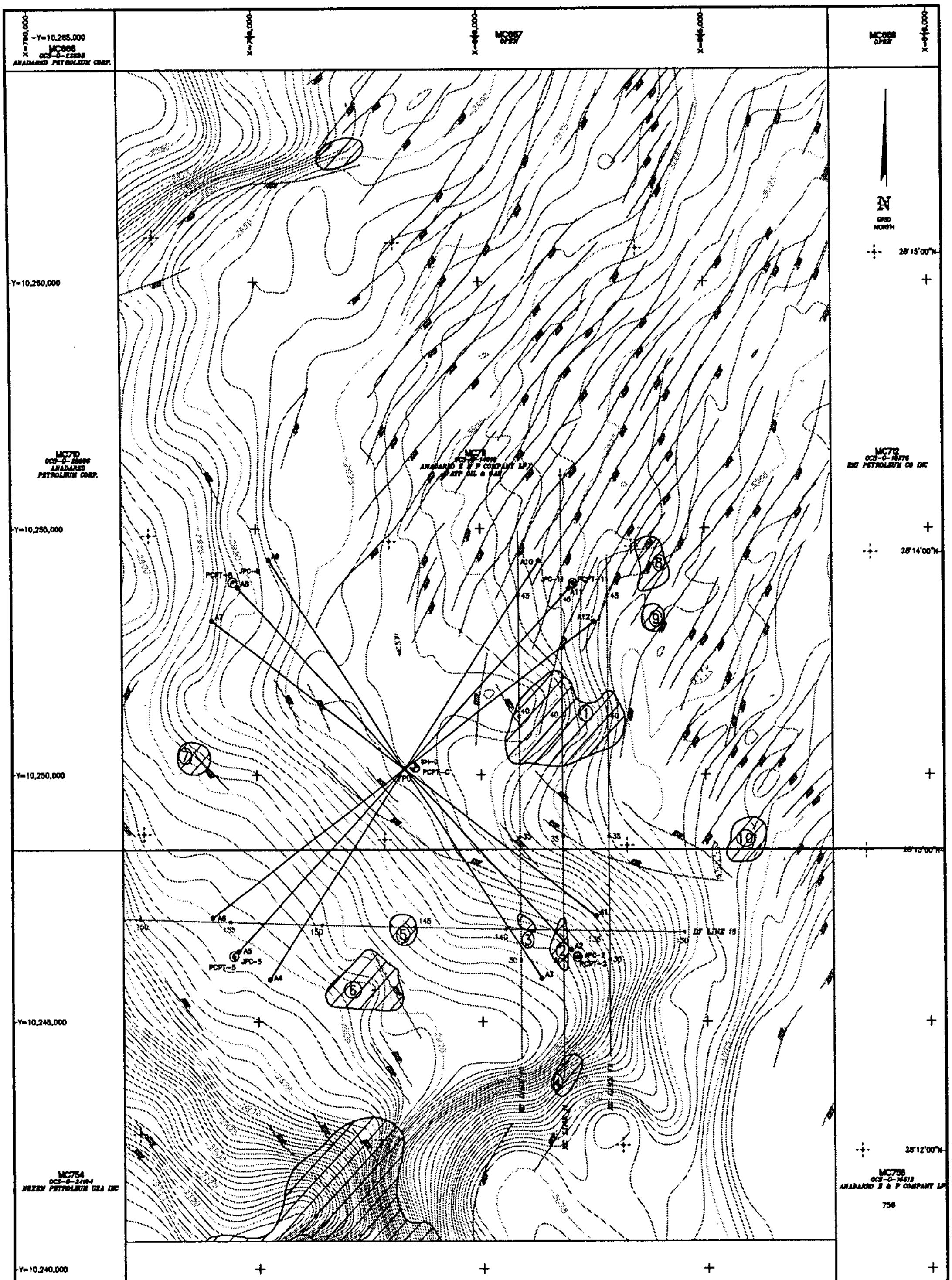
Fugro GeoServices, Inc., (2004), "Archeological, Engineering, and Hazard Survey of Proposed 8" Oil and 10" Gas Export Pipelines from Mississippi Canyon Area Block 711 to Grand Isle Area Block 115", deeptow survey report done for ATP Oil & Gas Corporation c/o Bluewater Industries (Report Number 2404-5005, 16 November 2004).

Fugro-McClelland Marine Geosciences, Inc., (2005a), "Geotechnical Investigation, Gomez Prospect, Blocks 711 & 755, Mississippi Canyon Area, Gulf of Mexico", field report on jumbo piston coring and PCPT testing done for ATP Oil & Gas Corporation (Field Report No. 0201-5420, 18 February 2005).

Fugro-McClelland Marine Geosciences, Inc., (2005b), "Addendum to the Geotechnical Investigation, Gomez Prospect, OCS-G-14016, Boring BH-C, Block 711, Mississippi Canyon Area, Gulf of Mexico", for ATP Oil & Gas Corporation (Field Report No. 0201-54207, addendum letter dated 7 March 2005).

Kinsella, Cook & Associates, Inc., (1993), "Geophysical Survey Report, Blocks 711 and 755, Mississippi Canyon Area, Offshore Louisiana, OCS-G-14016 and 14017", pre-drilling geohazards report done for Union Pacific Resources Company (13 September 1993).

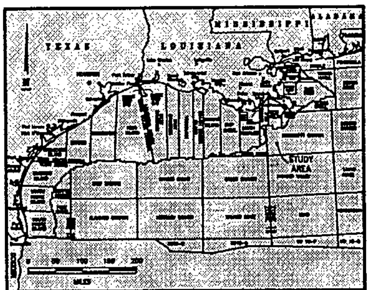
Minerals Management Service, (2000), "Deepwater Chemosynthetic Communities", Notice to Lessees and Operators of Federal Oil, Gas, and Sulphur Leases in the Outer Continental Shelf, Gulf of Mexico Region (NTL No. 2000-G20, issued 6 December 2000).



PROPOSED ANCHOR AND FPU LOCATIONS

ANCHOR NUMBER	X COORDINATE	Y COORDINATE
A1	802,533'	10,247,134'
A2	801,981'	10,248,447'
A3	801,301'	10,245,873'
A4	795,272'	10,245,855'
A5	794,583'	10,246,425'
A6	794,013'	10,247,107'
A7	794,030'	10,253,130'
A8	794,600'	10,253,807'
A9	795,290'	10,254,367'
A10	801,280'	10,254,344'
A11	801,958'	10,253,778'
A12	802,515'	10,253,101'
FPU	798,293'	10,250,124'

MC755
NEXEN PETROLEUM USA INC



BASE MAP INFORMATION

AREA OF 3-D SEISMIC DATA.

PROPOSED FPU ANCHOR LAYOUT.

A1 — PROPOSED INDIVIDUAL ANCHOR LOCATION AND CORRESPONDING ANCHOR LINE. FOR WORST-CASE (HURRICANE) OPERATING SCENARIO, BLACK INDICATES WHERE ANCHOR LINE WILL ALWAYS BE IN WATER COLUMN; RED INDICATES MAXIMUM DISTANCE FROM ANCHOR THAT CHAIN WILL BE ON SEAFLOOR (EXTENDS TO A MAXIMUM OF 500 FT FROM THE ANCHOR; NOTE THAT CHAIN WILL BE BURIED BELOW SEAFLOOR TO ABOUT 100 FT FROM ANCHOR).

PCPT-2 — CONE PENETROMETER LOCATION (2005).

JPC-2 — JUMBO PISTON CORE LOCATION (2005).

BH-C — ROTARY BORING LOCATION (2005).

DF LINE 12 — SELECTED HIGH-RESOLUTION LINE WITH FIXMARKS.

FPU ■ — PROPOSED FPU LOCATION.

INTERPRETIVE INFORMATION

WATER DEPTH CONTOUR, IN FEET. CONTOUR INTERVAL IS 5 FEET. WATER DEPTHS WERE DERIVED FROM 3-D EXPLORATION SEISMIC DATA AND ARE APPROXIMATE. DEPTHS ARE GENERALLY ESTIMATED TO BE ACCURATE WITHIN ±20 FEET WHERE THE SEAFLOOR IS FLAT AND FEATURELESS; DEPTHS MAY BE LESS ACCURATE ELSEWHERE.

SEAFLOOR OR SHALLOW FAULT MOSTLY CAUSED BY CONSOLIDATION OF BURIED LANDSLIDE DEPOSITS; FAULTS ARE NOT DEEP-SEATED. HOUSE SHOWS DIRECTION OF FAULT DIP.

POSSIBLE HYDROCARBON SEEP ZONE IDENTIFIED PRINCIPALLY USING HIGH-RESOLUTION SITE-SURVEY DATA OR 3-D EXPLORATION SEISMIC DATA. NUMBER IS TO FACILITATE CROSS-REFERENCE WITH REPORT TEXT.

NOTE:
INFRASTRUCTURE, WELLHEADS, DEBRIS, SHIPWRECKS, AND ANY OTHER MAN-MADE FEATURES THAT MAY BE PRESENT ARE NOT SHOWN ON THIS MAP.

SPHEROID:	CLARKE 1866	FLATTENING:	1/294.98
SEMI MAJOR AXIS:	6,378,206.4 m	SCALE FACTOR:	0.99960
PROJECTION:	UTM	CENTRAL MERIDIAN:	87W
DATUM:	NAD 1927	LAT. ORIGIN:	0.00000 N
ZONE:	16	FALSE EASTING:	500,000 m
GRID UNITS:	FEET	FALSE NORTHING:	000000 m

SCALE = 1:12,000

0 1,000 2,000 3,000 4,000 5,000

FEET

WATER DEPTH AND SEAFLOOR FEATURES MAP

GOMEZ DEVELOPMENT BLOCKS 711 AND 755 MISSISSIPPI CANYON AREA GULF OF MEXICO

ATP OIL & GAS

CONTOUR INTERVAL: 5 FEET	
DATUM: SEA SURFACE	
VELOCITY: HARMONIC MEAN (ADVOCATE AND HOOD, 1993)	
POSITIONING BY:	DRAFTED BY: J. MURRAY
INTERPRETATION BY: C. BRAUN	CHECKED BY: K. J. CAMPBELL
DATE: 12 APRIL 2005	REVISION NO.:
JOB NO.: 2405-2081	DWG NO.: 2081WDSF12.DWG

PLATE C-1 SHEET NO. 1 OF 1

FUGRO

	A	B	C	D	E	F	G	H
1	**Right-of-Way Pipeline Application**			Segment No.:				
2								
3	Instructions:							
4	1. Complete one form for the pipeline segment submitted in your application. A ROW							
5	application may only contain one proposed pipeline segment.							
6	2. Complete one form for each unattached umbilical submitted in your application.							
7	3. Provide response/data for all items that are shaded. Other items as required.							
8	4. Provide one original and three identical copies of all application materials.							
9								
10	**Pipeline Route Data**							
11	List all blocks and lease numbers contacted by the pipeline. (Insert rows as needed)	**Area**	**Block No.**	**Lease No.**	**Operator**			
12	(If block is unleased, so note.)							
13		Mississippi Canyon	711	G14016	Anadarko E&P Company LP/ ATP Oil and Gas Corporation			
14		Mississippi Canyon	755	G24105	Nexen Petroleum U.S.A. Inc.			
15								
16								
17	**Contact Information**							
18	Applicant company name (ROW permittee/holder)	ATP Oil and Gas Corporation						
19	Name of company representative signing application	Mickey W. Shaw						
20	Phone No.	713-622-3311						
21	Fax	713-403-7002						
22	E-Mail	mshaw@atpog.com						
23	Mailing address	4600 Post Oak Place Suite 200						
24		Houston, Texas 77027-9726						
25								
26	ROW holder's MMS code (five digit)	1819						
27								
28	Designated operator company name	ATP Oil and Gas Corporation						
29	Phone No.	713-622-3311						
30	Fax	NA						
31	E-Mail							
32	Mailing address	4600 Post Oak Place Suite 200						
33		Houston, Texas 77027-9726						
34								
35	Operator's MMS code (five digit)	1819						
36								
37	Regulatory contact (Name)	Sharon DeSimoni						
38	Company name	J. Connor Consulting, Inc.						
39	Phone No.	281-578-3388						
40	Fax	281-578-8895						
41	E-Mail	sharon.desimoni@jccteam.com						
42								
43	Technical contact (Name)	Daniel H. Longwell, P.E.						
44	Company name	Bluewater Industries						
45	Phone No.	713-802-2060						
46	Fax	713-802-2063						
47	E-Mail	dlongwell@bluewaterindustries.com						
48								
49	**Fees**							
50	Application fee of $2,350 enclosed? (Required)	Yes						
51	Rental fee of $15 per mile or every fraction thereof enclosed? (Required)	Yes						
52	Right-of-way length (miles) e.g., 5.71	1.48						
53	Total check amount	$2,380.00						
54	Check date	5/18/2005						
55	Check number	415721						
56	Name of financial institution upon which check is written	Chase Bank Of Texas						
57								
58	**Basic Pipeline Data**							

	A	B	C	D	E	F	G	H
59	Line service, e.g., oil, gas, bulk gas, lift, injection, service, etc.	Oil & gas						
60	Total pipeline length (feet) - excluding riser(s)	7,833						
61	Length of pipeline in Federal waters (feet)	7,833						
62	Length of pipeline in State waters (feet/NA)	0						
63	Pipeline designed for bi-directional flow? (Y/N)	Yes						
64	Alternate line service, e.g., oil, gas, bulk gas, lift, injection, service, etc.	N/A						
65	Supervisor Control and Data Acquisition system for leak detection installed? (Y/N)	No						
66	If yes, system type, e.g., over/short, pressure point analysis, volumetric, etc.	N/A						
67								
68	**Pipeline Origin**							
69	Type Facility, e.g., Platform, Well, Subsea Well, PLEM, Subsea Manifold, Subsea Tie-in	MC 711 Subsea Well No 004ST01						
70	Number/identifier, e.g. A, 1, 4-B, 13336 (Number/Segment Number/identifier/NA)	Well No 004ST01						
71	Manned platform? (Y/N/NA)	NA						
72	Area	Mississippi Canyon						
73	Block	711						
74	OCS Lease	OCS-G-14016						
75	Pig launcher? (Y/N)	No						
76	System designed for "smart" pigs? (Y/N/NA)	No						
77								
78	**Pipeline Destination**							
79	Type Facility, e.g., Platform, Well, Subsea Well, PLEM, Subsea Manifold, Subsea Tie-in	MC 711 Gomez FOI						
80	Number/identifier, e.g. A, 1, 4-B (Number/Segment Number/identifier/NA)	"A"						
81	Manned platform? (Y/N/NA)	Yes						
82	Area	Mississippi Canyon						
83	Block	711						
84	OCS Lease	OCS-G-14016						
85	Pig receiver? (Y/N/NA)	No						
86								
87	**Pipeline Appurtenances**							
88	Manifold/subsea templates/etc. along pipeline other than at origin or destination? (Y/N)	Yes						
89	If yes, specify appurtenant type	Umbilical						
90	If yes, specify appurtenant area and block location, e.g., MP 134	MC 711						
91								
92	**Construction/Air Quality Data**							
93	Pipeline installation method, e.g., lay barge, DP vessel, jack up	DP vessel						
94	Maximum anchor spread (feet or NA)	NA						
95	Onshore Facility Location	Amelia, LA						
96	Pipeline construction duration (days)	42 Days						
97	Construction start date (projected)	8/1/2005						
98								
99	**Pipeline product data**							
100	Design maximum flow rate of gas (mmcf/d)	10						
101	Gravity of gas (Air = 1.0)	0.813						
102	Design maximum flow rate of oil/condensate (b/d)	9,000						
103	API or specific gravity of oil/condensate	0.88						
104	H2S concentration (ppm)	Nil						
105	Maximum anticipated pipeline temperature (degrees F)	120						
106	CO_2 concentration (ppm)	4200						
107	Inhibition program planned? (Y/N)	Yes						
108	Hydrates anticipated (Y/N)	No						
109	Paraffin anticipated (Y/N)	No						
110								
111	**Submerged Component Design Data**	**Diameter 1**	**Diameter 2**	**Diameter 3**				
112	Outside diameter (inches)	6.895" - dynamic flexible pipe						
113	Wall thickness (inches)	1.4475 - layers, as per riser data						
114	Grade	NA						
115	Hydrostatic test pressure (psig)	9,375						
116	HTP duration (hours) (Must be equal to or greater than eight)	8						

	A	B	C	D	E	F	G	H
117	Type external corrosion coating	polypropylene						
118	Corrosion coating thickness (mils)	236						
119	Concrete coating density (pcf)	NA						
120	Coating thickness (inches)	NA						
121	Type internal corrosion coating (Type/NA)	NA						
122	Coating thickness (mils) (Mils/NA)	NA						
123	Bare pipe specific gravity	1.83						
124	Weighted pipe specific gravity	NA						
125	Pipe is non-standard? (Y/N)	Yes						
126	If yes, note type, e.g., coil tubing, pipe-in-pipe, flexible pipe, other (specify) (Type/NA)	Flexible Pipe						
127								
128	**Cathodic Protection Design Data**							
129	Design Type, e.g., bracelet anodes, anode sleds	NA						
130	Anode Type, e.g. Galvalum III, Aluminum, etc.	NA						
131	Net anode weight (pounds)	NA						
132	Spacing (feet)	NA						
133	Number of anodes	NA						
134	Anode life (years)	NA						
135	Designs for systems other than bracelet anodes required. (Attached/NA)	NA						
136								
137								
138	**Departing Riser Design Data**	**Diameter 1**	**Diameter 2**	**Diameter 3**				
139	Outside diameter (inches)	6.895" - flexible pipe						
140	Wall thickness (inches)	1.4475 - layers, as per riser data						
141	Grade	NA						
142	Hydrostatic test pressure (psig)	9,375						
143	HTP duration (hours) (Must be equal to or greater than eight)	8						
144	splash zone=S.Z.	**Below S.Z.**	**In S.Z.**	**Above S.Z.**				
145	Type external corrosion coating	same						
146	Coating thickness (mils or inches)							
147	Type internal corrosion coating (Type/NA)							
148	Coating thickness (mils) (Mils/NA)							
149	Riser guard design attached? Required if origin is caisson or platform (Y/NA)							
150	Catenary riser? (Y/N)							
151	If yes, VIV reduction, installation tension, anchoring, tension monitoring attached? (Y/NA)							
152								
153	**Receiving Riser Design Data**	**Diameter 1**	**Diameter 2**	**Diameter 3**				
154	Outside diameter (inches)	N/A						
155	Wall thickness (inches)							
156	Grade							
157	Hydrostatic test pressure (psig)							
158	HTP duration (hours) (Must be equal to or greater than eight)							
159	splash zone=S.Z.	**Below S.Z.**	**In S.Z.**	**Above S.Z.**				
160	Type external corrosion coating							
161	Coating thickness (mils or inches)							
162	Type internal corrosion coating (Type/NA)							
163	Coating thickness (mils) (Mils/NA)							
164	Riser guard design attached? Required if origin is caisson or platform (Y/NA)							
165	Catenary riser? (Y/N)							
166	If yes, VIV reduction, installation tension, anchoring, tension monitoring attached? (Y/NA)							
167								
168	**Flange and Valve Data**							
169	Flange type (ANSI/API)	API 10K						
170	Flange pressure rating (psig)	10,000						
171	Derated pressure rating (psig/NA)	N/A						
172	Valve type (ANSI/API)	API 10K						
173	Valve pressure rating (psig)	10,000						
174	Derated pressure rating (psig/NA)	N/A						
175								

	A	B	C	D	E	F	G	H
176	**Pipeline Burial Data**							
177	Buried minimum of three feet? Y/N/Self (Burial required if less than 200' water depth)	No						
178	Burial method (jet, plow, self, other(specify))	N/A						
179	If self burial, provide seafloor strength in ksf. (Must be less than 0.2 ksf) (kips/NA)	N/A						
180	Data supporting self burial attached? (Y/NA)	N/A						
181								
182	**Miscellaneous Data**							
183	Non-discrimination in employment form attached? (Required)	Yes						
184								
185	**Oil Spill Financial Responsibility Requirement Determination**							
186	Static Pipeline Volume (Bbls.) If greater than 1,000 then WCD volume required	122						
187	Worst case discharge volume (Bbls.) If greater than 1,000 then OSFR required	NA						
188	Proposed Right-of-Way included under company OSFR coverage? (Yes/Pending/NA)	NA						
189								
190	Certified plat attached? Plat is required.	Yes						
191	Diskette per NTL 98-09 attached? Diskette is required.	Yes						
192								
193	Does pipeline cross into State waters (Y/N)	No						
194	If yes, State permit required (Attached/Applied For/NA)	N/A						
195	If yes, COE permit required (Attached/Applied For/NA)	N/A						
196								
197	Minimum water depth (feet below sea level)	2940						
198	Maximum water depth (feet below sea level)	2980						
199								
200	Water depth greater than 400 meters? (Y/N)	Yes						
201	If Yes, Chemo study required (see NTL 2000-G20) (Attached/NA)	previously submitted						
202								
203	Deep Water Operations Plan submitted to MMS? (See NTL 2000-N06) (Y/NA)	Yes						
204	If yes, date submitted (Date/NA)	25-Mar-05						
205								
206	Pipeline to be towed to location? (Y/N)	No						
207	If yes, dragged on bottom? (Y/N/NA)							
208								
209	Artificial reef in vicinity? (Y/N)	No						
210	If Yes and PL in La., PL must be > 500' away. Confirm Y/NA							
211	Distance to reef (feet).							
212	If Yes and PL in TX., PL must be > seven times water depth away. Confirm Y/NA							
213	Distance to reef (feet).							
214								
215	Hazard Report submitted? (Yes) Hazard Report is required.	Yes						
216								
217	Shallow Hazards Analysis Statement included? (Yes) SHAS is required in cover letter	Yes						
218								
219	Umbilical associated with pipeline? (Y/N)	Yes						
220	Umbilical type, e.g., hydraulic, electric, other(specify) (Type or NA)	hydraulic/gas lift						
221	Umbilical outside diameter (inches) (Diameter or NA)	4-inch						
222	Attached to pipeline? (Y/N/NA; If No, will be assigned a unique segment number)	No						
223	If no, separate application form attached? (Yes/NA)	No - Considered Appurtenance						
224								
225	Does pipeline contact anchorage area or fairways? (Y/N)	No						
226	If Yes, burial depth in anchorage areas or fairways consistent with COE permit? (Y/NA)	NA						
227	If yes, COE permit attached? (Y/NA/Pending)	NA						
228								
229	**Pipeline Crossing Data**							
230	Does proposed pipeline cross an existing pipeline (Y/N)	No						
231	If yes, enter noted data, adding data rows as required.	**Operator**	**Segment No.**	**Size (inches)**	**Service**	**Notified?**		
232								
233	If yes, minimum clearance between lines must be 18". (Yes/NA)	N/A						

	A	B	C	D	E	F	G	H
234	If yes and < 500' water depth, must have 3' cover or concrete mats. (Confirm cover or concrete mat.)	N/A						
235	If sand bags, slope is 3/1. (Confirm Yes/NA)	N/A						
236	If concrete mat, specify manufacturer	N/A						
237	If concrete mats, mat edges jetted below mudline. (Yes/NA)	N/A						
238	Crossed pipeline operator notified? (Y/N/O O = crossed pipeline owned by applicant)	N/A						
239								
240	**H_2S Contingency Plan and Modeling Data**							
241	H_2S Operations Contingency Plan attached as H_2S concentration greater than 20 ppm (Y/Pending/NA)	NA						
242	Air Dispersion Model attached as H_2S concentration greater than 500 ppm (Y/pending/NA)	NA						
243	H_2S Crossing Contingency Plan attached as crossed pipeline carries H_2S in concentrations greater than 20 ppm (Y/Pending/NA)	NA						
244								
245	**Subsea Tie-In Data**							
246	Does pipeline tie into a subsea pipeline? (Y/N)	No						
247	Ties to existing valve or hot tap? (Identify which/NA)							
248	Segment number of pipeline being tied in to (SN/NA)							
249	MAOP of pipeline being tied in to (MAOP/NA)							
250	If existing valve, letter of no objection from tie-in operator attached? (Yes/NA)							
251	If hot tap, appurtenance application submitted to MMS? (Yes/NA)							
252	Is assembly snag proofed? (Y/NA) Required if less than 500' water depth.							
253	If sand bags used, slope is 3/1 (Y/NA)							
254	If sand bags used, 3' coverage required (Y/NA)							
255								
256	**Surface Tie-In Data**							
257	Does pipeline tie directly into another pipeline at a surface location? (Y/N)	No						
258	Segment number of pipeline being tied in to (SN/NA)							
259	MAOP of pipeline being tied in to (MAOP/NA)							
260								
261	**Spill Response Plan Data**							
262	Type of spill response plan (OSCP/OSRP per NTL 98-30)	OSRP						
263	Date spill plan submitted to MMS	3/23/2005						
264	Date spill plan approved (Actual Date or "Pending")	3/29/2005						
265								
266	**Safety Schematic Information**							
267	Pressure source identified? (well, separator, pump, etc.)	Well						
268	MSP/MAWP/SITP of source shown? (psig)	6,500						
269	Origin/destination specification breaks shown on schematic. (Y/NA)	Yes						
270	Receiving segment number noted? (Segment Number or N/A)	N/A						
271	Receiving segment no. MAOP (psig) (MAOP or N/A)	N/A						
272	Calculated pipeline MAOP (psig)	7,500						
273	Operator responsibility transfer point shown? (Yes/NA)	NA						
274								
275	**Collapse Information (Deepwater Pipelines Only)**							
276	Water depth (feet)	3080						
277	External pressure (psig)	1333						
278	Collapse pressure (psig)	3,237						
279	Safety factor	2.4						
280	Collapse calculations are required. (Attached/NA)	Performed by Flexible Pipe manufacturer						
281								
282	**Safety Design Review**							
283	**Pipeline Origin**							
284	PSHL required at departing end of pipeline (Confirm Yes)	Yes						
285	PSHL must be downstream of choke and/or flow restrictions (Confirm Yes)	Yes						
286	For a well, if MSP > MAOP, a redundant PSH and independent SDVs required (Confirm Yes)	N/A						

	A	B	C	D	E	F	G	H
287	For production equipment, if MSP > MAOP, a redundant PSH with independent SDV is required or a vented PSV is required (Confirm Yes/NA)	N/A						
288	If bi-directional flow, SDV required (Confirm Yes/NA)	N/A						
289	If pig trap present, safety equipment can not be bypassed (Confirm True)	N/A						
290	If pump on line, must be consistent with API RP 14C A7 (Confirm Yes/NA)	N/A						
291	**Pipeline Destination**							
292	If production facility and uni-directional flow, SDV and FSV required (Confirm Yes/NA)	Yes						
293	If production facility and bi-directional flow, SDV and PSHL required (Confirm Yes/NA)	N/A						
294	If subsea tie-in and uni-directional flow, FSV and block valve required (Confirm Yes/NA)	N/A						
295	If subsea tie-in and bi-directional flow, block valve required (Confirm Yes/NA)	N/A						
296	If gas lift or water injection flowline on unmanned platform, FSV required (Confirm Yes/NA)	Yes						
297	If gas lift or water injection flowline on manned platform, SDV required (Confirm Yes/NA)	Yes						
298	If crossover platform (pipeline does not receive production), SDV required at boarding point and PSHL required at departing point (Confirm Yes/NA)	N/A						
299	If crossover platform is non-manned and non-production, FSV required (Confirm Yes/NA)	N/A						
300								
301	**Departure Data**							
302	Waiver from NTL 98-20 (buoying of hazards) requested? (Y/N)	Yes						
303	Other departures requested? (Y/N)	No						
304	If yes, specify.							
305								
306								
307								
308								
309								
310								
311								
312								
313								
314								
315	**Do Not Enter Data Below This Line - MMS Use Only**							
316								
317	**PIPELINE MASTER ENTRY SHEET**							
318	Name		MMS Engineer entry					
319	Date		MMS Engineer entry					
320	Segment Number		MMS Engineer entry					
321	Right-of-Way Number		MMS Engineer entry					
322	Right-of-Way Permittee							
323	Right-of-Way Permittee Code							
324	Operator	ATP Oil and Gas Corporation						
325	Operator Code	1819						
326	Approval Code	Right-of-Way						
327	Authority Code		MMS Engineer entry					
328	Pipe Size	6.895" - dynamic flexible pipe						
329	Product Code		MMS Engineer entry					
330								
331	ORIGIN							
332	Facility Type	MC 711 Subsea Well No 004ST01						
333	Identifier	Well No 004ST01						
334	Area	Mississippi Canyon						
335	Block	711						
336	Lease	OCS-G-14016						
337								
338	DESTINATION							
339	Facility Type	MC 711 Gomez FOI						
340	Identifier	"A"						
341	Area	Mississippi Canyon						

	A	B	C	D	E	F	G	H
342	Block	711						
343	Lease	OCS-G-14016						
344								
345	OCS Segment Length	7,833						
346	State + Federal Pipeline Length	7,833						
347	Cathodic Code	NA						
348	Cathodic Life Time (Years)		MMS Engineer entry					
349	Minimum Water Depth (feet)	2940						
350	Maximum Water Depth (feet)	2980						
351								
352	Buried Designator Flag	No						
353	Bi-directional Flag	Yes						
354	Alternate Service	N/A						
355	Recv Segment No. (Sub-surface)	0						
356	Recv MAOP	0						
357	Assigned MAOP		MMS Engineer entry					
358	Pipeline Status Code	Proposed						
359	Right-of-Way Status Code	Pending						
360								
361	Comments		MMS Engineer entry					

Pipeline Review Report

Review : Adjudication Review

Permit Number: P-15170 **Permit Type:** ROW Application **Submittal Received:** 05/31/2005

Operator : ATP Oil & Gas Corporation

ROW Number : G26866 **Reviewer Received Date:** 06/02/2005 **Review Completed:** 06/02/2005

Segments : 15170, 15171

Reviewer : GLAZNERA

Remark :

Item	Response Text
2	***The corporation is qualified.***
3	***On file with MMS.***
5	***$300,000 right-of-way grant bond on file.***

SS Well # 004

State of Louisiana

KATHLEEN BABINEAUX BLANCO
GOVERNOR

SCOTT A. ANGELLE
SECRETARY

DEPARTMENT OF NATURAL RESOURCES
OFFICE OF COASTAL RESTORATION AND MANAGEMENT

September 15, 2005

Sharon DeSimoni
J. Connor Consulting, Inc.
16225 Park Ten Place, Suite 700
Houston, TX 77084

RE: **C20050466,** Coastal Zone Consistency
ATP Oil & Gas Corporation
Minerals Management Service
Federal License or Permit
Installation of a 6.895" Bulk Oil Pipeline Right-of-Way from Mississippi Canyon 711 Well No. 4 to Mississippi Canyon 755, Gulf of Mexico, **Offshore Louisiana**

Dear Ms. DeSimoni:

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 Brian Marcks of the Consistency Section at (225)342-7939 or 1-800-267-4019.

Sincerely,

Jim Rives
Acting Administrator

JR/JH/bgm

cc: MMS ATTENTION PIPELINE APPROVALS
Bonnie Johnson, MMS 5412
Ronnie Duke, NOD-COE

Pipeline Review Report

Review : Hazards Review (Geological and Geophysical Unit)

Permit Number: P-15170 **Permit Type:** ROW Application **Submittal Received:** 05/31/2005

Operator : ATP Oil & Gas Corporation

ROW Number : G26866 **Reviewer Received Date:** 06/01/2005 **Review Completed:** 08/12/2005

Segments : 15170, 15171

Reviewer : AHMEDA

Remark :

Item	Response Text
1	***The information is sufficient to perform a review.***
2	***There are natural hazards.***
3	***There are man-made Hazards.***
4	***General comments:***
5	***There are fault scarps along pipeline route that may cause pipeline spanning. The maximum scarp relief is:*** 28'
6	***There are steep slopes along pipeline route that may cause pipeline spanning. The maximum slope found is:*** 3 degree
7.1	***There are rock outcrops and/or pinnacles along pipeline route that could damage the pipeline during installation.***
7.2	***There are rock outcrops and/or pinnacles near potential anchor locations that may interfere with the placement of anchors.***
12	***There are pipeline(s) crossing the proposed pipeline route which could be damaged during installation***
13.2	***There are pipeline(s) near the potential anchor locations that could be damaged during or after anchor placement.***
14	***Approval is recommended!***

WARNING: ORIGINAL DOCUMENT HAS A VOID PANTOGRAPH • MICROPRINTING • FLUORESENT FIBERS • CHEMICAL REACTANTS

ATP OIL & GAS CORPORATION
4600 POST OAK PLACE, SUITE 200
HOUSTON, TEXAS 77027-9726

OPERATING ACCOUNT

CHASE BANK OF TEXAS - SAN ANGELO, N.A.
SAN ANGELO, TEXAS 76903

415721

88-88
1113

'O THOUSAND THREE HUNDRED EIGHTY DOLLARS AND NO CENTS

CHECK NO.	DATE	PAY EXACTLY
415721	05/18/05	*****2,380.00

VOID IF NOT PRESENTED FOR PAYMENT WITHIN 180 DAYS

Minerals Management Service
ER 1201 Elmwood Park Blvd.
New Orleans, LA 70123-2394

AUTHORIZED SIGNATURE

⑈415721⑈ ⑆111300880⑆ ⑈0630005095 5⑈

THE ORIGINAL DOCUMENT HAS A REFLECTIVE WATERMARK ON BACK. HOLD AT AN ANGLE TO VIEW WHEN CHECKING THE ENDORSEMENT.

PAYEE	PAYEE NO.	CHECK NO.	DATE
Minerals Management Service	1331	415721	05/18/05

OUCHER	VENDOR INV #	INV DATE	TOTAL AMOUNT	PRIOR PMTS & DISCOUNTS	NET AMOUNT
5-AP-49021	051805A	05/17/05	2,380.00	0.00	2,380.00
OTAL INVOICES PAID					2,380.00

' OIL & GAS CORPORATION
POST OAK PLACE, SUITE 200

DETACH AND RETAIN

SS Well # 006

State of Louisiana

KATHLEEN BABINEAUX BLANCO
GOVERNOR

SCOTT A. ANGELLE
SECRETARY

DEPARTMENT OF NATURAL RESOURCES
OFFICE OF COASTAL RESTORATION AND MANAGEMENT

September 15, 2005

Sharon DeSimoni
J. Connor Consulting, Inc.
16225 Park Ten Place, Suite 700
Houston, TX 77084

RE: **C20050464,** Coastal Zone Consistency
ATP Oil & Gas Corporation
Minerals Management Service
Federal License or Permit
Installation of a 6.895" Bulk Oil Pipeline Right-of-Way from Mississippi Canyon 711 Well No. 6 to Mississippi Canyon 755, Gulf of Mexico, **Offshore Louisiana**

Dear Ms. DeSimoni:

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 Brian Marcks of the Consistency Section at (225)342-7939 or 1-800-267-4019.

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