17 FEB 2006

In Reply To: MS 5232

Mr. Randy Judd
Tana Exploration Company LLC
1600 Smith Street
Suite 5000
Houston, Texas 77002

Dear Mr. Judd:

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: January 3, 2006
Supplemental Data Date: January 9, 2006

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

A 4-inch Right-of-Way pipeline, 1 mile long, to transport bulk gas from Caisson No. 7 in Eugene Island Block 37 through Eugene Island Area Block 58 to Platform "D" in Eugene Area Block 57.

Assigned Right-of-Way Number: OCS-G26966
Assigned Segment Number: 15551

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

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

Assigned MAOP (psi): 2220
MAOP Determination : Valves, Flanges

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.

Re: Create 200-foot wide right-of-way and install, operate, and maintain pipeline Segment No. 15551

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. 15551, ROW OCS-G26966 (MS 5232)
1502-01 ROW OCS-G26966 (Microfilm) (MS 5033)
MS 5280 Lafayette District w/flow schematic
MS 5232 Cartography
bshrestha:bs: Segment No. 15551

MICRO

TANA

Exploration Company LLC

1600 Smith, Suite 5000
Houston, Texas 77002
Office: 832-325-6000
Fax: 832-325-6001

January 3, 2006

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

Attention: Mr. Alex Alvarado
Pipeline Unit

RE: Application for 4" Bulk Gas Right-of-Way Pipeline Originating at Eugene Island Block 37 Caisson No. 007 (Lease OCS-G 24882) and Terminating at Eugene Island Block 57 D Platform (Lease OCS-G 02601), OCS Federal Waters, Gulf of Mexico, Offshore Louisiana

Gentlemen:

As required by 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 accordance with federal regulations contained in Title 30 CFR Part 250., Subpart J; Tana Exploration Company LLC (Tana) is filing this application in quadruplicate (original and three copies) for a right of way easement two hundred feet in width for the construction, maintenance and operation of a 4" bulk gas right-of-way pipeline in and/or through Blocks 37, 58, and 57, Eugene Island Area, OCS Federal Waters, Gulf of Mexico, Offshore, Louisiana.

The proposed 4" bulk gas pipeline will originate at Tana Exploration Company LLC's existing Eugene Island Block 37 Caisson No. 007 (Lease OCS-G 24882) and proceed in a southwesterly direction approximately 4903.64 feet (.93 mile) to Northstar Gulfsands, LLC's existing Eugene Island Block 57 D Platform (Lease OCS-G 02601).

Tana Exploration Company LLC will be the operator of the proposed 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 of 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, Tana Exploration Company LLC expressly agrees 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 Region, and made every reasonable effort to preserve and protect the cultural resource from damage until said Director has given directions as to its preservation.

Tana Exploration Company LLC agrees to be bound by the aforementioned regulations, and further agrees to comply with the applicable stipulations set forth in Title 30 CFR Part 250, Subpart J and that certain Letter to Lessees (LTL) dated April 18, 1991.

The approved Oil Spill Financial Responsibility Certification currently includes Eugene Island Block 37 as Covered Offshore Facility (COF) and will be updated to include the proposed pipeline segment.

Tana Exploration Company LLC has an approved Regional Oil Spill Response Plan on file with the Minerals Management Service, and will include the proposed pipeline segment at the next required update.

Installation of the proposed pipeline will be accomplished by utilizing a typical lay/bury barge(s). The pipeline will be jetted to a minimum of 3 feet below the mudline. There is one (1) foreign pipeline crossing along the proposed route.

The proposed construction operations will be supported by a crewboat and tug, each making approximately 3 trips per week, respectively, from an onshore facility located in Cameron, Louisiana.

Contingent upon receiving regulatory approval and scheduling of personnel and equipment, Tana Exploration Company LLC anticipates commencing installation on approximately March 1, 2006 with an overall completion of project being estimated at five (5) days.

In accordance with application regulations, Tana Exploration Company LLC has 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 holder is included in Attachment A and copies of the return receipt showing date and signature as evidence of service will be forwarded to your office when received.

In order to expedite the permit process, we have requested a letter of no objection from the operator, right of way or easement holder expressing no objection to the proposed project.

When obtained, these letters will also be forwarded to your office. The proposed pipeline does not adjoin or subsequently cross state submerged lands.

The riser at Eugene Island Block 37 Caisson No. 7 will be installed inside of the boat landing and the riser at Eugene Island Block 57 Platform D will be installed inside to jacket for protection.

In support of our application, and for your review and use, the following supporting documentation is enclosed and made a part of this application letter:

1. Nondiscrimination in Employment Stipulation
2. Designated Oil and Gas Lease Operators and Right of Way or Easement Holders
3. General Pipeline Design Information
4. Worst Case Discharge Calculation
5. Departures and Exception Requests
6. Plan and Profile Route Maps (with 1 diskette)
7. Navigational Route Map
8. Pipeline Safety Flow Schematic
9. Riser Elevation Detail Drawings
10. Pipeline Crossing Diagram
11. Tesla Offshore Pipeline Pre-Lay Survey Report (3 hard copies and 1 diskette)
12. Hazards Summary
13. Coastal Zone Management Consistency Certification and Enforceable Policies for the State of Louisiana

Point of Contact:

Christine Groth
R.E.M. Solutions, Inc.
17171 Park Row, Suite 390
Houston, Texas 77084
281.492.8562 (Phone)
281.492.6117 (Fax)
christine@remsolutionsinc.com (E-Mail)

Tana Exploration Company LLC agrees to keep open at all reasonable times for inspection by the Minerals Management Service, the area covered by this proposed 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. 02579 for a copy of a resolution approved by the Board of Directors authorizing the undersigned to execute on behalf of Tana Exploration Company LLC. Additionally, Tana Exploration Company LLC has submitted a $300,000 Right of Way Grant Bond to the Adjudication Unit, covering installation of a right of way pipelines in OCS Federal Waters, Gulf of Mexico Region.

Sincerely,

Tana Exploration Company LLC

Randy E. Judd
Vice President, Engineering

REJ:CAG
Enclosures

Copies To:

Arena Offshore, LLC
4200 Research Forest Drive, Suite 230
The Woodlands, Texas 77381
Attention: Debbs Nelson

Williams Field Services
One Williams Tower
Tulsa, Oklahoma 74172
Attention: Sharon Peck

Northstar Gulfsands, LLC
11 Greenway Plaza, Suite 2800
Houston, Texas 77046
Attention Georgiana Stanley

Samedan Oil Corporation (c/o Noble Energy, Inc.)
100 Glendorough, Suite 100
Houston, Texas 77067
Attention: Pam Tullos

Noble Energy, Inc.
100 Glendorough, Suite 100
Houston, Texas 77067
Attention: Pam Tullos

Energy Development Corporation (c/o Noble Energy, Inc.)
100 Glendorough, Suite 100
Houston, Texas 77067
Attention: Pam Tullos

Bois d'Arc Offshore Ltd
600 Travis Chase Tower, Suite 6275
Houston, Texas 77002
Attention: Greg Martin

U.S. DEPARTMENT OF THE INTERIOR
MINERALS MANGEMENT SERVICE

NON-DISCRIMINATION IN EMPLOYMENT

As a condition precedent to the approval of granting the subject pipeline right-of-way, the grantee, Tana Exploration Company LLC 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:

The grantee shall fully comply with paragraphs (1) through (7) of Section 202 of the Executive Order 11246, as amended (reprinted in Title 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.

Signature: _____

Date: 1/3/06

DESIGNATED OIL & GAS LEASE OPERATORS
AND
RIGHT-OF-WAY OR EASEMENT HOLDERS

The following entities have been furnished a copy of the subject application and supporting documentation covering the proposed pipeline project.

Eugene Island Block 37

Company	*Lease/Right-of-Way No.*	*Lease/Right-of-Way*
Tana Exploration Company LLC	OCS-G 24882	Oil and Gas Lease
None	N/A	Right-of-Way

Eugene Island Block 58

Company	*Lease/Right-of-Way No.*	*Lease/Right-of-Way*
Arena Offshore, LLC	OCS-G 02895	Oil & Gas Lease
Williams Field Services	Segment No. 9033	Right-of-Way

Eugene Island Block 57

Company	*Lease/Right-of-Way No.*	*Lease/Right-of-Way*
Bois d'Arc Offshore Ltd (Portion) Northstar Gulfsands, LLC (Portion)	OCS-G 02601	Oil & Gas Lease
Williams Field Services	Segment No. 9033	Right-of-Way (*)
Samedan Oil Corporation	Segment Nos. 4698 and 4701	Right-of-Way (*)
Northstar Gulfsands, LLC	Segment Nos. 4703, 5031, 5085, 4709, 6411, 4706, 4710, 4708, 4712, 4713, 9648, and 4704,	Right-of-Way (*)
Noble Energy, Inc.	Segment No. 5105	Right-of-Way (*)
Energy Development Corporation	Segment Nos. 4700 and 4705	Right-of-Way (*)

(*) Anchors Only

TANA EXPLORATION COMPANY, LLC

EUGENE ISLAND BLOCK 37 #7

4.5" O.D. BULK GAS PIPELINE PERMIT

PREPARED BY:

TECHNICAL ENGINEERING CONSULTANTS, INC.
401 WHITNEY AVENUE, SUITE 600
GRETNA, LOUISIANA 70056
(504) 362-0896

GENERAL INFORMATION & CALCULATIONS
4.5" O.D. BULK GAS PIPELINE
EUGENE ISLAND BLOCK 37 #7
TEC PROJECT NO. 10059
DECEMBER 23, 2005
REVISION A

1. The maximum water depth (-) 10' MSL along the pipeline route and in relationship to the natural bottom.

2. The description of the pipe and coating is as follows:

   a. Line Pipe: 4.5" O.D. x 0.337" W.T. API 5L Grade X-42 seamless; bare weight = 14.98#/ft. Specific gravity in seawater (empty) = 2.11. Pipe is coated with Scotchkote 6233 fusion bonded epoxy (14 mils). Pipe joints are protected with heat shrinkable wraparound pipe sleeves.

   b. Riser Pipe: 4.5" O.D. x 0.337" W.T. API 5L Grade X-42 seamless; bare weight = 14.98#/ft. coated with 14 mils of Scotchkote 6233 fusion bonded epoxy. Welded joints are protected with heat shrinkable wraparound pipe sleeves. Above the splash zone, the line is protected by platform piping paint system.

   c. Internal Coating - Internal Coating is not required. The analysis of transported products will be monitored and preventative measures will be employed as necessary.

3. The proposed pipeline is approximately 4,904 feet in horizontal length. This does not include the approximate 130 feet of total vertical riser pipe used for both platforms. The pipeline will transport natural gas (S.G. = 0.65) and condensate (S.G. = 0.777). The pipeline design working pressure is 2220 psig.

4. Valves and Flanges: Pipeline valves and flanges will be ANSI 900 with rated working pressure of 2220 psig.

5. The design of the proposed pipeline is in accordance with DOI (MMS) 30 CFR Part 250 Subparts H and J, ANSI B16.5 and ASME B31.8. Each was applied within the scope of the intended code or regulation.

6. The cathodic protection system for the pipeline will use Galvalum III Alloy tapered semi-cylindrical bracelet anodes. Calculations are as follows:

a. Anticipated line life is 20 years.

b. Assumed maximum of 2% bare pipe.

c. Current 6 MA/sq. ft.

d. Galvalum III Alloy 8#/amp year

e. Anode spacing calculations:

Area/mile = 5280 ft./mi. x 3.14 x (4.5"/12) ft.

= 6,217.2 sq. ft./mi.

Amps = 6,217.2 sq. ft./mi. x .02 x .006 amps/sq. ft.

= 0.746 amps/mi.

Line Life = 0.746 amps/mi. x 20 = 14.92 amp yr./mi.

#/mile = 14.92 amp yr./mi. x 8#/amp yr.

= 119.4#/mile

Anode quantity = (119.4#/mi.)/23# = 5.19 anodes/mi.

Anode spacing = (5280 ft./mi.)/(5.19 anodes/mi.) = 1017 ft./anode

Use one (1) 23# (net) Galvalum III Alloy anode every 500 feet.

7. The design pressure for the riser and line pipe:

a. Riser:

$t = PD/2S + C.A.$	t = minimum wall thickness (inches)
$t = 2220(4.5)/2(25,200) + C.A.$	P = internal design pressure (psig)
	P = 2220 psig
$t = 0.198" + 0.05"$	D = nominal outside diameter (inches)
	D = 4.5"
$t = 0.248"$ (minimum)	S = SMYS[ASME B31.8] x Design Factor [30 CFR Part 250.1002 (a)]
	S = 42,000 x .6
	S = 25,200 psi
	C.A. = Corrosion Allowance
	C.A. = .05"

Use 4.5" O.D. x 0.337" W.T. API 5L Grade X-42 seamless

Hydrostatic test pressure, if testing as a segment

HTP = 1.5 x MAOP = 1.5 x 2220 psig

HTP = 3330 psig

b. Line Pipe:

t = PD/2S + C.A.	t = minimum wall thickness (inches)
t = 2220(4.5)/2(30,240) + C.A.	P = internal design pressure (psig)
	P = 2220 psig
t = 0.165" + 0.05"	D = nominal outside diameter (inches)
	D = 4.5"
t = 0.215" (minimum)	S = SMYS[ASME B31.8] x Design Factor [30 CFR Part 250.1002(a)]
	S = 42,000 x .72
	S = 30,240 psi
	C.A. = Corrosion Allowance
	C.A. = .05"

Use 4.5" O.D. x 0.337" W.T. API 5L Grade X-42 seamless

Hydrostatic test pressure, when testing as a segment:

In accordance with DOI 30 (MMS) CFR Part 250 Subparts H & J.

HTP = 1.25 x MAOP + external pressure

= 1.25 x 2220 + 10 (1.03) / 2.31

= 2779.5 psig

Test to 3330 psig, same as riser.

8. The hydrostatic test will be conducted in accordance with applicable regulations. Test duration will be a minimum of eight (8) hours per 30 CFR Part 250.1003 (b)(1). The test medium will be seawater. The test pressure is not greater than 95% of the hoop stress pressure using 100% of the steel's SMYS.

a. Line Pipe:

$P = 2tS/D$ — P = max. hoop pressure (psig)

$= 2(0.337)(42{,}000)/4.5$ — t = nominal wall thickness (inches)

$= 6291$ psig — S = SMYS = 42,000 psi

95% of P = 5976 psig > 3330 psig — D = nominal outside diameter (inches)

b. Hydrotest:

Line Pipe and Riser to 3330 psig for 8 hours

9. The specific gravity of the line pipe was calculated as follows:

The line pipe weighs 14.98 lbs./LF.

The pipe displaces [AREA(sq. in.)/144] x 62.4 x 1.03 = 7.10# water/ft.

Specific gravity of pipeline = 14.98 / 7.10 = 2.11

The weight of coatings, anodes, and other materials was not considered in these calculations.

10. The design capacity of the pipeline is approximately 15 MMSCFD of natural gas and 250 BPD of condensate.

11. The proposed pipeline will tie-in Tana Exploration Company's Eugene Island Block 37 #7 Caisson to Northstar's Eugene Island Block 57 "D" Platform.

12. The pipeline shall be protected at Eugene Island Block 37 #7 platform by the following: Two (2) high pressure monitoring devices, one set at a maximum of 15% above the normal operating pressure and one set at a maximum of 10% above the normal operating pressure, but in no case above the maximum allowable operating pressure of the pipeline, and one (1) low pressure monitoring device set at 15% below the normal operating pressure. The effect of any pressure exceeding either limit will cause the automatic and orderly shutdown of the affected well.

13. The riser at Eugene Island Block 37 #7 is designed and will be installed inside of the boat landing for protection. The riser at Eugene Island Block 57 "D" is designed and will be installed inside of the jacket for protection.

PIPELINE SUMMARY

1. Line Pipe Specifications:

O.D.	W.T.	Material Spec.	Length	MAOP
4.5"	0.337"	API 5L Grade X-42 smls.	4,904 ft.	2220 psig

2. Riser Pipe Specifications:

O.D.	W.T.	Material Spec.	Length	MAOP
4.5"	0.337"	API 5L Grade X-42 smls.	130 ft.	2220 psig

3. Pipeline Hydrostatic Test Pressure:

   Line Pipe and Riser = 3330 psig for 8 hours.

4. Line Pipe Coating:

   Scotchkote 6233 thin film fusion bonded epoxy (14 mils). Welded joints protected with heat shrinkable pipe sleeves.

5. Name of Product:

   Natural Gas (S.G. = 0.65) and condensate (S.G. = 0.777)

6. Class Location:

   Class I

7. Governing Code

   DOI 30 CFR Part 250 Subparts H and J, and ASME B31.8

Application by:
Tana Exploration Company
December 23, 2005

4.5" O.D.
Bulk Gas Pipeline
Eugene Island Block 37 #7
Gulf of Mexico

- SUMMARY -

	DATE	SUBJECT		JOB NO.	SHEET
	1/3/2006	TANA Exploration Co., LLC	Eugene Island 37 No. 7 to Eugene Island 57 "D"	10059	1 OF 1
	BY WSH				

MAXIMUM RELEASE CALCULATION
PIPELINE SPILL ESTIMATOR
(OCS STUDY MMS 2002-033)

V_{REL} = Total Volume Released

$0.1781 * V_{pipe} * f_{rel} * f_{GOR} + V_{pre\ shut}$ = **14.23** Bbls

where;

V_{pipe} = (I.D/24)^2 *Length * 3.14 = 389.46 cu ft.

where

I.D.= 3.826 Inches

Length = 4878 feet

f_{rel} = 0.77 per Table 1.3

G_{max} = 112 per Table 1.3

where

$P_{rel} = P_{pipe} / P_{amb}$ = 492.68 psi

where

P_{pipe} = 2,200 psi

P_{amb} = 0.446533 *d = 4.46533 psi

where

d, Water depth= 10 feet

f_{GOR} = 0.26 From Table 1.4

GOR = 60,000 SCF/BBL

$V_{pre\ shut} = Q * t / 1440$ = 0.35 bbls

where,

Q= 250 BBL/Day

t= 2 min.

DEPARTURE AND EXCEPTION REQUESTS

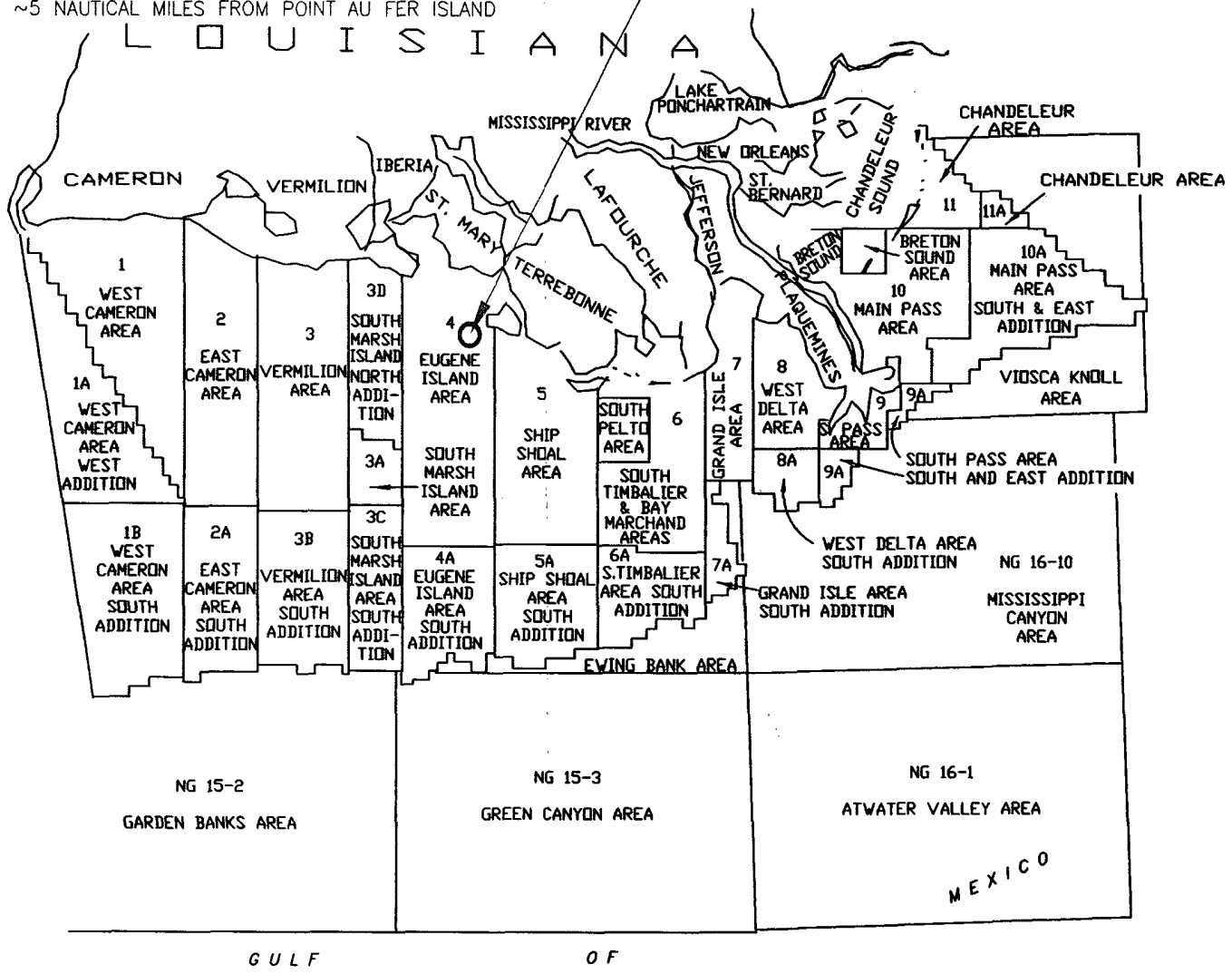
Buoying Potential Hazards

Tana Exploration Company LLC hereby requests a waiver from Notice to Lessees (NTL) 98-20, Section IV.B, which requires buoying of all existing hazards located within 150 meters (490 feet) of the proposed surface disturbance area. Utilizing the on-board graphic system during construction operations, Tana Exploration Company LLC will comply with the recommended avoidance of the magnetic anomalies identified in the Tesla Pipeline Pre-Lay Survey Report.

LOUISIANA GULF COAST INDEX
M.M.S. O.C.S. LEASING AREAS

PROPOSED 4" GAS CONDENSATE PIPELINE

TOTAL LENGTH – 4,903.64' (.93 MI)
~5 NAUTICAL MILES FROM POINT AU FER ISLAND



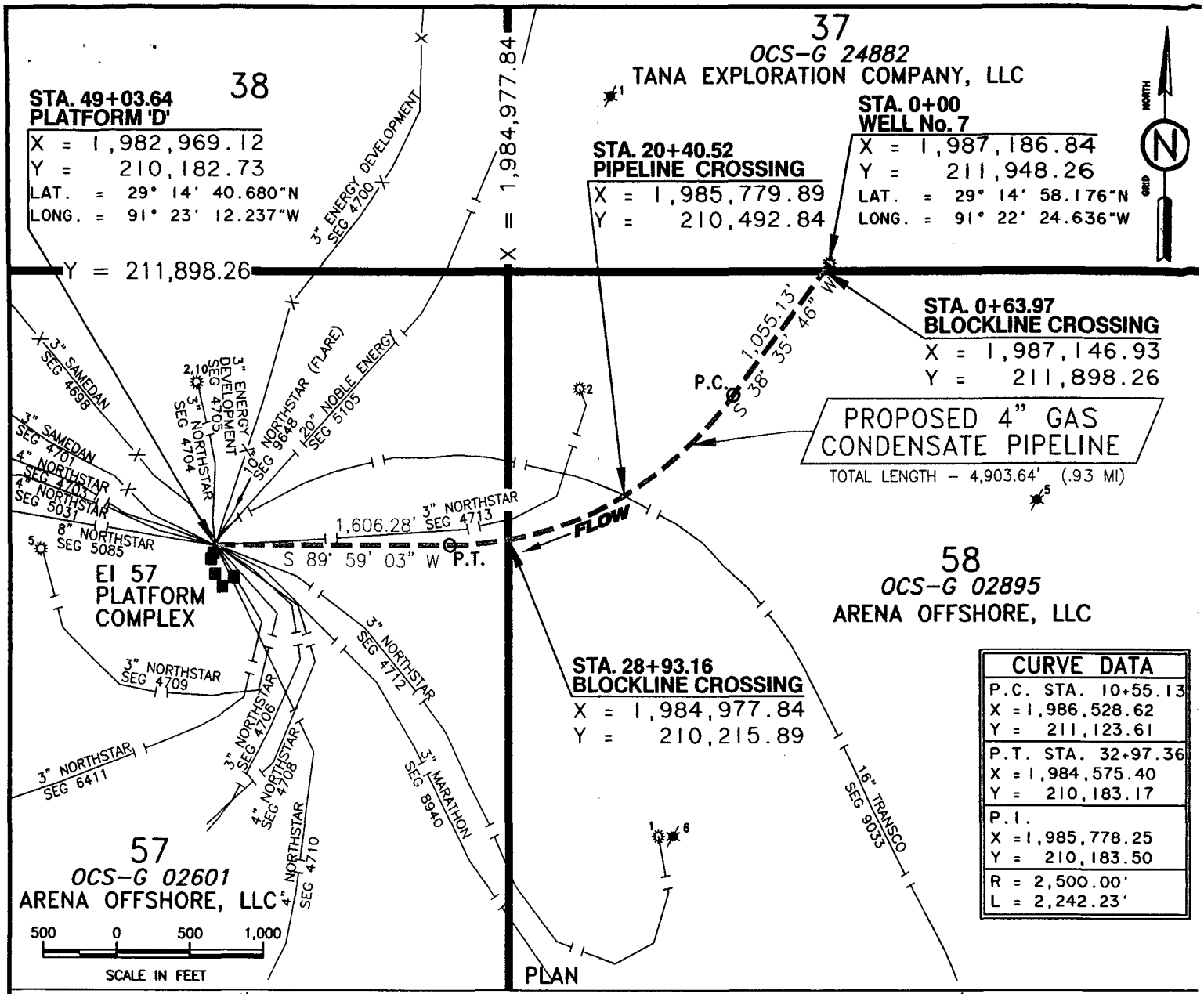
TANA EXPLORATION COMPANY, LLC	TANA Exploration Company

PROPOSED 4" GAS CONDENSATE PIPELINE
BLOCK 37 WELL No. 7 TO
BLOCK 57 PLATFORM 'D' EUGENE ISLAND AREA
GULF OF MEXICO

DATUM: NAD 27	PROJECTION: LAMBERT
SPHEROID: CLARKE 1866	ZONE: LOUISIANA SOUTH

TESLA OFFSHORE, LLC
36499 Perkins Road Prairieville, Louisiana 70769
Tel: 225-673-2163 Fax: 225-744-3116

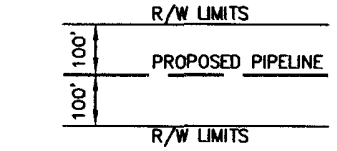
DRAWN BY: RJN	DATE: 12/21/2005	JOB No.: 05-543	DRAWING No.: 05-543 PERM
REV. No.:	REV. DATE:	SCALE: N.T.S.	SHEET 1 OF 2



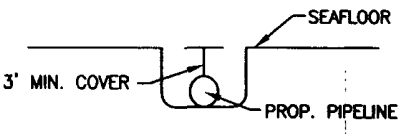
CERTIFIED CORRECT AS TO HORIZONTAL POSITION OF PROPOSED PIPELINE

STATE OF LOUISIANA
CURTIS M. CHANEY
REG. No. 4829
REGISTERED
PROFESSIONAL
LAND SURVEYOR

REG. PROFESSIONAL LAND SURVEYOR NO. 4829
STATE OF LOUISIANA



RIGHT-OF-WAY LIMITS
NOT TO SCALE



TYPICAL DITCH DETAIL
NOT TO SCALE

TANA EXPLORATION COMPANY, LLC

TANA Exploration Company

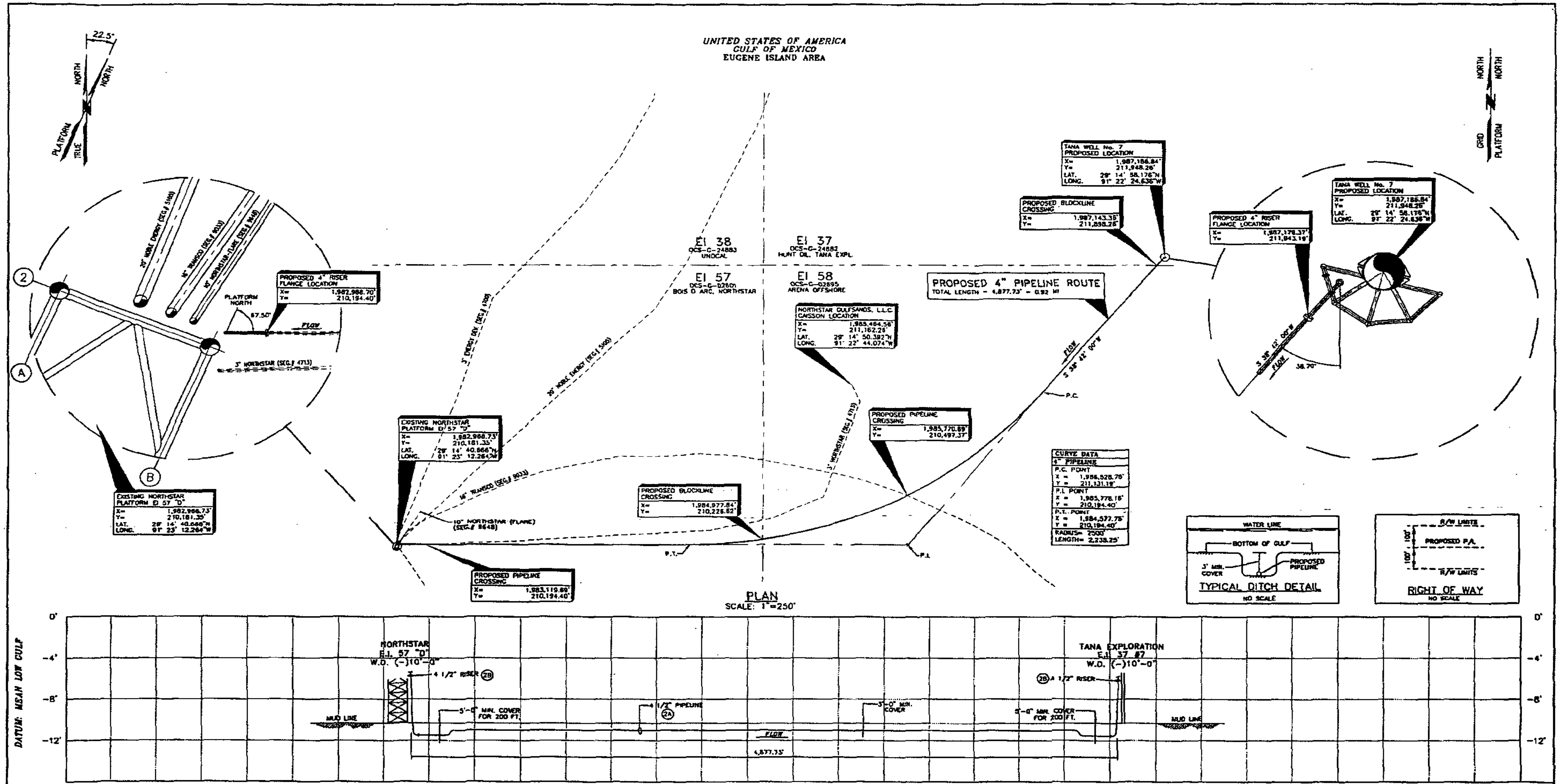
PROPOSED 4" GAS CONDENSATE PIPELINE
BLOCK 37 WELL No. 7 TO
BLOCK 57 PLATFORM 'D' EUGENE ISLAND AREA
GULF OF MEXICO

DATUM: NAD 27	PROJECTION: LAMBERT
SPHEROID: CLARKE 1866	ZONE: LOUISIANA SOUTH

TESLA OFFSHORE, LLC
36499 Perkins Road Prairieville, Louisiana 70769
Tel: 225-673-2163 Fax: 225-744-3116

DRAWN BY: RJN	DATE: 12/21/2005	JOB No.: 05-543	DRAWING No.: 05-543 PERM
REV. No.:	REV. DATE:	SCALE: AS NOTED	SHEET 2 OF 2

UNITED STATES OF AMERICA
GULF OF MEXICO
EUGENE ISLAND AREA



PROFILE

SCALE: HORZ: 1"=250'
SCALE: VERT: 1"=4'

NOTE:
COORDINATES WERE ESTABLISHED BY SURVEY BEARINGS AND DISTANCES USING THE LAMBERT GRID (LOUISIANA SOUTH) SYSTEM.

▲ UNIDENTIFIED MAGNETIC ANAMOLIES

PT.	LAMBERT COORDINATES X	Y	PROPOSED CLEARANCE

MATERIAL SUMMARY

1. ONE 4 1/2" INCH BULK GAS & CONDENSATE PIPELINE
   DESIGN:
   A. MAXIMUM ALLOWABLE OPERATING PRESSURE = 2220 psig
   B. DESIGN CAPACITY = 15 MMSCFD, 150 BOPD
2. PIPE AND COATINGS
   A. PIPELINE: 4 1/2" INCH O.D. x 0.337 INCH W.T. API-5L GR. X42, SEAMLESS, COATED WITH 14 MILS OF FUSION BONDED EPOXY. WELDED JOINTS WILL BE PROTECTED BY HEAT SHRINKABLE SLEEVES.
   B. RISER PIPE: 4 1/2" INCH O.D. x 0.337 INCH W.T. API-5L GR. X42, SEAMLESS, COATED WITH 14 MILS OF FUSION BONDED EPOXY. WELDED JOINTS WILL BE PROTECTED BY HEAT SHRINKABLE SLEEVES. ABOVE SPLASH ZONE, THE LINE IS PROTECTED BY PLATFORM PAINT SYSTEM.
3. CATHODIC PROTECTION
   23# POUND NET WEIGHT GALVALUM III ALLOY TAPERED SEMI-CYLINDRICAL BRACELET TYPE ANODES WILL BE ATTACHED TO THE PIPELINE AT A SPACING NOT TO EXCEED 500 FEET.
   HYDROSTATIC TEST PRESSURE
   A. THE FLOWLINE AND RISER SHALL BE HYDROSTATICALLY TESTED TO 3330 psig FOR A DURATION OF 8 HOURS.
4. CONSTRUCTION
   A. ALL OFFSHORE CONSTRUCTION, INCLUDING THE WELDING OF THE PIPE, SHALL BE PERFORMED IN ACCORDANCE WITH TANA EXPLORATION COMPANY TECHNICAL SPECIFICATIONS.

APP'D.	CHK'D.	DRAFT	DATE	REVISION	MARK
MOD	MOD	REB	12/28/05	REVISED PER CLIENT, RE-ISSUED FOR APPROVAL	E
WRS	WRS	REB	12/01/05	REVISED PER CLIENT, RE-ISSUED FOR APPROVAL	D
WRS	WRS	JJK	11/14/05	RE-ISSUED FOR APPROVAL	C
WRS	WRS	JJK	10/16/05	RE-ISSUED FOR APPROVAL	B
WRS	WRS	JJK	10/07/05	ISSUED FOR APPROVAL	A

TANA
Exploration Company

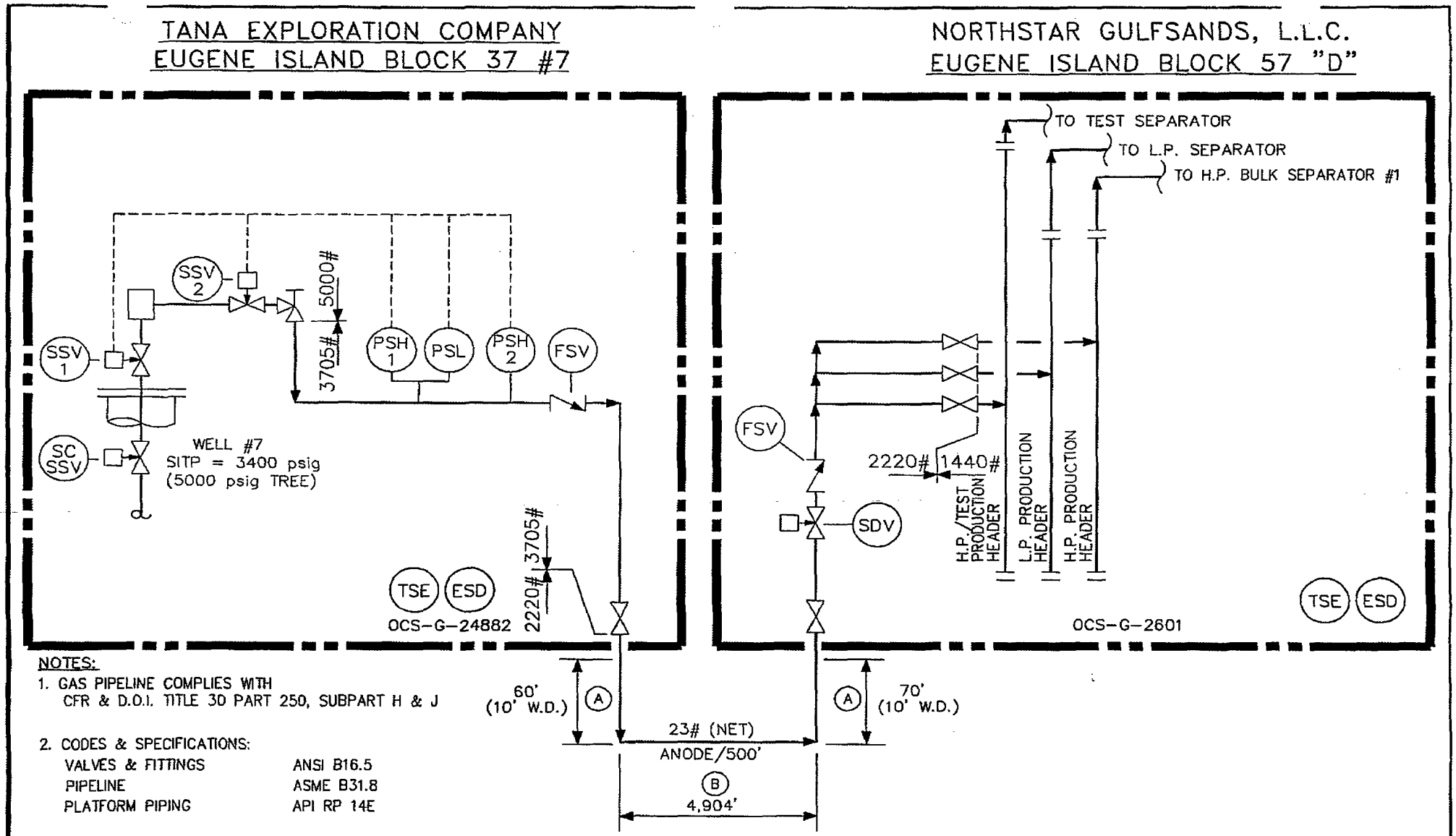
TEC TECHNICAL ENGINEERING CONSULTANTS
GRETNA LOUISIANA

APPROVED	DATE
DRAFT JJK	10/7/05

TITLE: NAVIGATION ROUTE MAP
PROPOSED 4" BULK GAS PIPELINE
E.I. BLOCK 37 No. 7 TO E.I. BLOCK 57 "D"
PLAN AND PROFILE

CLIENT: TANA EXPLORATION COMPANY — JOB NO. 10059 — DWG. NO. 800

REB - Z:\Tana\10059\Navigation\10059800.dwg - Wed, 28 Dec 2005 - 1:32 PM



NOTES:

1. GAS PIPELINE COMPLIES WITH CFR & D.O.I. TITLE 30 PART 250, SUBPART H & J

2. CODES & SPECIFICATIONS:

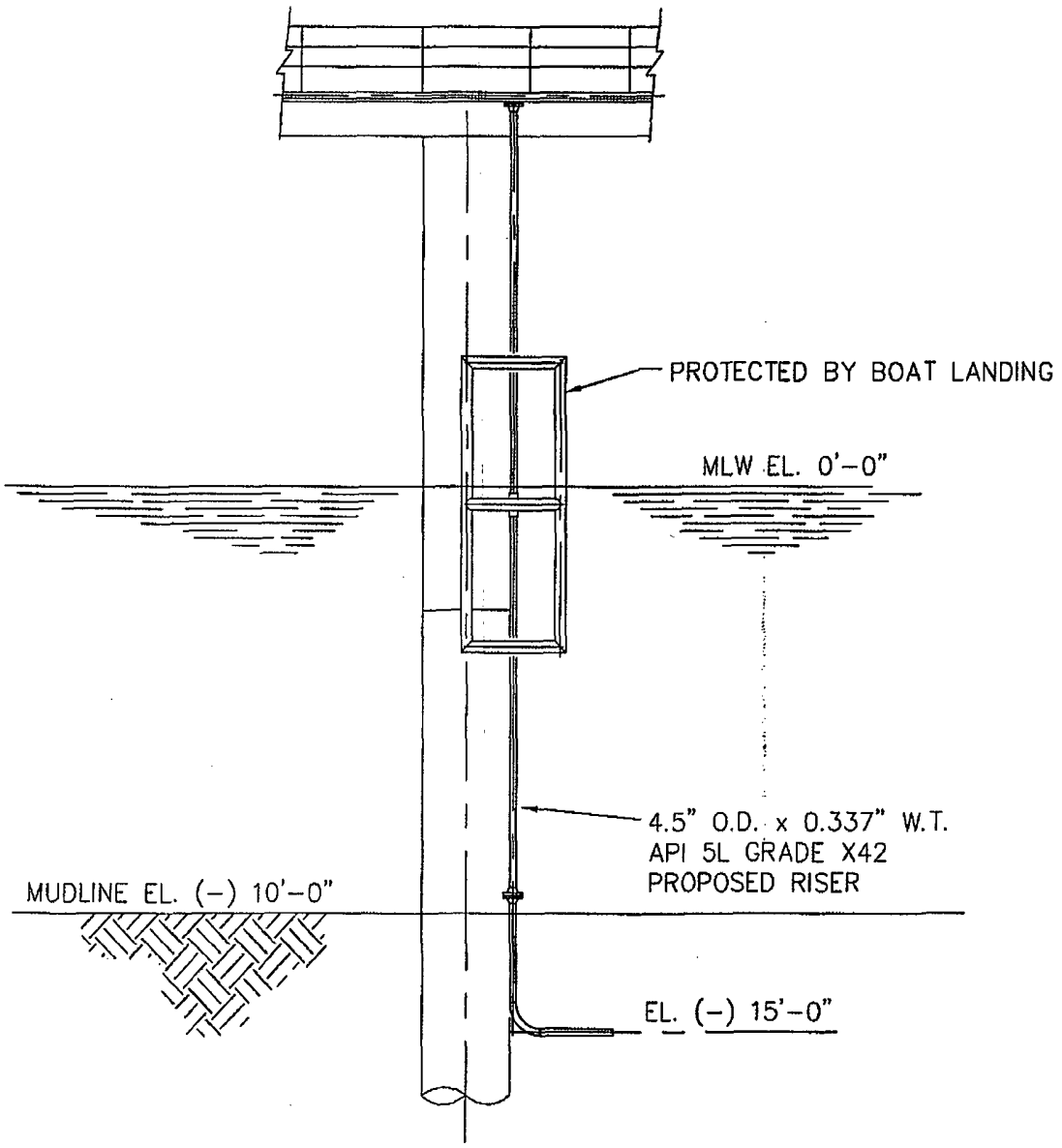
VALVES & FITTINGS	ANSI B16.5
PIPELINE	ASME B31.8
PLATFORM PIPING	API RP 14E

APPLICATION BY:
TANA EXPLORATION COMPANY
HOUSTON, TEXAS
DECEMBER 23, 2005 REV. A

RISER (A) 4.5"O.D. X 0.337" W.T. API 5L GRADE X-42
PIPELINE (B) 4.5"O.D. X 0.337" W.T. API 5L GRADE X-42

PROPOSED 4"
BULK GAS PIPELINE
EUGENE ISLAND BLOCK 37 #7
GULF OF MEXICO

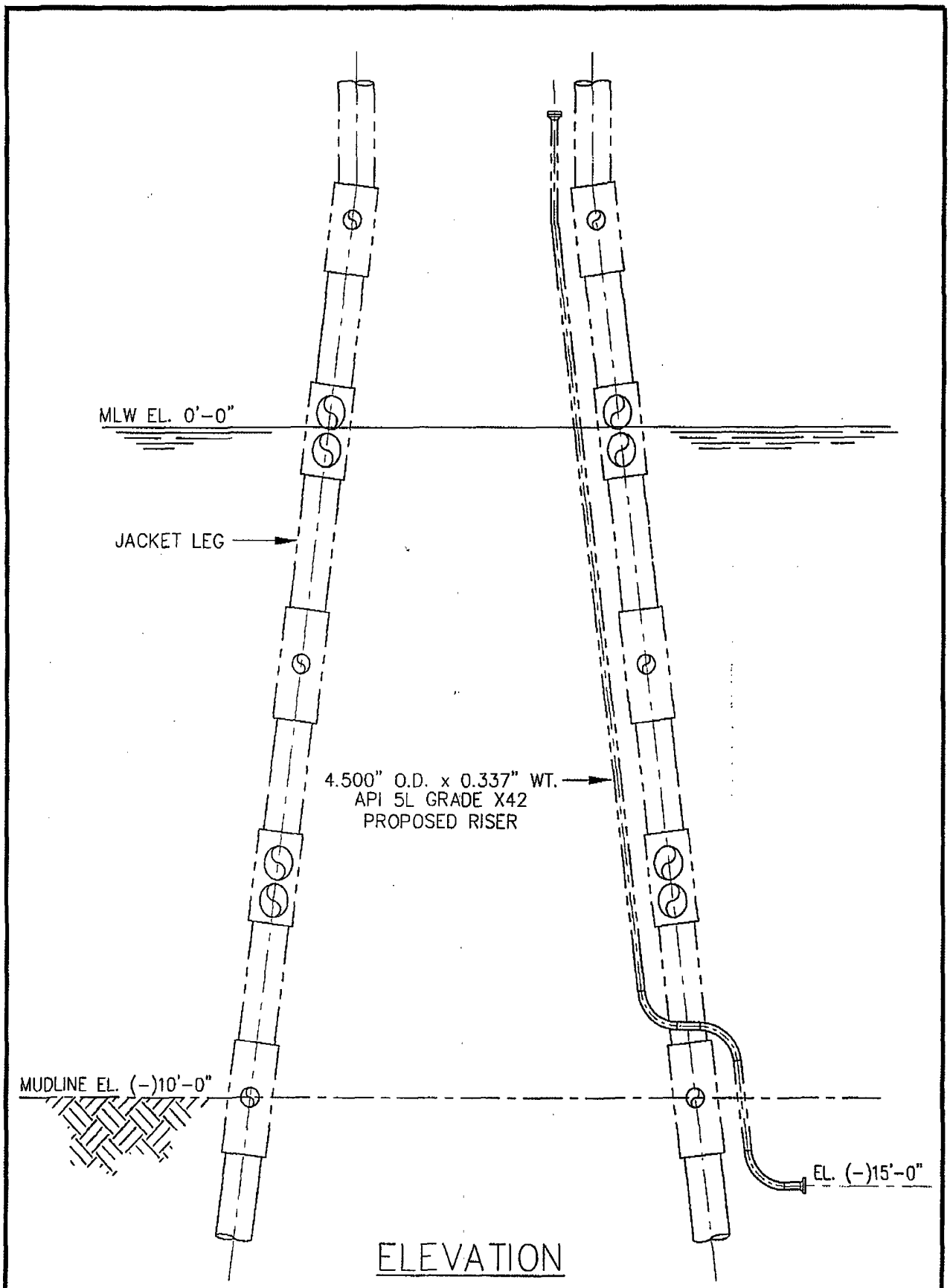
LFL - Z:\Tana\10059\Permits\10059PP-1.dwg - Fri, 23 Dec 2005 - 10:31



ELEVATION

APPLICATION BY:
TANA EXPLORATION COMPANY
HOUSTON, TEXAS
DECEMBER 5, 2005
REVISION (A)

EUGENE ISLAND BLOCK 37 #7
PROPOSED 4.5" PIPELINE
RISER ELEVATION
GULF OF MEXICO

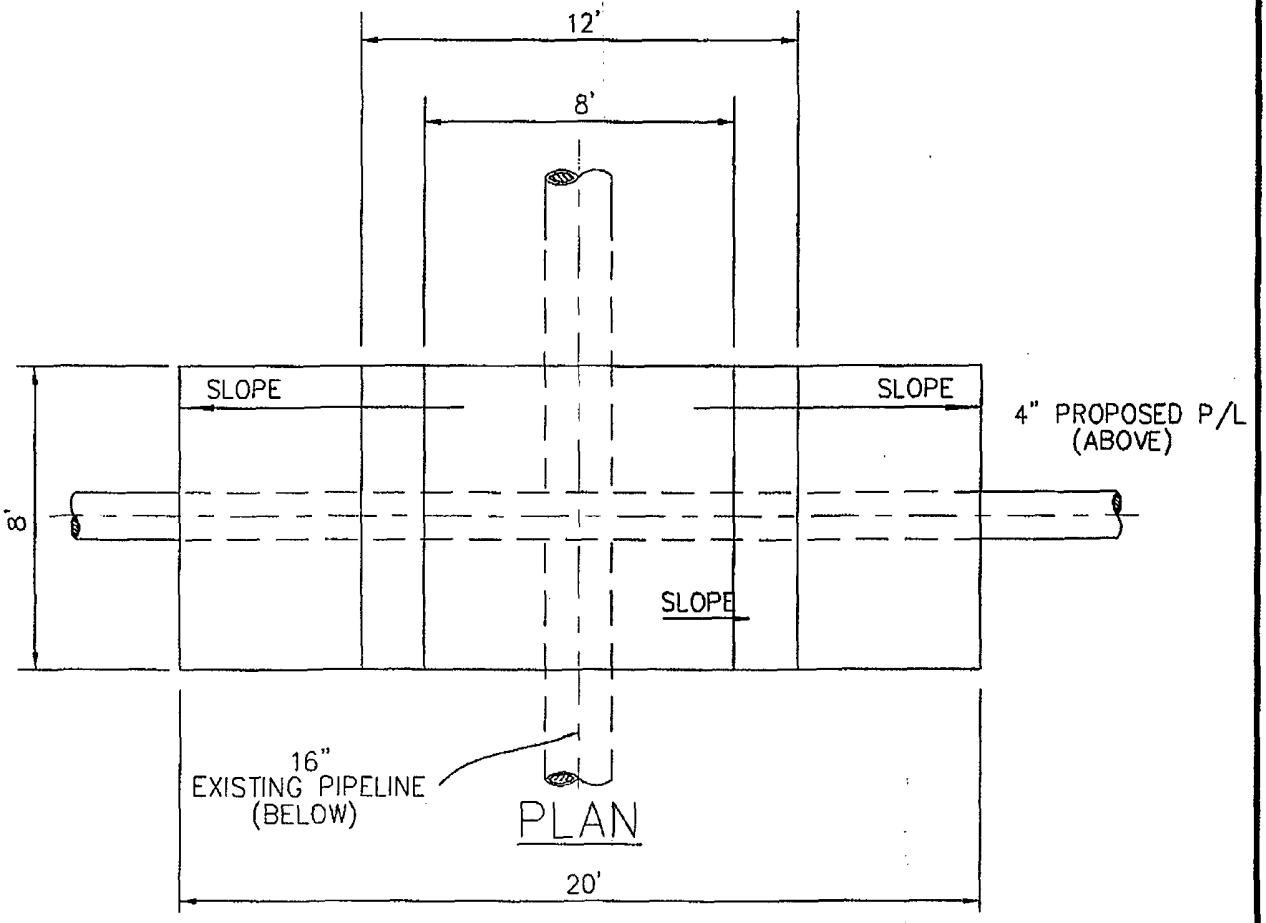


ELEVATION

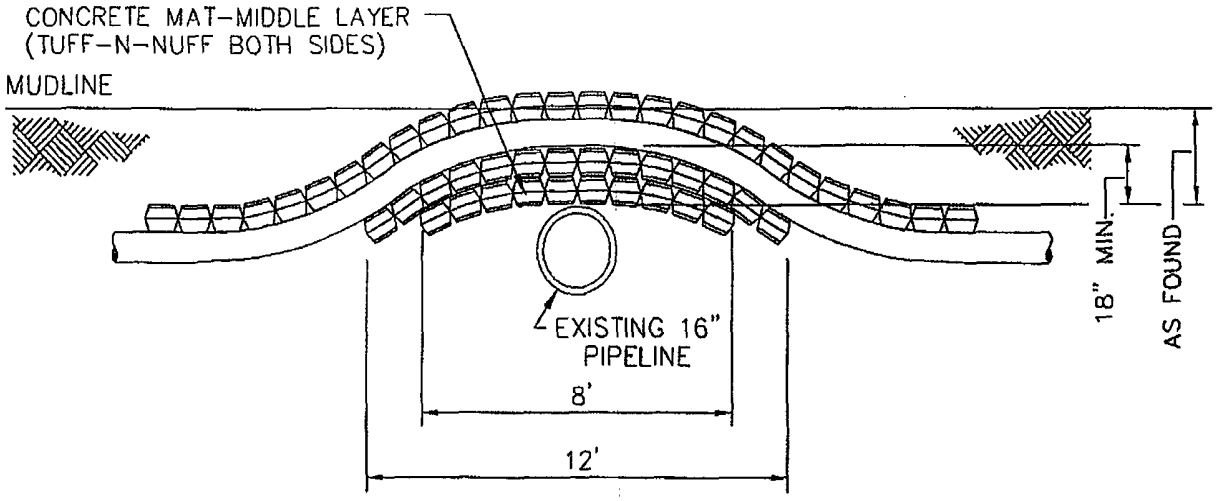
APPLICATION BY:
TANA EXPLORATION COMPANY
DECEMBER 23, 2005
REVISION A

EUGENE ISLAND BLOCK 57 "D"
PROPOSED 4.5" PIPELINE
RISER ELEVATION
GULF OF MEXICO

LFL - Z:\Tana\10059\Permits\10059PP-2.dwg - Fri, 23 Dec 2005 - 10:30



16" TRANSCO PIPELINE SEG. 9033 (E.I. 58)



ELEVATION

NOTES

1. FIRST MAT DIMENSIONS - 8'x8'x9".
2. SECOND MAT DIMENSIONS - 12'x8'x9".
3. MATS 1 AND 2 ARE MADE FROM 1 EACH - 20'x8'x9".
4. CONCRETE MATS WILL HAVE "TUFF-N-NUFF" COATING.
5. CONTRACTOR TO ENSURE ENDS OF MAT ARE BURIED.

APPLICATION BY:
TANA EXPLORATION COMPANY
HOUSTON, TEXAS
DECEMBER 23, 2005
REVISION: A

PROPOSED 4"
BULK GAS PIPELINE
EUGENE ISLAND BLOCK 37 #7
GULF OF MEXICO

SHALLOW HAZARD RECOMMENDATIONS

Water depths are 9 to 10 feet (Mean Low Water) within the survey area. Important features to note and avoid when deploying lay barge anchors include:

- Samedan 3" pipeline (Segment 4698).
- Samedan 3" pipeline (Segment 4701).
- Northstar 4" pipeline (Segment 4703).
- Northstar 4" pipeline (Segment 5031).
- Northstar 8" pipeline (Segment 5085).
- Northstar 3" pipeline (Segment 4709).
- Northstar 3" pipeline (Segment 6411).
- Northstar 3" pipeline (Segment 4706).
- Northstar 4" pipeline (Segment 4710).
- Northstar 4" pipeline (Segment 4708).
- Marathon 3" pipeline (segment 8940).
- Northstar 3" pipeline (Segment 4712).
- Northstar 3" pipeline (Segment 4713)
- Transco 16" pipeline (Segment 9033)
- Northstar 10" pipeline (Segment 9648)
- Noble Energy 20" pipeline (Segment 5105)
- Energy Development 3" pipeline (Segment 4700)
- Northstar 3" pipeline (Segment 4704)
- Energy Development 3" pipeline (Segment 4705)
- Wells #2 & #10 in Block 57
- Well #12 in Block 57
- Well #5 in Block 57
- Platform EI 57 A-PRD
- Platform EI 57 B-QTR
- Platform EI 57 C-HTR
- Platform EI 57 D-RSR
- Platform EI 57 F

- Well #2 in Block 58
- P&A #5 Well in Block 58
- P&A #1 Well in Block 37
- Well #7 in Block 37
- A total of 15 magnetic anomalies, none of which have been marked for avoidance.
- One (1) side scan sonar target- avoidance of 100 feet.

Magnetometer data confirmed the as-built locations of all pipelines in the survey area.

The existing pipelines, platforms, wells, P&A wells, and sonar target should be marked with appropriate marine survey equipment during rig moves and drilling operations to comply with **MMS On-Site Requirements** specified **in NTL No. 98-20, Section IV, Item B**. In lieu of using buoys as stipulated in **Section IV, Item B-1**, the operator should request MMS approval to mark potential hazards with best available and safest technologies including computer graphic screens that will be integrated to DGPS positioning units aboard the lay barge and anchor handling vessels. In further compliance with **Item B-2**, a map at a scale of 1:12,000 will be provided to key personnel on the drilling rig and anchor handling vessels. The field map will depict the location of the proposed well, existing pipelines, platforms, wells, P&A wells, and sonar target.

Robert J. Floyd
Chief Geoscientist

Ricky Clemmons
Marine Geologist

COASTAL ZONE MANAGEMENT PROGRAM

CONSISTENCY CERTIFICATION

Eugene Island Block 37
From (Area and Block)

Eugene Island Block 58
To (Area and Block)

0.93
Length (Miles)

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

Tana Exploration Company LLC
Right-of-Way Applicant

Certifying Official

January 3, 2006
Date

KS

TANA

Exploration Company LLC

1600 Smith, Suite 5000
Houston, Texas 77002
Office: 832-325-6000
Fax: 832-325-6001

January 20, 2006

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

Attention: Bimal Shrestha
Pipeline Unit

RE: Application for 4" Bulk Gas Right-of-Way Pipeline ***(Segment No. 15551)*** Originating at Eugene Island Block 37 Caisson No. 7 (Lease OCS-G 24882) and Terminating at Eugene Island Block 57 D Platform (Lease OCS-G 02601), OCS Federal Waters, Gulf of Mexico, Offshore Louisiana

Gentlemen:

By letter dated January 3, 2006, Tana Exploration Company LLC submitted an application for the installation of a 4" bulk gas right-of-way pipeline across Eugene Island Blocks 37 and 57.

Enclosed are copies of the no objection letters and/or federal express tracking results acknowledging receipt of the notification of Tana's proposed pipeline installation.

Company
Bois d'Arc Offshore Ltd.
Arena Offshore, LLC
Williams Field Services Gulf Coast
Northstar Gulfsands, LLC
Samedan Oil Corporation
Noble Energy, Inc.
Energy Development Corporation

Delivered on 1/4/06
WAIT TILL 2/4/06

Should you have any questions or request additional data, please contact the undersigned or our regulatory consultant, R.E.M. Solutions, Inc., Attention: Christine Groth at 281.492.8562 or at christine@remsolutionsinc.com.

Sincerely,

Tana Exploration Company LLC

Randy E. Judd/CAG

Randy E. Judd
Vice President, Engineering

REJ:CAG
Attachments

Minerals Management Service
RECEIVED
JAN 23 2006
Office of Field Operations
Pipeline Section

FedEx Express
Customer Support Trace
3875 Airways Boulevard
Module H, 4th Floor
Memphis, TN 38116

U.S. Mail: PO Box 727
Memphis, TN 38194-4643

Telephone: 901-369-3600

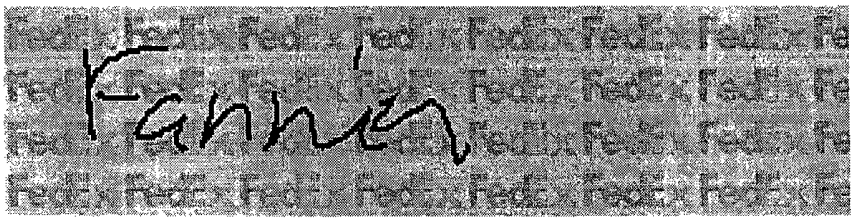
01/19/2006

Dear Customer:

The following is the proof of delivery you requested with the tracking number **790274269952**.

Delivery Information:

Status:	Delivered	**Delivery location:**	600 TRAVIS 5200
Signed for by:	F.FANNIN	**Delivery date:**	Jan 4, 2006 09:26
Service type:	Standard Envelope		



Shipping Information:

Tracking number:	790274269952	**Ship date:**	Jan 3, 2006
		Weight:	0.5 lbs.

Recipient:
Greg Martin
Bois d'Arc Offshore LTD.
Chase Tower
600 Travis, Suite 6275
Houston, TX 77002 US

Shipper:
CONNIE GOERS
R.E.M. SOLUTIONS, INC
17171 PARK ROW
SUITE 390
HOUSTON, TX 77084 US

Reference Tana EI37 P/L Appl.

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1.800.GoFedEx 1.800.463.3339

TANA

Exploration Company LLC

1600 Smith, Suite 5000
Houston, Texas 77002
Office: 832-325-6000
Fax: 832-325-6001

January 3, 2006

Arena Offshore, LLC
4200 Research Forest Drive, Suite 230
The Woodlands, Texas 77381

Attention: Debbs Nelson

RE: Application for Installation of 4" Bulk Gas Right-of-Way Pipeline Originating at Eugene Island Block 37 Caisson No. 007 and Terminating at Eugene Island Block 57 D Platform, OCS Federal Waters, Gulf of Mexico, Offshore Louisiana

Gentlemen:

As evidenced by the enclosed copy of that certain letter to the Minerals Management Service, Tana Exploration Company LLC is requesting approval for installation of a 4" bulk gas right-of-way pipeline originating at the existing Eugene Island Block 37 Caisson No. 7 and terminating at ~~Arena's~~ NORTHSTAR'S Eugene Island Block 58 D Platform.

In accordance with the requirements of Title 30 CFR Part 250, Subpart J, Tana Exploration Company LLC is requesting your review of this application, and offering a letter of no objection to the proposed project by executing in the space provided below.

Please direct any questions or requests for additional information to the attention of the undersigned, or our regulatory consultant on this project, R.E.M. Solutions, Inc, Attention: Christine Groth at 281.492.8562.

Sincerely,

Tana Exploration Company LLC

Randy E. Judd/CAG

Randy E. Judd
Vice President, Engineering

REJ:CAG
Enclosures

CONSENT GRANTED THIS 9 DAY OF January, 2006.

BY: Debbs Nelson

TITLE: Operations Manager

FedEx Express
Customer Support Trace
3875 Airways Boulevard
Module H, 4th Floor
Memphis, TN 38116

U.S. Mail: PO Box 727
Memphis, TN 38194-4643

Telephone: 901-369-3600

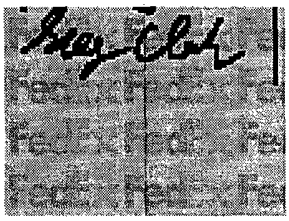
01/19/2006

Dear Customer:

The following is the proof of delivery you requested with the tracking number **790274130490**.

Delivery Information:

Status:	Delivered	**Delivery location:**	1 WILLIAM CNTR MAILROOM
Signed for by:	G.CLARK	**Delivery date:**	Jan 4, 2006 10:15
Service type:	Standard Envelope		



Shipping Information:

Tracking number:	790274130490	**Ship date:**	Jan 3, 2006
		Weight:	0.5 lbs.

Recipient:
Sharon Peck
Williams Field Service Gulf Coast
One Williams Center
MD WRC3-9
Tulsa, OK 74172 US

Shipper:
CONNIE GOERS
R.E.M. SOLUTIONS, INC
17171 PARK ROW
SUITE 390
HOUSTON, TX 77084 US

Reference Tana El 37 P/L Appl.

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Module H, 4th Floor
Memphis, TN 38116

U.S. Mail: PO Box 727
Memphis, TN 38194-4643

Telephone: 901-369-3600

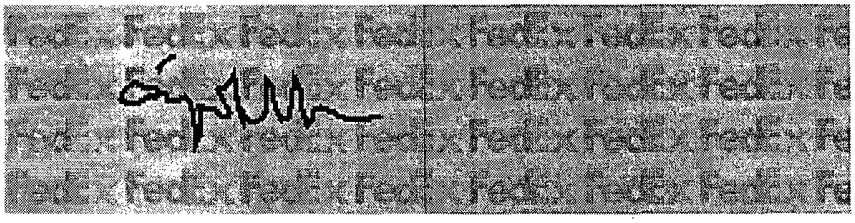
01/19/2006

Dear Customer:

The following is the proof of delivery you requested with the tracking number **790274136605**.

Delivery Information:

Status:	Delivered	**Delivery location:**	11 GREENWAY 2800
Signed for by:	A.QUINTANA	**Delivery date:**	Jan 4, 2006 11:23
Service type:	Standard Envelope		



Shipping Information:

Tracking number:	790274136605	**Ship date:**	Jan 3, 2006
		Weight:	0.5 lbs.

Recipient:
Georgiana Stanley
Northstar Gulfsands, LLC
11 Greenway Plaza
Suite 2800
Houston, TX 77046 US

Shipper:
CONNIE GOERS
R.E.M. SOLUTIONS, INC
17171 PARK ROW
SUITE 390
HOUSTON, TX 77084 US

Reference Tana EI37 P/L Appl

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Module H, 4th Floor
Memphis, TN 38116

U.S. Mail: PO Box 727
Memphis, TN 38194-4643

Telephone: 901-369-3600

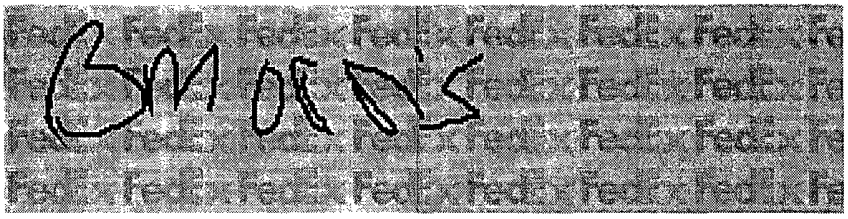
01/19/2006

Dear Customer:

The following is the proof of delivery you requested with the tracking number **792478559081**.

Delivery Information:

Status:	Delivered	**Delivery location:**	100 GLENBOROUGH DRIVE; SUITE
Signed for by:	.MORRIS	**Delivery date:**	Jan 4, 2006 09:34
Service type:	Standard Envelope		



Shipping Information:

Tracking number:	792478559081	**Ship date:**	Jan 3, 2006
		Weight:	0.5 lbs.

Recipient:
Pam Tullos
Samedan Oil Corporation
100 Glenborough
Suite 100
Houston, TX 77067 US

Shipper:
CONNIE GOERS
R.E.M. SOLUTIONS, INC
17171 PARK ROW
SUITE 390
HOUSTON, TX 77084 US

Reference Tana El 37 P/L appl.

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Customer Support Trace
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Module H, 4th Floor
Memphis, TN 38116

U.S. Mail: PO Box 727
Memphis, TN 38194-4643

Telephone: 901-369-3600

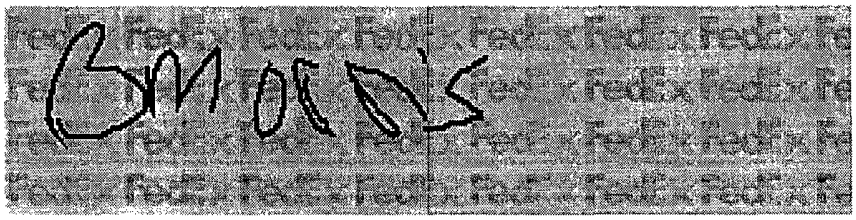
01/19/2006

Dear Customer:

The following is the proof of delivery you requested with the tracking number **792478560501**.

Delivery Information:

Status:	Delivered	**Delivery location:**	100 GLENBOROUGH DRIVE; SUITE
Signed for by:	.MORRIS	**Delivery date:**	Jan 4, 2006 09:34
Service type:	Standard Envelope		



Shipping Information:

Tracking number:	792478560501	**Ship date:**	Jan 3, 2006
		Weight:	0.5 lbs.

Recipient:
Pam Tullos
Noble Energy, Inc.
100 Glenborough
Suite 100
Houston, TX 77067 US

Shipper:
CONNIE GOERS
R.E.M. SOLUTIONS, INC
17171 PARK ROW
SUITE 390
HOUSTON, TX 77084 US

Reference Tana EI 37 P/L appl.

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Customer Support Trace
3875 Airways Boulevard
Module H, 4th Floor
Memphis, TN 38116

U.S. Mail: PO Box 727
Memphis, TN 38194-4643

Telephone: 901-369-3600

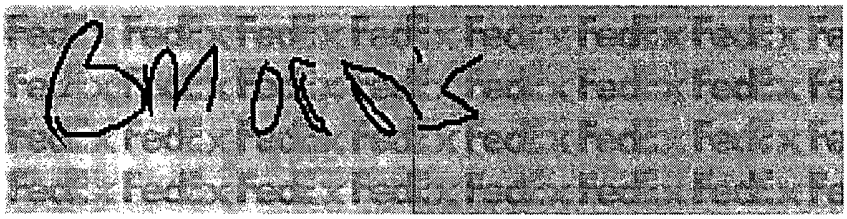
01/19/2006

Dear Customer:

The following is the proof of delivery you requested with the tracking number **790765732340**.

Delivery Information:

Status:	Delivered	**Delivery location:**	100 GLENBOROUGH DRIVE; SUITE
Signed for by:	.MORRIS	**Delivery date:**	Jan 4, 2006 09:34
Service type:	Standard Envelope		



Shipping Information:

Tracking number:	790765732340	**Ship date:**	Jan 3, 2006
		Weight:	0.5 lbs.

Recipient:
Pam Tullos
Energy Development Corp
100 Glenborough
Suite 100
Houston, TX 77067 US

Shipper:
CONNIE GOERS
R.E.M. SOLUTIONS, INC
17171 PARK ROW
SUITE 390
HOUSTON, TX 77084 US

Reference Tana El 37 P/L appl.

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Shrestha, Bimal

From: Shrestha, Bimal
Sent: Friday, January 06, 2006 3:40 PM
To: 'christine@remsolutionsinc.com'
Subject: Tana Pipeline Application segment 15551 in EI 37 to 57

Dear Tana:

We received pipeline application from Tana in EI 37 to 57. Segment numbers assigned is 15551.

We need Right-of-way advanced rental fee of $15.00 for the first year.

Please forward copies of CZM approval letter as well as letter of no objection for pipeline and block crossings, when available.

Thanks.

Bimal Shrestha
504-736-2548
Pipeline Section
Minerals management Section

Segment number: S#1555
ROW Number: _____
Operator: _____
Technical Contact: _____
Phone: _____
Fax: _____

Action Item	Out	In
1. Disk to Carto	1/5	
2. L&E	1/5	
3. G&G	1/5	
4. Adjucation	1/5	
5. Check to Denver	1/5	
6. COFR		
7. CZM		

PROBLEM:

- LNO
- CZM
- $15 Rental

BS
15551

State of Louisiana

KATHLEEN BABINEAUX BLANCO
GOVERNOR

SCOTT A. ANGELLE
SECRETARY

DEPARTMENT OF NATURAL RESOURCES
OFFICE OF COASTAL RESTORATION AND MANAGEMENT

January 25, 2006

Randy E. Judd
Vice President, Engineering
Tana Exploration Company LLC
1600 Smith, Suite 5000
Houston, TX 77002

RE: **C20060018,** Coastal Zone Consistency
Tana Exploration Company LLC
Minerals Management Service
Federal License or Permit
Installation of a 4.5" Bulk Gas Pipeline Right-of-Way from Eugene Island, Block 37 Caisson No. 007 to "D" Platform in Eugene Island, Block 57, Gulf of Mexico, **Offshore Louisiana**

Dear Mr. Judd:

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

Minerals Management Service
RECEIVED
JAN 31 2006
Office of Field Operations
Pipeline Section

TANA
Exploration Company

TANA EXPLORATION COMPANY, LLC

PROPOSED PIPELINE ROUTE SURVEY

BLOCK 37, WELL No. 7

TO

BLOCK 57, 'D' PLATFORM

EUGENE ISLAND AREA

OFFSHORE LOUISIANA

GULF OF MEXICO

DECEMBER, 2005

JOB NO. 05-543-13

Tesla Offshore, LLC
36499 Perkins Road
Prairieville, Louisiana 70769
Telephone: (225) 673-2163
Fax: (225) 744-3116

December 20, 2005

Tana Exploration, LLC
c/o Lowe Offshore
12650 Crossroads Park Dr.
Houston, Texas 77065

Attention: Mr. Ray Dickey

Dear Mr. Dickey:

Tesla Offshore LLC appreciates the opportunity to submit this shallow hazard and archaeological report based on the proposed pipeline route survey from Block 37 to Block 57, Eugene Island Area. The fieldwork was completed on the 30th of November and 1st of December, 2005 following specifications in NTL No. 98-20 and NTL No. 2005-G07 published by the Minerals Management Service Gulf of Mexico Region.

If we can be of further assistance, or if you have any questions, please do not hesitate to call.

We sincerely appreciate this opportunity to be of service to you.

Very truly yours,

Randall P. Bergeron

Randall P. Bergeron
President

RPB/rf
Enclosures

TABLE OF CONTENTS **SECTION**

MAP **POCKET**

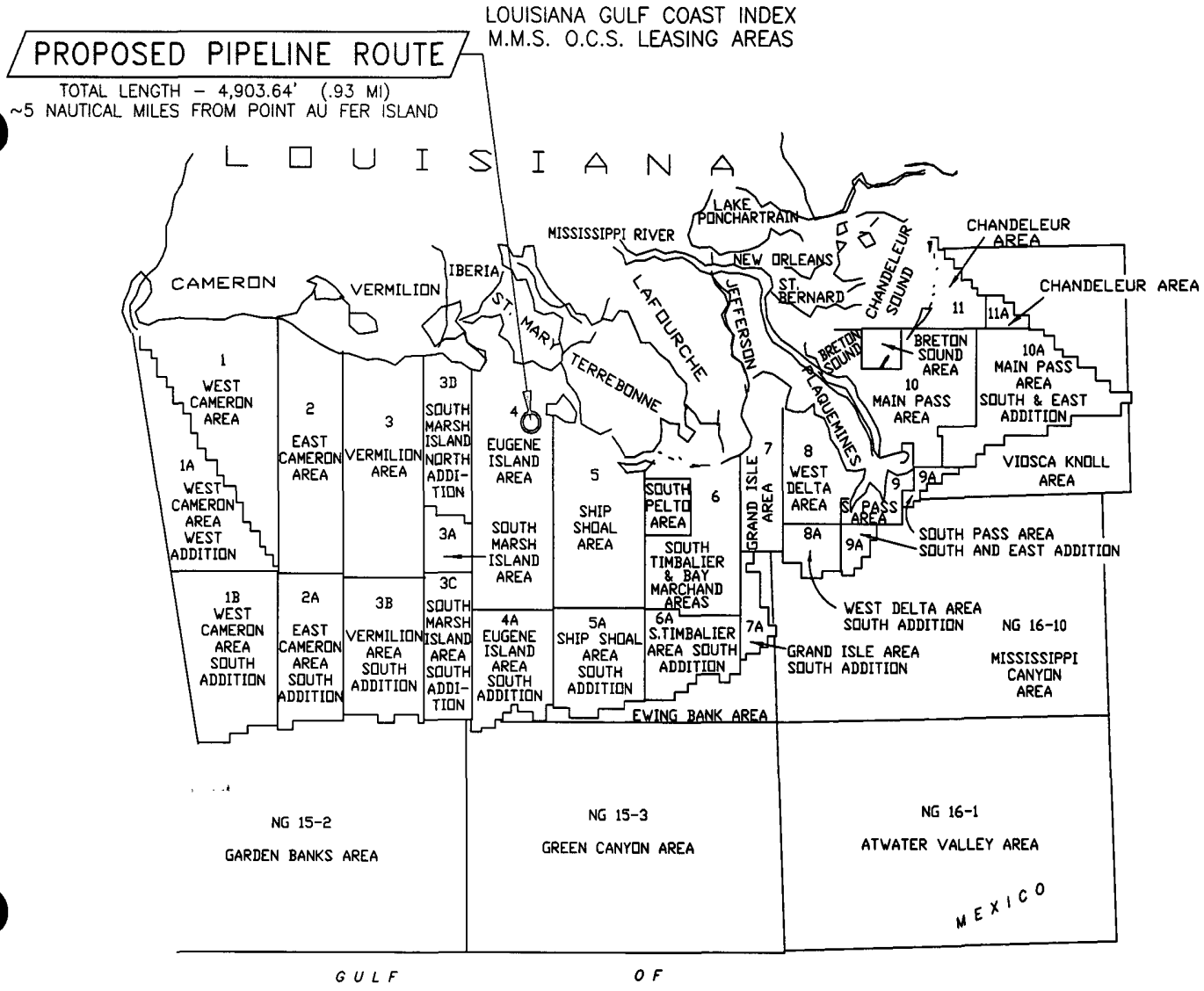
INTRODUCTION

Tana Exploration, Inc. selected Tesla Offshore LLC to conduct a proposed pipeline route survey from the No. 7 Well in Block 37 to the 'D' Platform in Block 57, Eugene Island Area, offshore Louisiana. The survey identified potential shallow hazards to pipeline construction and anchoring. The data were reviewed for evidence of archaeological features. On November 30 and December 1, 2005, the *M/V Prospector* traversed 32 lines at 50-meter intervals with additional tie lines and tangents to ensure complete coverage of the proposed pipeline route.

Differential enabled GPS receivers were interfaced to an EZ-Nav navigation by Geonav Marine Systems. Differential signals were provided via WAAS & USCG Reference Station Networks. Geophysical systems included a magnetometer, 500 kHz dual channel side scan sonar, 200 kHz echo sounder, and chirp (2 - 10 kHz) subbottom profiler acquiring digital data with strip chart displays.

The post-plotted survey lines and interpreted features are projected on the enclosed map at a horizontal scale of 1" = 500'. Different cable distances between the positioning antenna and the separate towed sensors were included when mapping the geophysical data with respect to the post-plotted shot points. Equipment descriptions, tuning specifications, and survey logs are in Appendix A. All magnetic anomalies and a sonar target are described in Appendix C and shown on Map 1.

Curtis Chaney, Chief Surveyor, designed the survey. John Laiche, AutoCAD Supervisor checked all the data reproductions, maps, and assembled the final report. Kyle Ray and Ryan Newchurch, AutoCAD operators, prepared the maps and data examples, and Mike Tripp, AutoCAD Manager, prepared the CD ROMs. Matt Keith Marine Archaeologist, Rob Floyd, Chief Geoscientist, and Ricky Clemmons, Marine Geologist, interpreted the geophysical data and wrote the final report.



NOTE

SURVEY PERFORMED BY TESLA OFFSHORE, LLC IN NOVEMBER & DECEMBER, 2005.

INSTRUMENTATION

DIFFERENTIAL GPS NAVIGATION SYSTEM
ECHO SOUNDER
SIDE SCAN SONAR
MAGNETOMETER
SUBBOTTOM PROFILER

PROPOSED PIPELINE ROUTE SURVEY

VICINITY MAP

BLOCK 37 TO BLOCK 57
EUGENE ISLAND AREA

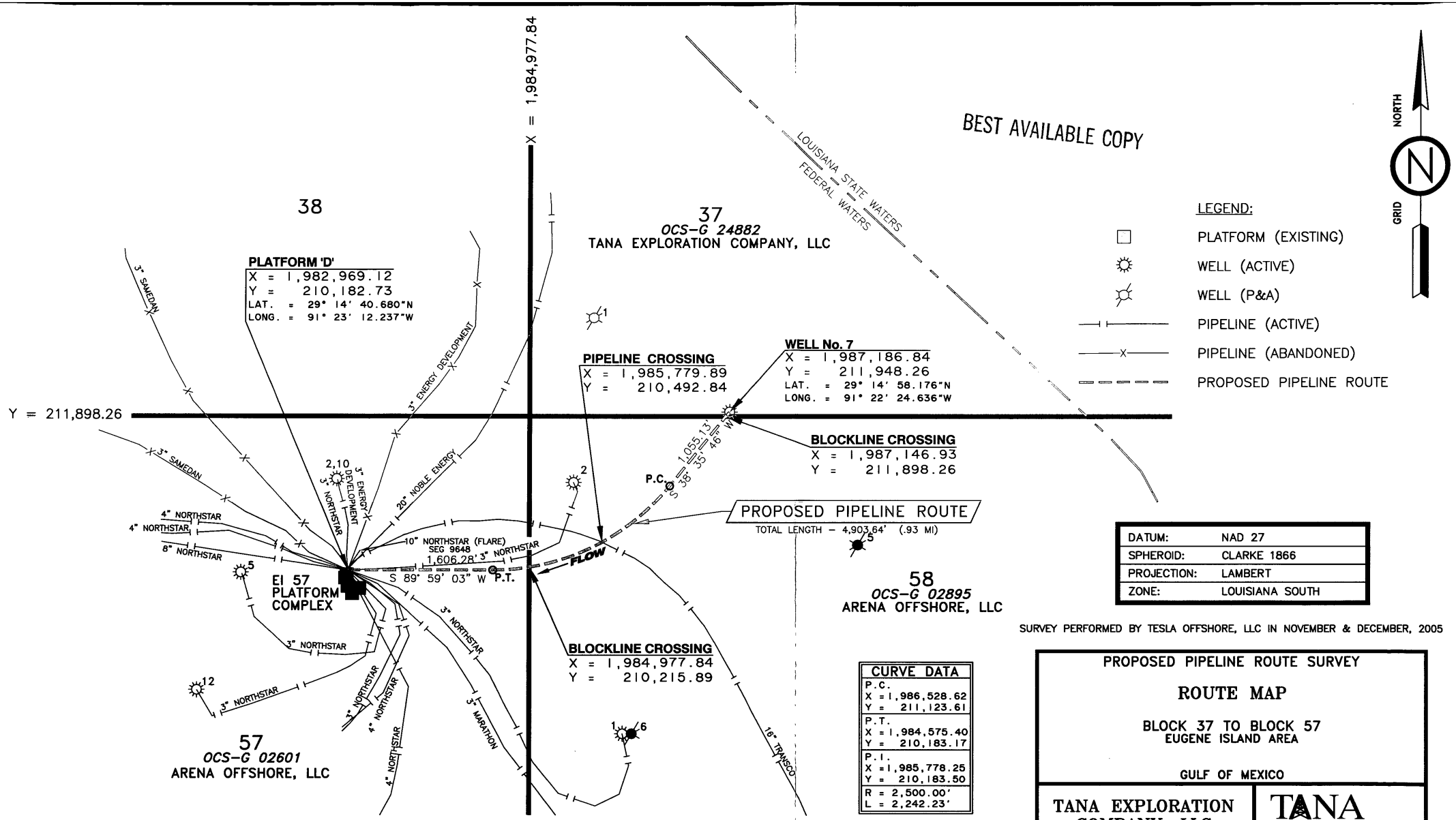
GULF OF MEXICO

TANA EXPLORATION COMPANY, LLC

TANA Exploration Company

TESLA OFFSHORE, LLC
36499 Perkins Road
Prairieville, Louisiana 70769
Tel: 225-673-2163
Fax: 225-744-3116

PREP. RJN	INT.	CAD RJN	APP. JSL	FILE NO. 05-543-VC
CHK. JSL	CHK.	CHK. JSL	DATE 12/21/2005	



BEST AVAILABLE COPY

NORTH
GRID

LEGEND:

- PLATFORM (EXISTING)
- WELL (ACTIVE)
- WELL (P&A)
- PIPELINE (ACTIVE)
- PIPELINE (ABANDONED)
- PROPOSED PIPELINE ROUTE

CURVE DATA	
P.C.	
X = 1,986,528.62	
Y = 211,123.61	
P.T.	
X = 1,984,575.40	
Y = 210,183.17	
P.I.	
X = 1,985,778.25	
Y = 210,183.50	
R = 2,500.00'	
L = 2,242.23'	

DATUM:	NAD 27
SPHEROID:	CLARKE 1866
PROJECTION:	LAMBERT
ZONE:	LOUISIANA SOUTH

SURVEY PERFORMED BY TESLA OFFSHORE, LLC IN NOVEMBER & DECEMBER, 2005

PROPOSED PIPELINE ROUTE SURVEY

ROUTE MAP

BLOCK 37 TO BLOCK 57
EUGENE ISLAND AREA

GULF OF MEXICO

TANA EXPLORATION COMPANY, LLC

TANA Exploration Company

TESLA OFFSHORE, LLC
36499 Perkins Road
Prairieville, Louisiana 70769
Tel: 225-673-2163
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PREP. RJN	INT.	CAD RJN	APP. JSL	FILE NO. 05-543-RT
CHK. JSL	CHK.	CHK. JSL	DATE 12/21/2005	

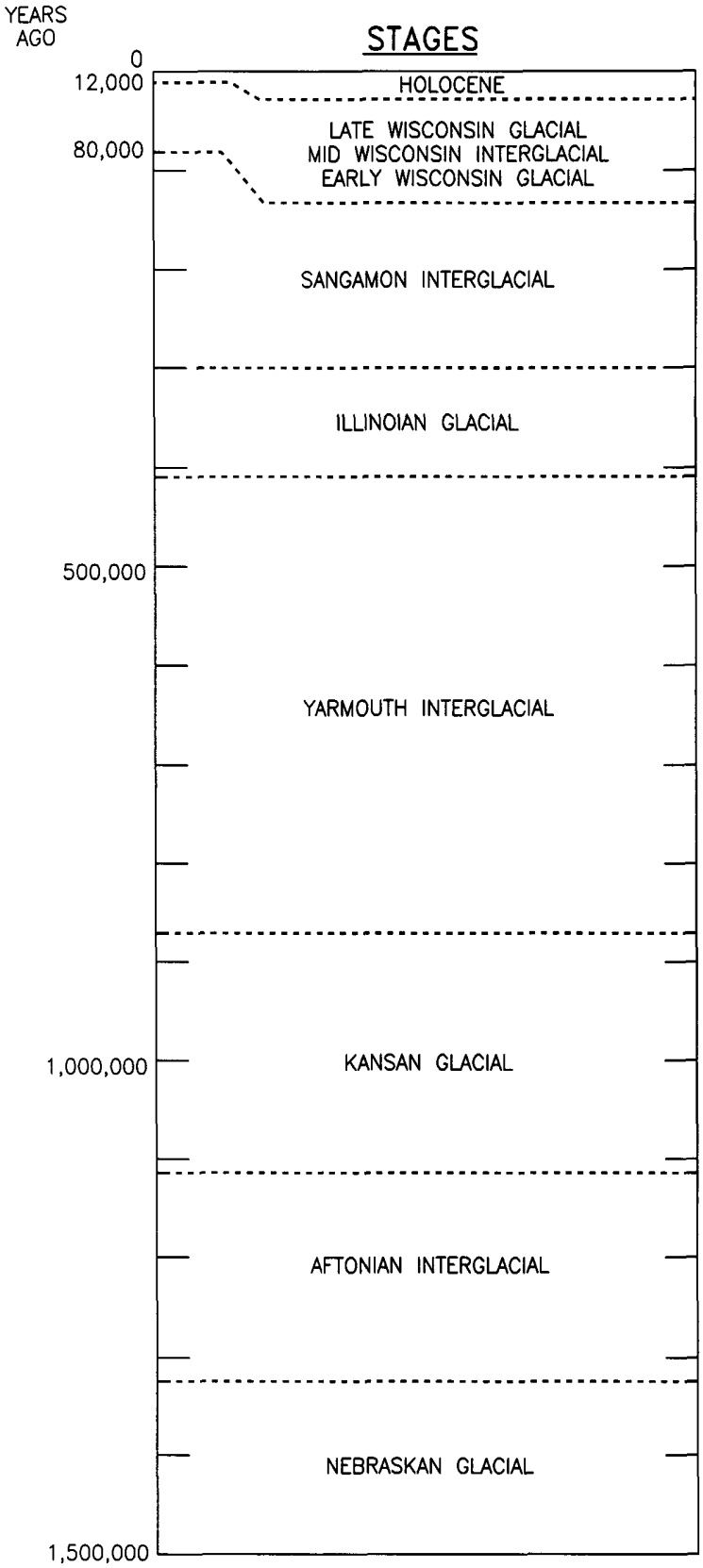
GEOLOGIC BACKGROUND

Blocks 37, 57, & 58, Eugene Island Area, are 5 miles south southwest of Point au Fer in Terrebonne Parish, Louisiana (Vicinity Map). The northern Gulf of Mexico continental shelf developed by rapid deltaic progradation and aggradation. Oscillating deltas built the continental shelf edge roughly 250 miles into the Gulf basin. This northern flank of the Pleistocene depocenter of the Gulf Coast geosyncline includes 3,400 feet of Pleistocene sediments (Sawyer, 1984).

Four (4) or five (5) major high and low sea level cycles occurred during the Pleistocene epoch. Low sea levels were 500 to 600 feet lower than today in the mid-Pleistocene (Coleman, 1982) with more recent regressions of 350 to 400 feet in the Late Wisconsin (CEI, 1977; 1982). During marine regressions (glacial periods), streams developed extensive drainage networks on the shelf, frequently entrenching channels deeply into shelf sediments. The latest glaciation comprised the Early Wisconsin stage about 100,000 to 70,000 years ago and the Late Wisconsin which peaked between 20,000 and 18,000 years ago.

The Mississippi River constructed overlapping deltas across coastal Louisiana for the thousands of years since the last sea level transgression. Approximately 7,500 to 5,000 years BP, the Mississippi River poured sediment into the Maringouin/Sale'-Cypremort delta lobes that blanketed this portion of the central Louisiana during the middle to late Holocene epoch. After abandoning that delta complex through a steeper gradient to the Gulf of Mexico, the Teche delta lobe developed between 5,500 to 3,800 years ago.

The modern Atchafalaya delta lobe has prograded toward the survey area from the north over the past 50 years. Deltaic progradation of the Atchafalaya delta lobe has accelerated seaward with the dredge opening of Wax Lake Outlet just west of the Atchafalaya River mouth. Massive sedimentary plumes through these adjoining natural and man-made distributary outlets have built up subaerial islands in areas that were shallow water ecosystems a few decades ago. Sedimentary plumes from Atchafalaya Bay and Vermilion Bay are deposited throughout the survey area (Coleman & Roberts, 1988).



Quaternary glacial nomenclature and chronology. Synthesized from various sources and based largely on oceanographic evidence.

from QUATERNARY GEOLOGY OF THE LOWER MISSISSIPPI VALLEY
by Roger T. Saucier 1974

BATHYMETRY AND SEAFLOOR FEATURES

Water depths throughout the survey area range from 9 to 10 feet (Mean Low Water). Velocimeter readings were taken in the survey grid, and tide corrections were applied to all data. The seafloor is flat (Figure 1) except for localized scouring around the existing platform complex in Block 57.

Side scan sonar records indicated that the seafloor contains sufficient cohesiveness to retain shrimp trawl scars and anchor drag marks. Wells and platforms were visible on the sonar records (Figure 2).

Ambient magnetic fields ranged from a minimum 48,079 nT to a maximum 48,257 nT (1 nanotesla is equal to 1 gamma). Magnetic data was used to verify the locations of the following features:

- Samedan 3" pipeline (Segment 4698).
- Samedan 3" pipeline (Segment 4701).
- Northstar 4" pipeline (Segment 4703).
- Northstar 4" pipeline (Segment 5031).
- Northstar 8" pipeline (Segment 5085).
- Northstar 3" pipeline (Segment 4709).
- Northstar 3" pipeline (Segment 6411).
- Northstar 3" pipeline (Segment 4706).
- Northstar 4" pipeline (Segment 4710).
- Northstar 4" pipeline (Segment 4708).
- Marathon 3" pipeline (segment 8940).
- Northstar 3" pipeline (Segment 4712).
- Northstar 3" pipeline (Segment 4713)
- Transco 16" pipeline (Segment 9033)
- Northstar 10" pipeline (Segment 9648)
- Noble Energy 20" pipeline (Segment 5105)
- Energy Development 3" pipeline (Segment 4700)

- Northstar 3" pipeline (Segment 4704)
- Energy Development 3" pipeline (Segment 4705)
- Wells #2 & #10 in Block 57
- Well #12 in Block 57
- Well #5 in Block 57
- Platform EI 57 A-PRD
- Platform EI 57 B-QTR
- Platform EI 57 C-HTR
- Platform EI 57 D-RSR
- Platform EI 57 F
- Well #2 in Block 58
- P&A #5 Well in Block 58
- P&A #1 Well in Block 37
- Well #7 in Block 37

A total of 14 magnetic anomalies were recorded within the survey area. A single sonar target was recorded. Sonar data indicated that the seafloor is otherwise clear of significant debris protruding from the seafloor.

NEAR-SEAFLOOR STRATIGRAPHY

Geologic interpretation is based on chirp (2-10 kHz) subbottom profiler records and analog sparker sections. Statements on sediment composition and geologic age are based solely on these survey data except where supplemental information is referenced. The following statements are to be considered interpretations of probable conditions present.

Seafloor sediments are reportedly silty sands in Blocks 37, 58 & 57, Eugene Island Area, although the seafloor trawl and anchor scars suggest a sufficient clay percentage to maintain soil cohesion not typical of sands (United States Department of the Interior, Minerals Management Service, 1983, Visual No. 3). Holocene deltaic deposits are approximately 90 feet thick in this lease area with approximately 75 feet of sediment deposits over the past 5000 years (Bernard, 1970).

Chirp subbottom profiler data showed significant signal attenuation, which completely wiped out the high frequency signals along the survey area from Atchafalaya deltaic sedimentary plumes (Figure 4). The bottom consistency appears extremely mucky to the west due to the build up of organic material. Data was attenuated approximately 10-15 feet below the mudline. No discernible faults, channels or features were recorded.

Mid-Holocene beds represent Maringouin deltaic deposits between 20 and 40 feet BML with late Holocene deposits from 10 to 20 feet BML. No evidence of active gas percolation into the water column was observed on the profiler or sonar data. Low-pressure gas saturated deltaic sediments are normal bottom attributes in the Gulf of Mexico where sedimentary methane concentrations in excess of 30 ml/liter are sufficient to attenuate the chirp spectrum signals due to bubble phase scattering and absorption of the sound waves (Whelan, et al.1977).

SHALLOW HAZARD RECOMMENDATIONS

Water depths are 9 to 10 feet (Mean Low Water) within the survey area. Important features to note and avoid when deploying lay barge anchors include:

- Samedan 3" pipeline (Segment 4698).
- Samedan 3" pipeline (Segment 4701).
- Northstar 4" pipeline (Segment 4703).
- Northstar 4" pipeline (Segment 5031).
- Northstar 8" pipeline (Segment 5085).
- Northstar 3" pipeline (Segment 4709).
- Northstar 3" pipeline (Segment 6411).
- Northstar 3" pipeline (Segment 4706).
- Northstar 4" pipeline (Segment 4710).
- Northstar 4" pipeline (Segment 4708).
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- Northstar 3" pipeline (Segment 4713)
- Transco 16" pipeline (Segment 9033)
- Northstar 10" pipeline (Segment 9648)
- Noble Energy 20" pipeline (Segment 5105)
- Energy Development 3" pipeline (Segment 4700)
- Northstar 3" pipeline (Segment 4704)
- Energy Development 3" pipeline (Segment 4705)
- Wells #2 & #10 in Block 57
- Well #12 in Block 57
- Well #5 in Block 57
- Platform EI 57 A-PRD
- Platform EI 57 B-QTR
- Platform EI 57 C-HTR
- Platform EI 57 D-RSR
- Platform EI 57 F

- Well #2 in Block 58
- P&A #5 Well in Block 58
- P&A #1 Well in Block 37
- Well #7 in Block 37
- A total of 15 magnetic anomalies, none of which have been marked for avoidance.
- One (1) side scan sonar target- avoidance of 100 feet.

Magnetometer data confirmed the as-built locations of all pipelines in the survey area.

The existing pipelines, platforms, wells, P&A wells, and sonar target should be marked with appropriate marine survey equipment during rig moves and drilling operations to comply with **MMS On-Site Requirements** specified **in NTL No. 98-20, Section IV, Item B**. In lieu of using buoys as stipulated in **Section IV, Item B-1**, the operator should request MMS approval to mark potential hazards with best available and safest technologies including computer graphic screens that will be integrated to DGPS positioning units aboard the lay barge and anchor handling vessels. In further compliance with **Item B-2**, a map at a scale of 1:12,000 will be provided to key personnel on the drilling rig and anchor handling vessels. The field map will depict the location of the proposed well, existing pipelines, platforms, wells, P&A wells, and sonar target.

Robert J. Floyd
Chief Geoscientist

Ricky Clemmons
Marine Geologist

APPENDIX A

EQUIPMENT SPECIFICATIONS
&
FIELD LOGS

GEOPHYSICAL SURVEY EQUIPMENT

Remote sensing equipment was deployed and tuned in the survey area after Differential GPS was calibrated and before data collection. Field records are in Appendix A. Specification sheets follow the Instrumentation section. The M/V *Prospector* traversed survey tracks at approximately 4 knots. Seas were 1 to 3 feet on the days that the data were collected. All survey data tied closely between primary and cross lines. The maps reflect features corrected for offset between sensors and the navigation antenna.

- Precision navigation using differential enabled GPS receivers interfaced to our EZ-Nav navigation computer system. Differential signals provided via WAAS and USCG Reference Station Networks. The Global Positioning (GPS) is Operated by) the US Department of Defense (DOD). As a result, Tesla Offshore cannot be held responsible for positioning degradation or omission of positioning attributable to the GPS system.

- Edgetech 4200FS dual frequency (100 & 500 kHz) side scan sonar set at 50-meter range at 500 kHz for overlapping coverage of the surveyed area. Digital data recording and quality control was achieved with the Coda Sonar Acquisition System.

- Edgetech X-Star Model. 216 Full Spectrum Chirp Sub-bottom profiler system. Digital data recording was achieved with the Coda Sonar Acquisition System.

- Marine Magnetics SeaSPY Overhauser Magnetometer operating at 0.5 second sampling rate with full scale recordings of 100 and 1,000 nT (1 nanotesla is equal to 1 gamma).

- Odom Echotrac MK III digital precision dual frequency echo sounder.

EQUIPMENT SPECIFICATIONS

Tesla Offshore, LLC
36499 Perkins Road
Prairieville, Louisiana 70769
Tel: 225-673-2163
Fax: 225-744-3116

CLIENT: TANA EXPLORATION COMPANY

PROSPECT BLOCK 37 - 57 EUGENE ISLAND AREA

M/V PROSPECTOR

JOB NO. 05-543-13

NAVIGATION CONTROLS
DIFFERENTIAL GPS

ZONE: LA SOUTH

ECHO SOUNDER:

Model No.	ECHOTRAC DF3200 MKIII
Scale	0 - 30 ft.
Setback:	24.5 ft.
Transducer Depth	5.5 ft.
Frequency	200 kHz

SIDE SCAN SONAR

Model No.	EDGETECH 4200-FS
Range	50 m/Channel
Frequency	100 kHz
Setback	+38 ft.
Tow Height	6 - 8 ft.

MAGNETOMETER:

Model No.	MARINE MAGNETICS-SEASPY
nT (Gamma)	100/1000
Setback	259 ft.
Data Rate	1/SEC
Tow Height	9 - 11 ft. <20' Req.
Buoy	YES

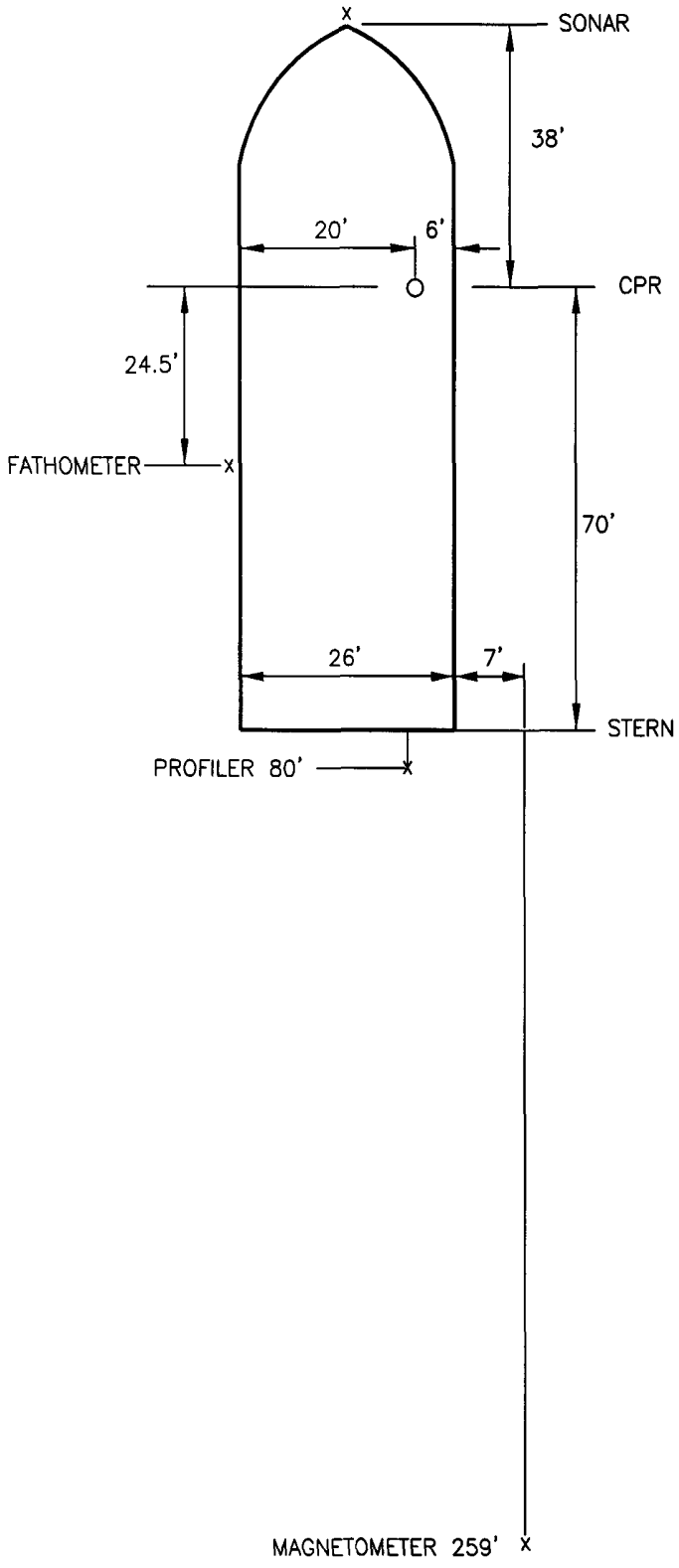
PROFILER:

Energy Source	EDGETECH
Model No.	CHIRP SB-216S
Recorder	CODA DA-50/ISYS BE
Scale/Delay	50 ms
Setback	80 ft.
Power Out	2 kW
Frequency	2 - 10 kHz

SEISMIC SINGLE TRACE:

Energy Source	N/A
Model No.	
Recorder	
Scale/Delay	
Setback	
Hydrophone	

M/V PROSPECTOR



REG. NO.	600787
REG. OWNER	INTERNATIONAL BOAT RENTALS, INC.
HOME PORT	NEW ORLEANS, LA

TESLA OFFSHORE

DAILY PROJECT REPORT

Date : 30-Nov-2005
Job# : 05-543-13
Area : Eugene Island 37-57
Client : Tana Exploration
Vessel : M/V Prospector

TESLA OFFSHORE, LLC
36499 Perkins Road
Prairieville, La 70769

Tesla Personnel:	K. Bourg, R. Colon Rios, A. Bochner, C. Sharpe, J. Naylor
Boat Crew:	A. Price, T. Austin, J. Nunez, D. Jeafcoat, K. Adams
Client:	

Summary :

Working	WOW	Tr/Supply	Eq DT	Vessel DT	Other

Weather;

	0001	0600	1200	1800	2400
Winds	15 Kts	15 Kts	10-15 Kts	5 Kts	5-10 Kts
Seas	3-5 FT	2-4 FT	2-3 FT	1-2 FT	1-2 FT

Time	Activity
1445	Job 05-598-14 Completed. Headed for 05-546-13.
1800	Enroute to Eugene Island 37-57.
1840	Arrive on location and deploy fatho.
1850	Running a test for water depth around work area.
1927	Drop SVP.
1935	Deploy gear.
2015	Start running lines.
2400	Running lines.

Party Chief: Kent Bourg

Client Rep.:

DAILY PROJECT REPORT

Date : 1-Dec-2005
Job# : 05-543-13
Area : Eugene Island 37-57
Client : Tana Exploration
Vessel : M/V Prospector

TESLA OFFSHORE, LLC
36499 Perkins Road
Prairieville, La 70769

Tesla Personnel:	K. Bourg, R. Colon Rios, A. Bochner, C. Sharpe, J. Naylor
Boat Crew:	A. Price, T. Austin, J. Nunez, D. Jeafcoat, K. Adams
Client:	

Summary :

Working	WOW	Tr/Supply	Eq DT	Vessel DT	Other

Weather;

	0001	0600	1200	1800	2400
Winds	5-10 Kts	5 Kts	5 Kts	5 Kts	5-10 Kts
Seas	1-2 FT	1-2 FT	1-2 FT	1-2 FT	1-2 FT

Time	Activity
0001	Running lines.
0600	Running lines.
1200	Running lines.
1335	End last line and pick up gear.
1348	Drop SVP.
1400	Job 05-543-13 Completed. Headed for 05-633-14.

Party Chief: Kent Bourg

Client Rep.:

Job # : _05-543-13
Area: _Eugene Island 37-57
Client : _Tana Exploration
Vessel : _M/V Prospector

TESLA OFFSHORE, LLC

NAVIGATION LINE LOG

Seq	Line #	Date	Dir	FIX#	START	END	MAG	SSS	FATH	SBP	S/Tr	X	Notes
33	1	12/1	270	20-14	0948	0955	X	X	X	X	N/A	X	
34	2	12/1	90	15-21	1006	1013	X	X	X	N/A	N/A	X	
32	3	12/1	90°	15-21	0931	0938	X	X	X	N/A	N/A	X	
27	4	12/1	90°	15-21	0741	0748	X	X	X	X	N/A	X	
25	5	12/1	90°	15-21	0703	0710	X	R/P	X	N/A	N/A	/	Replay SSS
31	6	12/1	270	20-14	0916	0923	X	X	X	N/A	N/A	X	
28	7	12/1	270°	20-14	0757	0804	X	X	X	X	N/A	X	
26	8	12/1	270°	20-14	0721	0727	X	X	X	N/A	N/A	X	
24	9	12/1	270°	20-14	0641	0648	X	X	X	N/A	N/A	X	
22	10	12/1	270°	20-12	0558	0607	X	X	X	X	N/A	X	
20	11	12/1	270°	20-12	0514	0523	X	X	X	N/A	N/A	X	
23	12	12/1	90°	13-21	0620	0626	X	X	X	N/A	N/A	X	
21	13	12/1	90°	13-21	0535	0544	X	X	X	X	N/A	X	
19	14	12/1	90°	5-21	0443	0503	X	X	X	N/A	N/A	X	
35	14A	12/1	270	20-4	1022	1039	X	X	X	N/A	N/A	X	
18	15	12/1	270°	20-4	0412	0431	X	X	X	N/A	N/A	X	
16	16	12/1	270°	20-4	0307	0327	X	X	X	X	N/A	X	
14	17	12/1	270°	20-4	0208	0227	X	X	X	N/A	N/A	X	

Job # : _05-543-13
Area: _Eugene Island 37-57
Client : _Tana Exploration
Vessel : _M/V Prospector

TESLA OFFSHORE, LLC

NAVIGATION LINE LOG

Seq	Line #	Date	Dir	FIX#	START	END	MAG	SSS	FATH	SBP	S/Tr	X	Notes
17	18	12/1	90°	5-21	0340	0359	X	X	X	N/A	N/A	X	
5	19	11/30	90	5-21	2204	2223	X	X	X	X	N/A	X	
15	20	12/1	90°	5-21	0237	0255	X	X	X	N/A	N/A	X	
13	21	12/1	90°	5-21	0138	0155	X	X	X	N/A	N/A	X	
7	22	11/30	90	5-21	2256	2314	X	X	X	X	N/A	X	
4	23	11/30	270	20-4	2137	2156	X	X	X	X	N/A	X	
36	23A	12/1	90	5-11	1100	1107	X	X	X	X	N/A	X	
8	24	11/30	270°	20-4	2323	2343	X	X	X	N/A	N/A	X	
6	25	11/30	90	20-4	2230	2249	X	X	X	X	N/A	X	
9	26	11/30	90	20-4	2349	0007	X	X	X	N/A	N/A	X	
11	27	12/1	90°	20-4	0042	0100	X	X	X	N/A	N/A	X	
2	28	11/30	270	20-4	2042	2101	X	X	X	X	N/A	X	
10	29	12/1	270	20-4	0016	0035	X	X	X	N/A	N/A	X	
12	30	12/1	90°	20-4	0108	0127	X	X	X	N/A	N/A	X	
3	31	11/30	90	5-21	2110	2129	X	X	X	X	N/A	X	
1	32	11/30	90°	5-21	2015	2033	X	X	X	N/A	N/A	X	
29	33	12/1	40°	5-11	0829	0837	X	X	X	N/A	N/A	X	
30	34	12/1	40°	5-11	0857	0904	X	X	X	X	N/A	X	

Job # : _05-543-13
Area: _Eugene Island 37-57
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Vessel : _M/V Prospector

TESLA OFFSHORE, LLC

NAVIGATION LINE LOG

Seq	Line #	Date	Dir	FIX#	START	END	MAG	SSS	FATH	SBP	S/Tr	X	Notes
37	101	12-01	360	14-7	1120	1127					N/A		
38	102	12-01	180	8-15	1138	1146					N/A		
41	103	12-01	360	14-7	1228	1236				RP	N/A		
42	104	12-01	180	5-15	1249	1300					N/A		
43	105	12-01	360	14-4	1308	1321					N/A		
39	301	12/01	360	12-5	1152	1200					N/A		
40	302	12/01	180	5-12	1210	1220					N/A		
44	303	12/01	180	5-10	1329	1335					N/A		

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ANALOG SENSOR LOGSHEET

Line #	Dir	Fix #'s	Date	Start Time	End Time	Start Gammas	Ending Gammas	SSS SB @ SOL	MAG SB @ SOL	WD @ SOL	WD @ EOL	Mag HOB @ SOL	Mag HOB @ EOL	Notes
32	90	5-21	11/30	2015	2033	48105	48143	+38	259	11	11	11	11	
28	270	20-4	11/30	2042	2101	48144	48127	+38	259	11	11	11	11	
31	90	5-21	11/30	2110	2129	48114	48138	+38	259	11	11	11	11	
23	270	20-4	11/30	2137	2156	48137	48128	+38	259	11	11	11	11	OFFline Shot Point #9 online shot point #6 OFFline shot point #7 online shot Point #4
19	90	5-21	11/30	2204	2223	48145	48079	+38	259	11	11	11	11	
25	270	20-4	11/30	2230	2249	48137	48130	+38	259	11	11	11	11	OFFline SP 10 Back ONline SP #6
22	90	5-21	11/30	2256	2314	48132	48152	+38	259	11	11	11	11	
24	270	20-4	11/30	2323	2343	48137	48135	+38	259	11	11	11	11	OFFline SP 9 Back online Sp #7
26	90	5-21	11/30	2349	0007	48132	48144	+38	259	11	11	11	11	
29	270°	20-4	12/01	0016	0035	48142	48126	+38	259	11	11	11	11	
27	90°	5-21	12/01	0042	0100	48132	48144	+38	259	11	11	11	11	
30	90°	20-4	12/01	0108	0127	48143	48120	+38	259	11	11	11	11	

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ANALOG SENSOR LOGSHEET

Line #	Dir	Fix #'s	Date	Start Time	End Time	Start Gammas	Ending Gammas	SSS SB @ SOL	MAG SB @ SOL	WD @ SOL	WD @ EOL	Mag HOB @ SOL	Mag HOB @ EOL	Notes
21	90°	5-21	12/01	0138	0155	48145	48576	+38	259	11	11	11	11	
17	270°	20-4	12/01	0208	0227	48135	48138	+38	259	11	11	11	11	
20	90°	5-21	12/01	0237	0255	48100	48257	+38	259	10	10	10	10	
16	270°	20-4	12/01	0307	0327	48140	48137	+38	259	10	10	10	10	Offline SP17 d/t current. Online SP17.
18	90°	5-21	12/01	0340	0359	49594	48109	+38	259	10	10	10	10	
15	270°	20-4	12/01	0412	0431	48136	48135	+38	259	9	9	9	9	Offline SP9 d/t wells. Online SP7.
14	90°	5-21	12/01	0443	0503	48135	48144	+38	259	9	9	9	9	Offline SP12 d/t jackup. Online SP21.
11	270°	20-12	12/01	0514	0523	48149	48142	+38	259	9	6	9	6	
13	90°	13-21	12/01	0535	0544	48139	48146	+38	259	9	9	9	9	
10	270°	20-12	12/01	0558	0607	48150	48141	+38	259	9	9	9	9	
12	90°	13-21	12/01	0620	0629	48137	48144	+38	259	9	9	9	9	
9	270°	20-14	12/01	0641	0648	48146	48135	+38	259	8	9	8	9	Offline SP18 d/t platform. Online SP16.

Job # : 05-543-13
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TESLA OFFSHORE, LLC

ANALOG SENSOR LOGSHEET

Line #	Dir	Fix #'s	Date	Start Time	End Time	Start Gammas	Ending Gammas	SSS SB @ SOL	MAG SB @ SOL	WD @ SOL	WD @ EOL	Mag HOB @ SOL	Mag HOB @ EOL	Notes
5	90°	15-21	12/01	0703	0710	48147	48151	+38	259	9	9	9	9	REPLAY SONAR.
8	270°	20-14	12/01	0721	0727	48150	48142	+38	259	9	9	9	9	
4	90°	15-21	12/01	0741	0748	48157	48154	+38	259	9	9	9	9	
7	270°	20-14	12/01	0757	0804	48150	48145	+38	259	9	9	9	9	
33	40°	5-11	12/01	0829	0837	48146	47906	+38	259	9	9	9	9	OFFline SP8 d/t platform.
34	40°	5-11	12/01	0857	0904	48145	47957	+38	259	9	9	9	9	OFFline SP9 d/t jackup. Online SP11.
6	270°	20-14	12/01	0916	0923	48147	48144	+38	259	9	9	9	9	
3	90°	15-21	12/01	0931	0938	48247	48148	+38	259	9	9	9	9	
1	270°	20-14	12/01	0948	0955	48152	48105	+38	259	9	9	9	9	
2	90°	15-21	12/01	1006	1013	50500	48144	+38	259	9	9	9	9	
14A	270°	20-4	12/01	1022	1039	48136	48130	+38	259	9	10	9	10	
23A	90°	5-11	12/01	1100	1107	48130	47057	+38	259	10	10	10	10	OFFline SP6 d/t well. Online SP8. OFFline SP8 d/t platform. Online SP10.

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TESLA OFFSHORE, LLC

ANALOG SENSOR LOGSHEET

Line #	Dir	Fix #'s	Date	Start Time	End Time	Start Gammas	Ending Gammas	SSS SB @ SOL	MAG SB @ SOL	WD @ SOL	WD @ EOL	Mag HOB @ SOL	Mag HOB @ EOL	Notes
101	360°	14-7	12/01	1120	1127	48131	48134	+38	259	10	10	10	10	
102	180°	8-15	12/01	1138	1146	48133	48138	+38	259	10	10	10	10	Offline SP10 d/t platform. Online SP13.
301	360°	12-5	12/01	1152	1200	48126	48102	+38	259	10	10	10	10	Offline at EOL. Online SP11.
302	180	5-12	12/01	1210	1220	48101	48138	+38	259	10	11	10	11	
103	360	14-7	12/01	1228	1236	48117	48137	+38	259	11	11	11	11	Replay Sub bottom
104	180	5-15	12/01	1248	1300	48151	47873	+38	259	11	11	11	11	
105	360	14-4	12/01	1308	1321	47983	48148	+38	259	11	11	11	11	
303	180	5-10	12/01	1329	1335	48159	48145	+38	259	11	11	11	11	

APPENDIX B

PROJECT PERSONNEL

FIELD PERSONNEL

Party Chief	K. Bourg
Geophysical Chief	R. Colon Rios
Geophysical Operator	A. Bochner
Geophysical Operator	C. Sharpe
Geophysical Operator	J. Naylor

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Geological Interpretation	Ricky Clemmons
Archaeological Assessment	Matt Keith
Archaeological Assessment	Rob Floyd
AutoCAD Supervisor	John Laiche
AutoCAD Specialist	Mike Tripp
AutoCAD Operator	Ryan Newchurch
AutoCAD Operator	Kyle Ray

APPENDIX C

MAGNETOMETER
&
SIDE SCAN SONAR DATA

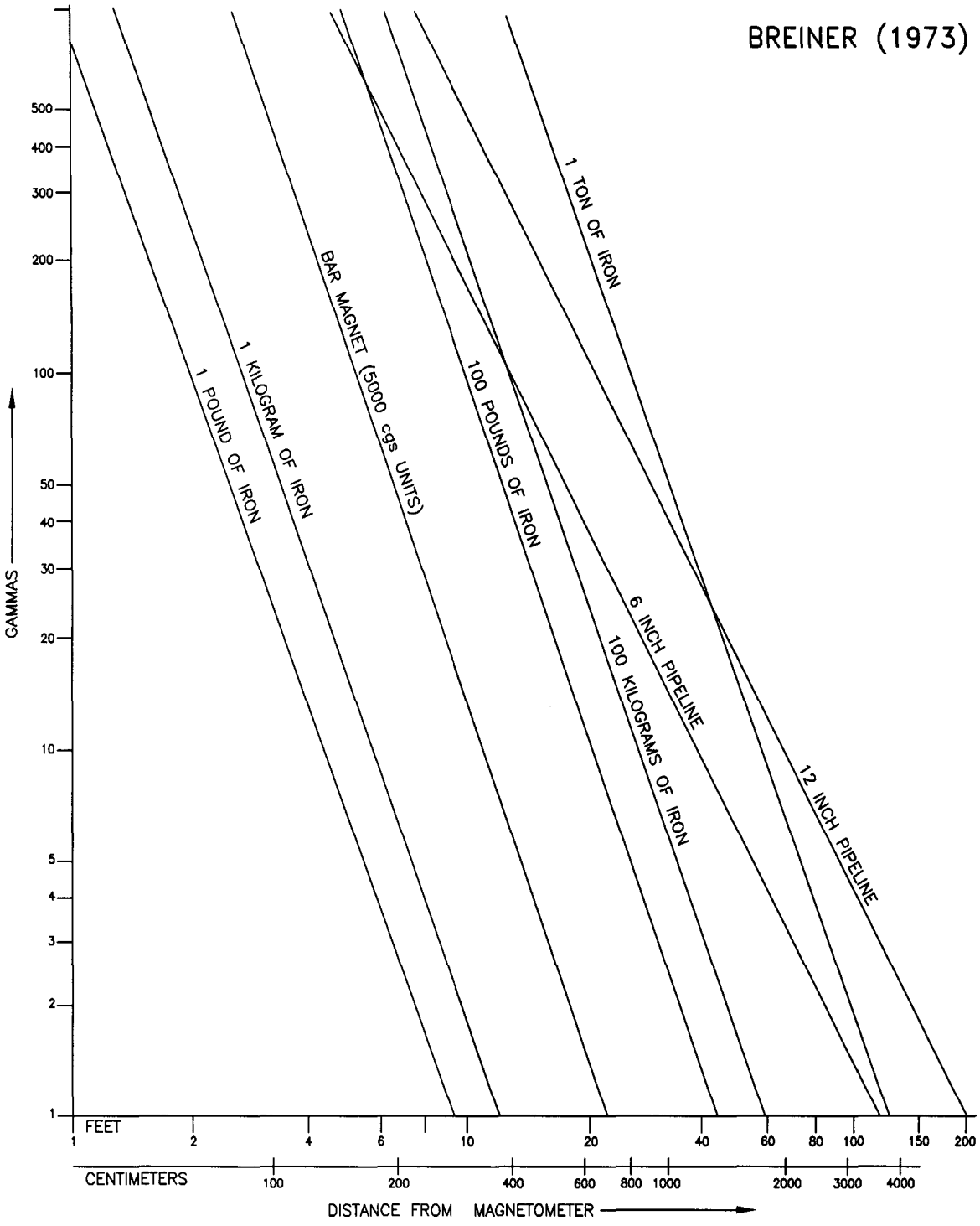
UNIDENTIFIED MAGNETIC ANOMALIES

BLOCKS 37,57, AND 58 EUGENE ISLAND AREA

COORDINATES, LOUISIANA SOUTH ZONE (NAD 27) CLARKE 1866

ANOMALY NUMBER	LINE NUMBER	SENSOR FIX	nT	SIG.	DURATION	SENSOR HEIGHT	BLOCK NUMBER	X	Y
1	14	12.20	31	D	50	9	57	1,984,579	211,430
2	16	14.70	37	+	100	10	58	1,985,805	211,068
3	16	13.00	97	D	75	10	57	1,984,974	211,070
4	17	13.10	82	D	100	11	58	1,985,015	210,969
5	17	12.30	19	D	100	11	57	1,984,624	210,972
6	23	14.60	98	D	100	11	58	1,985,755	210,192
7	23	13.60	37	+	50	11	58	1,985,263	210,187
8	24	20.00	21	+	100	11	58	1,988,415	210,056
9	25	13.70	36	-	75	11	58	1,985,313	209,919
10	26	8.30	550	D	50	11	57	1,982,657	209,779
11	26	17.50	44	-	50	11	58	1,987,188	209,789
12	29	17.70	34	+	100	11	58	1,987,284	209,395
13	30	14.20	29	-	50	11	58	1,985,562	209,257
14	31	14.00	32	-	50	11	58	1,985,463	209,131

Nomograms for Estimating Anomalies for Typical Objects (assuming diipole moment M = 5 x 10^9 cgs/ton, i.e., k = 8 cgs. Estimates valid only within order of magnitude)



To use the nomogram, select a given weight or type of object from among the diagonal labeled lines. Then choose a distance along the bottom line (abscissa) of the graph and follow a vertical line upwards from that distance until it intersects the diagonal line of the selected object. At that point, move horizontally to the left to a value on the vertical axis (ordinate) of the graph and read the intensity in gammas.

At a given distance, the intensity is proportional to the weight of the object. Therefore, for an object whose weight is not precisely that of the labeled lines, simply multiply the intensity in gammas by the ratio of the desired weight to the labeled weight on the graph. If the distance desired does not appear on the graph, remember that for a typical object the intensity is inversely proportional to the cube of the distance and for a long pipeline the intensity is inversely proportional to the square of the distance between magnetometer sensor and object. Due to the many uncertainties described herein, the estimates derived from this nomogram may be larger or smaller by a factor of 2 to 5 or perhaps more.

Table of Anomalies of Common Objects
Typical Maximum Anomaly

Object	Near Distance	Far Distance
Automobile (1 ton)	30 feet 40 gammas	100 feet 1 gamma
Ship (1000 tons)	100 ft 300 to 700 gammas	1000 feet 0.3 to 0.7 gammas
Light Aircraft	20 feet 10 to 30 gammas	50 feet 0.5 to 2 gammas
File (10 inch)	5 feet 50 to 100 gammas	10 feet 5 to 10 gammas
Screwdriver (5 inch)	5 feet 5 to 10 gammas	10 feet 0.5 to 1 gamma
Revolver (38 special or 45 automatic) (induced approximately equal to permanent see text)	5 feet 10 to 20 gammas	10 feet 1 to 2 gammas
Rifle	5 feet 10 to 50 gamms	10 feet 2 to 10 gammas
Ball Bearing (2mm)	3 inches 4 gammas	6 inches (0.5 feet) 0.5 gamma
Fenceline	10 feet 15 gammas	25 feet 1 to 2 gammas
Pipeline (12 inch diameter)	25 feet 50 to 200 gammas	50 feet 12 to 50 gammas
DC Train	500 feet 5 to 200 gammas	1000 feet 1 to 50 gammas
'Cow' magnet (1/2" W, 3" L)	10 ft 20 gammas	20 feet 2 gammas
Well casing and well head	50 feet 200 to 500 gammas	500 feet 2 to 5 gammas

BREINER (1973)

SIDE SCAN SONAR TARGETS WITH HAZARD AVOIDANCE

COORDINATES, LOUISIANA SOUTH ZONE (NAD 27) CLARKE 1866

Target Number	Line/ Fix	Magnetometer Association	Dimensions/ Description	Shape	X	Y	LATITUDE	LONGITUDE	Avoidance
1	Line 21 Fix 9.3	N/A	8' Circular target with at least 4' of measurable relief	Circular	1,983,150	210,360	29.4511194°	-91.38616694°	N/A

APPENDIX D

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REFERENCES

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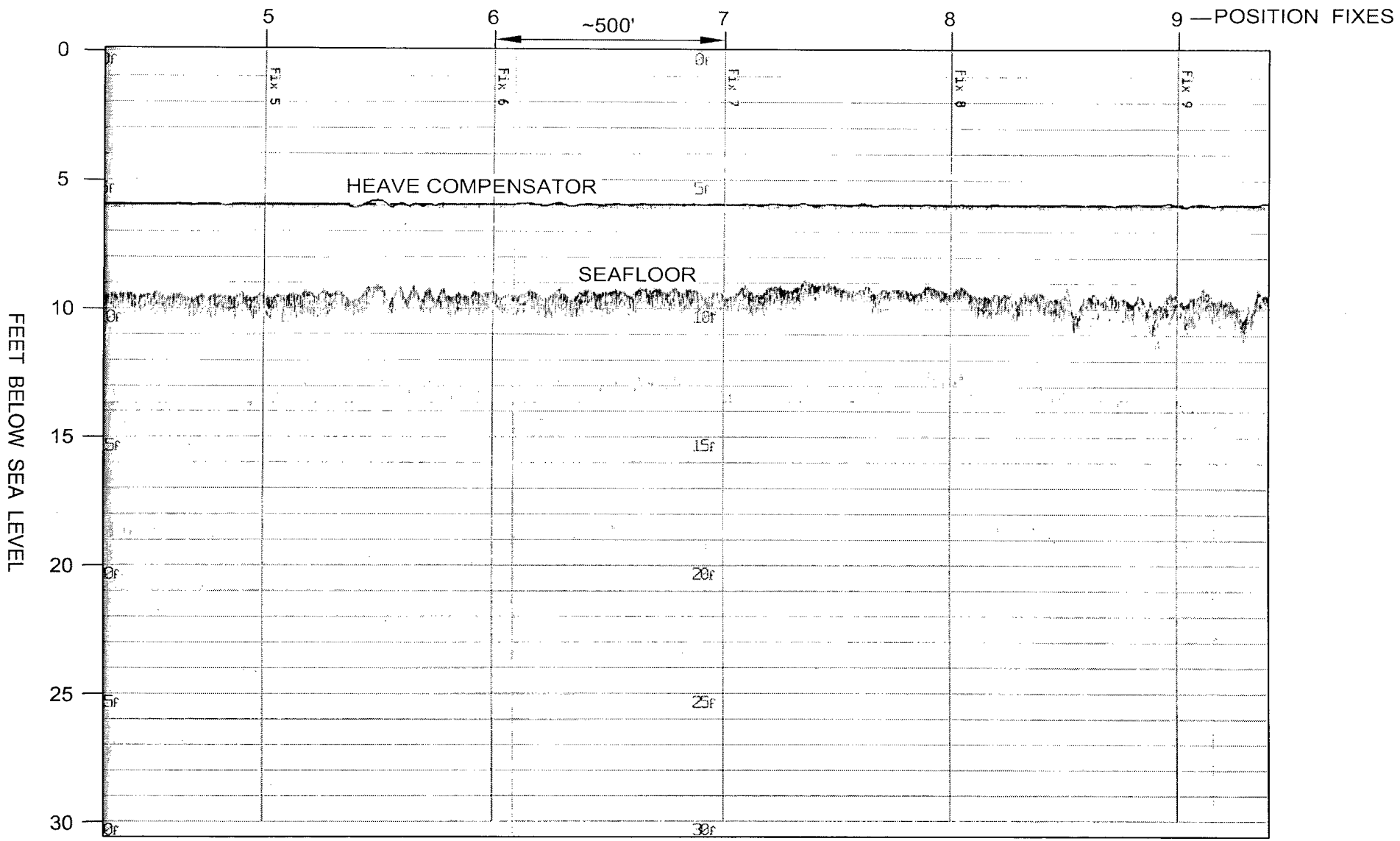
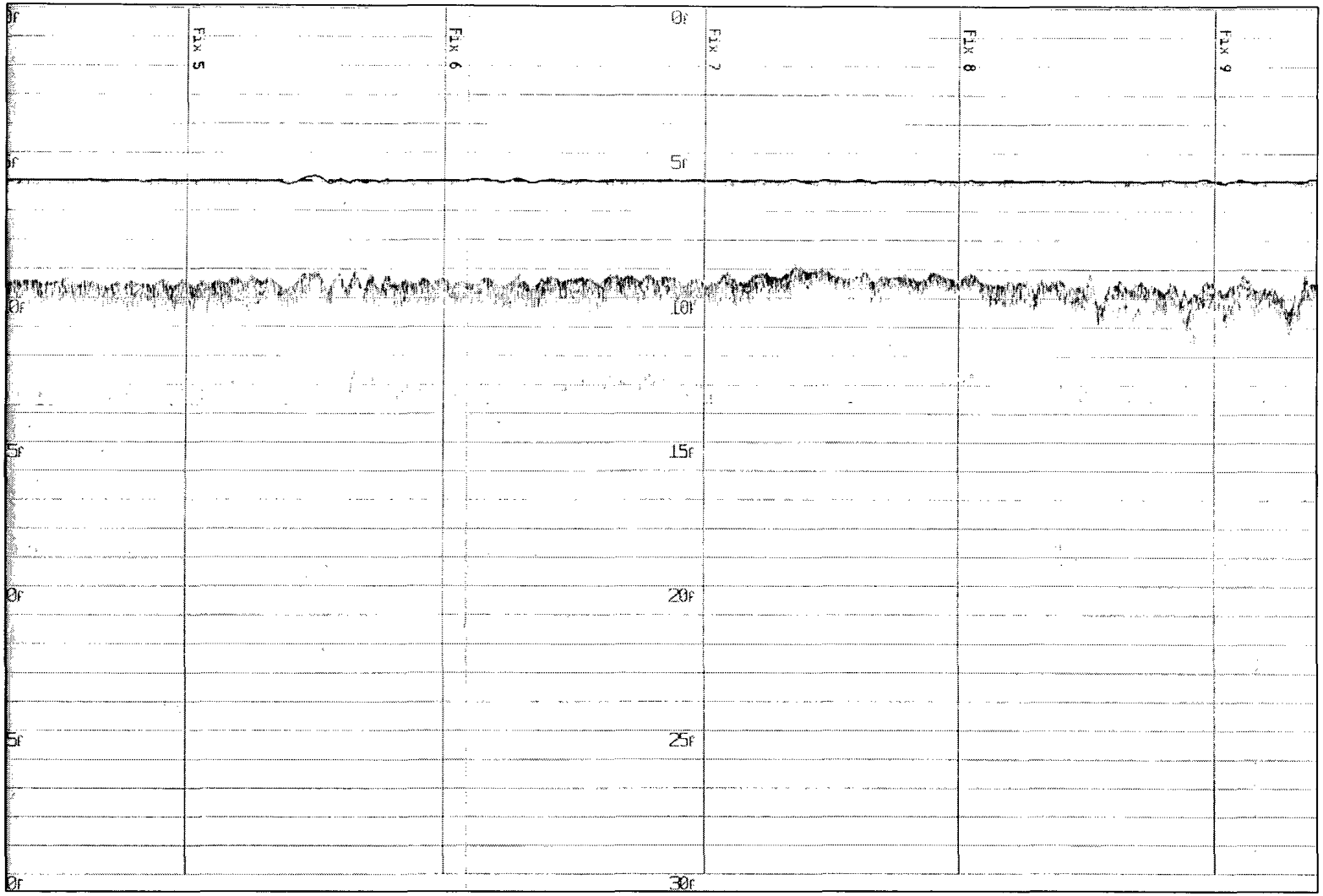
APPENDIX E

DATA EXAMPLES



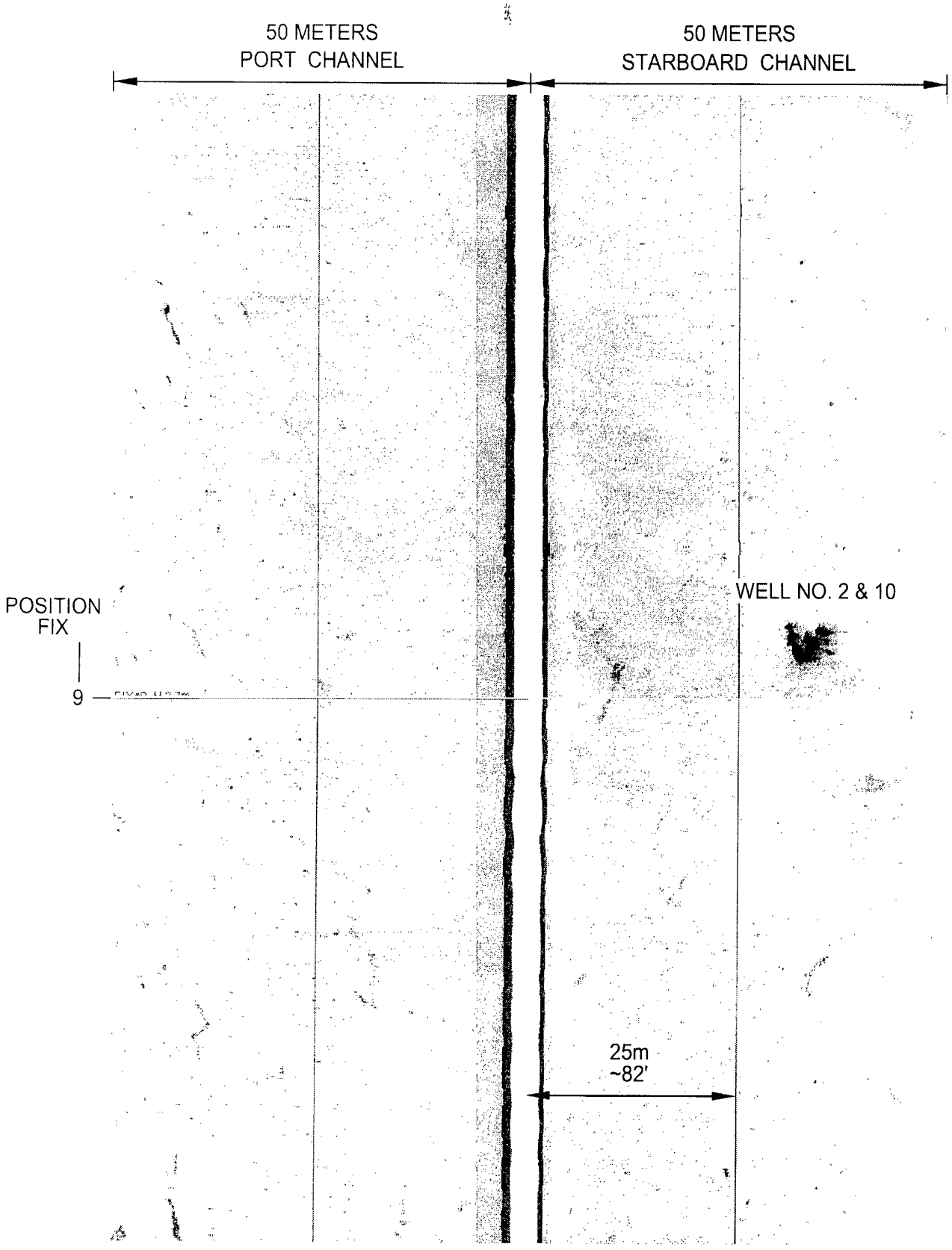
200 kHz ECHO SOUNDER RECORD OF SURVEY LINE NO. 33

05-543 FIGURE NO. 1



200 kHz ECHO SOUNDER RECORD OF SURVEY LINE NO. 33 (UNANNOTATED)

05-543 FIGURE NO. 1A

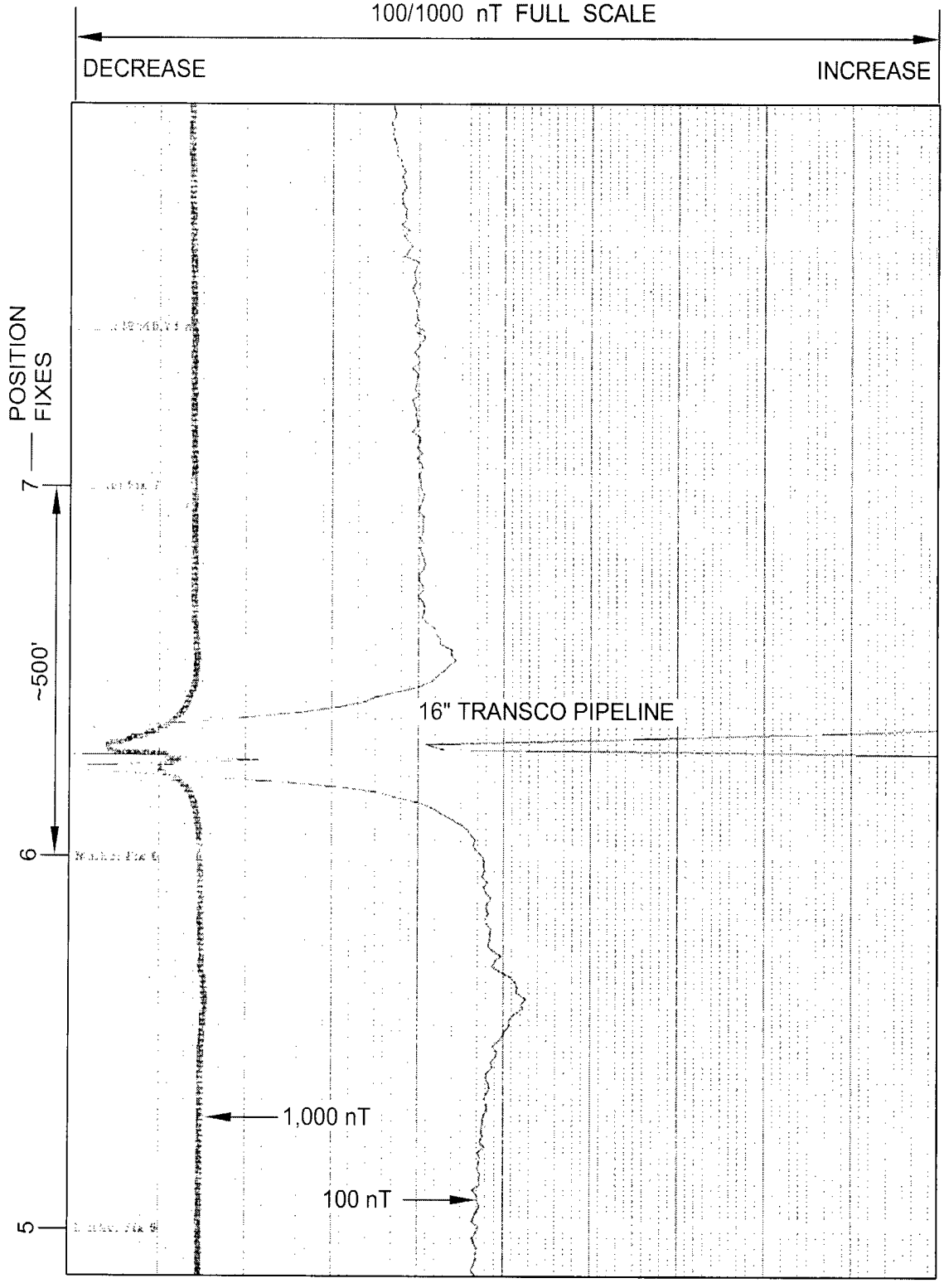


SIDE SCAN SONAR RECORD OF SURVEY LINE NO. 102

05-543 FIGURE NO. 2

SIDE SCAN SONAR RECORD OF SURVEY LINE NO. 102 (UNANNOTATED)

05-543 FIGURE NO. 2A



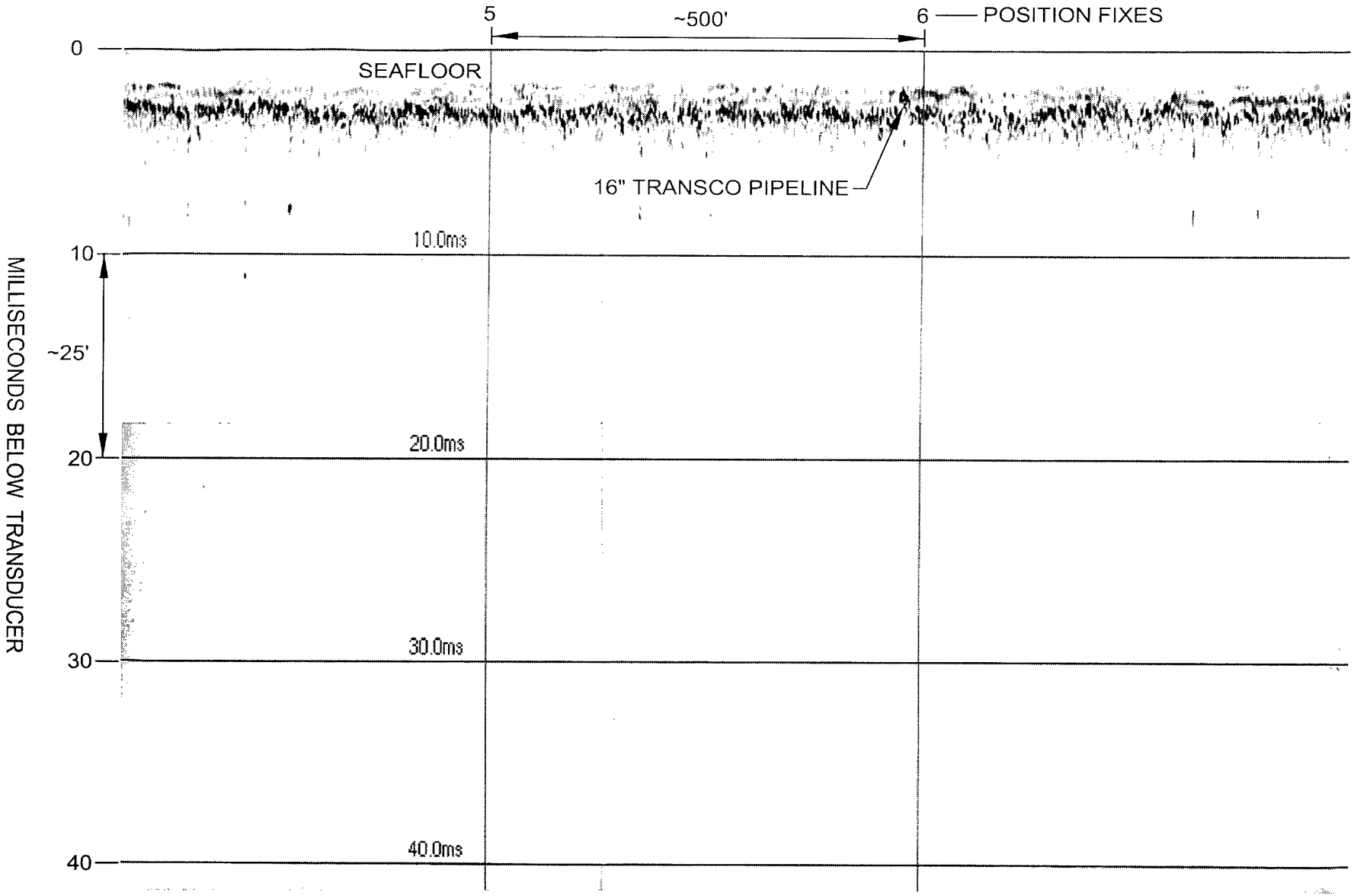
MAGNETOMETER RECORD OF SURVEY LINE NO. 33

SENSOR HEIGHT 9'

05-543 FIGURE NO. 3

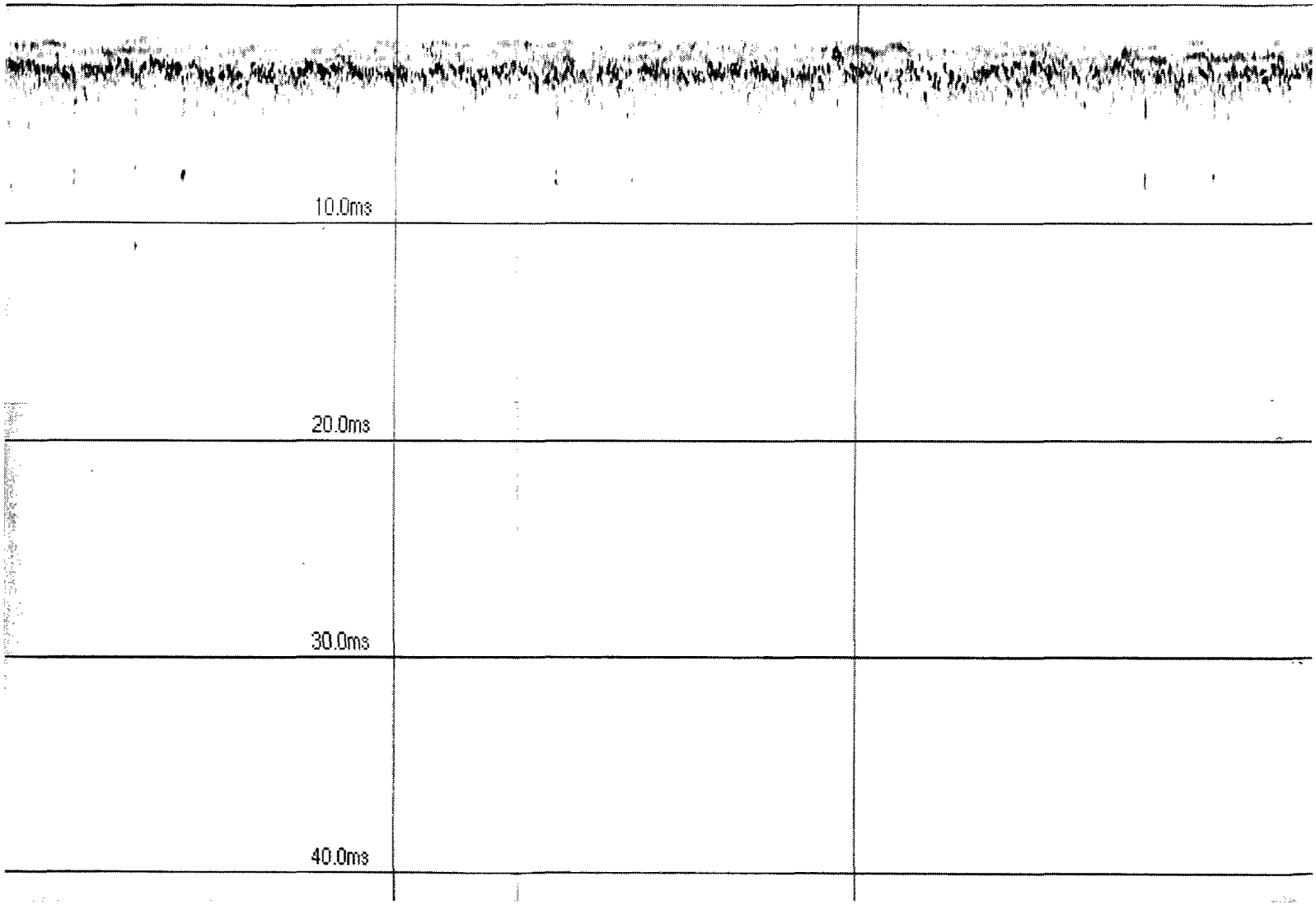
MAGNETOMETER RECORD OF SURVEY LINE NO. 33 (UNANNOTATED)

05-543 FIGURE NO. 3A



SUBBOTTOM PROFILER RECORD OF SURVEY LINE NO. 34

05-543 FIGURE NO. 4



SUBBOTTOM PROFILER RECORD OF SURVEY LINE NO. 34 (UNANNOTATED)

05-543 FIGURE NO. 4A

APPENDIX F

ARCHAEOLOGICAL ASSESSMENT

ARCHAEOLOGICAL ASSESSMENT

Based on the most recent regional study conducted for the MMS, Blocks 37, 57, & 58, Eugene Island Area, are inside a high probability zone for historic shipwrecks, and inside the high probability zone for prehistoric archaeological site preservation. A 50-meter primary line spacing ensured overlapping seafloor coverage with the side scan sonar in 9 to 10 feet of water. This archaeological assessment of the geophysical survey data includes a review of regional literature pertaining to Pleistocene and Holocene geomorphology to support the interpretation of prehistoric site potential for the lease area. Available coastal charts and shipwreck files have been checked to supplement the magnetometer and side-scan sonar interpretations.

Blocks 37, 57, & 58, Eugene Island Area, are five (5) miles offshore of Atchafalaya Bay on the central Louisiana outer continental shelf in 9 to 10 feet of water. Seafloor sediments in this vicinity are reportedly silty sands (USDI, MMS, 1983: Visual No. 3) with large volumes of clay being dumped into the area rapidly over the past few decades from sediment plumes through the Atchafalaya Bay.

Bernard (1970) and McClelland Engineers, Inc. (1979) used sparker seismic profiles and soil borings to determine that approximately 90 feet of Holocene age deposits accumulated over the Pleistocene topsoils that comprised the outer continental shelf during the last low sea level cycle in North America. Subbottom profiler data in Blocks 37, 57, & 58, Eugene Island Area, recorded less than 10 feet of sediment beneath the seafloor in the survey grid (Figure No. 4).

The upper 10 feet of fluff represent essentially modern soil accumulation with layers from 10 to 20 feet BML originating within the Sale'-Cypremort deltaic plain that was exposed above sea level between 6,000 and 5,000 years ago. Deeper organic deposits about 40 feet below the seafloor soils represent the Maringouin delta plain from 7,000 to 6,000 years ago. Excessive organic debris from the Atchafalaya River basin saturates the surficial deposits,

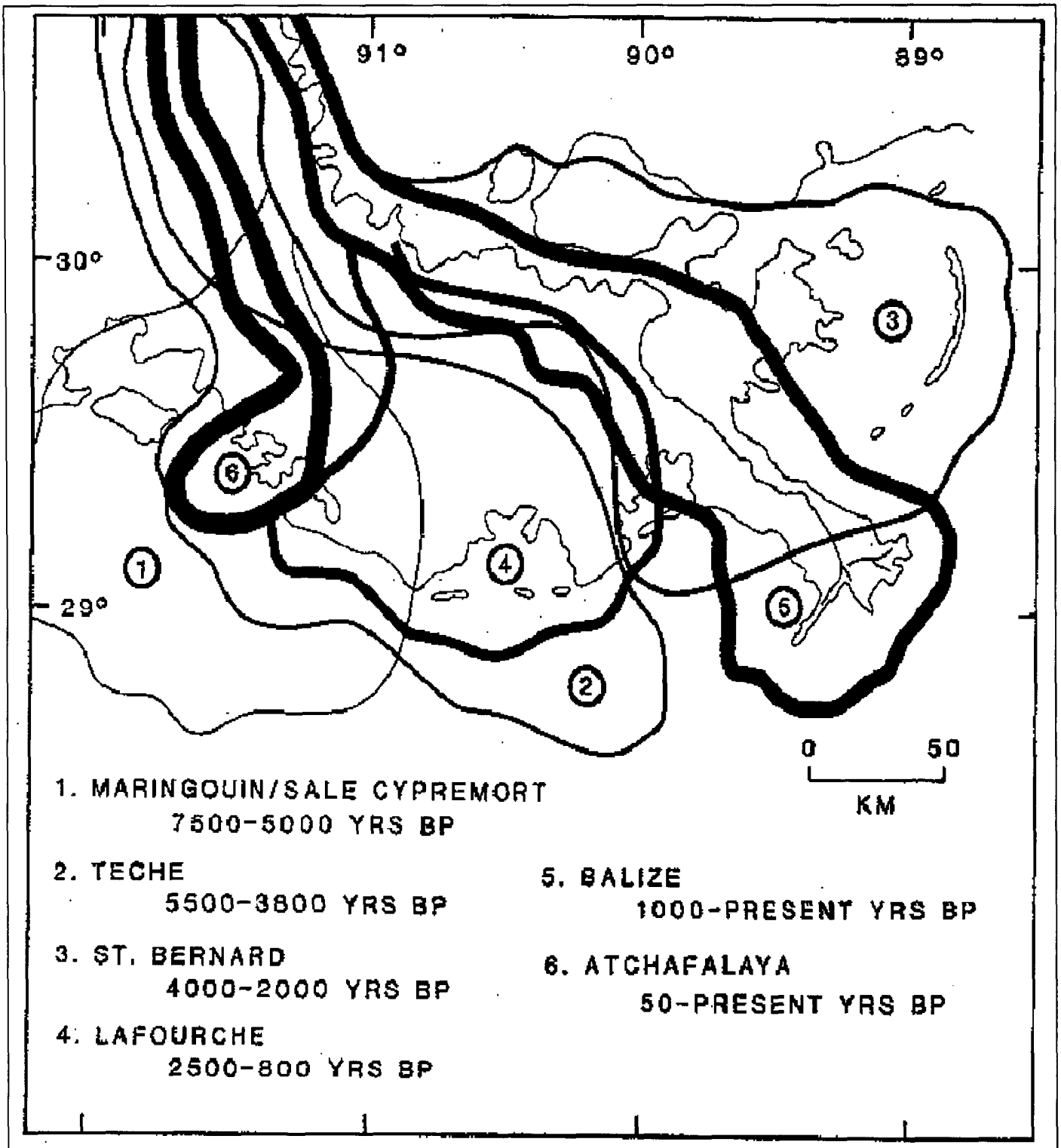


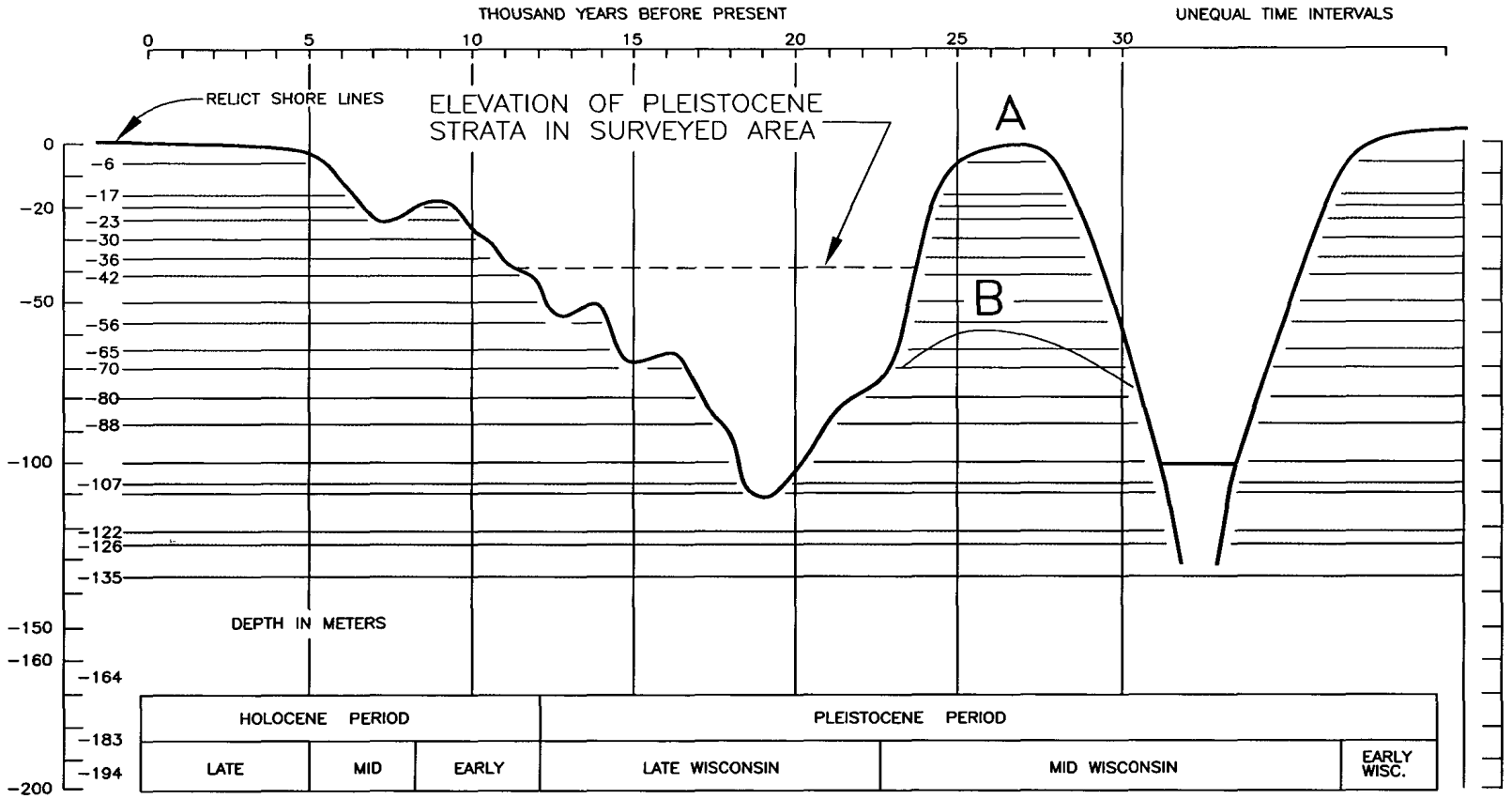
Figure 9. Outlines of the Holocene delta lobes of the Mississippi River delta plain. After Coleman (1988).

precluding resolution of any of these former deltaic layers. The subbottom profiles have been reviewed for evidence of former landforms, which may have supported prehistoric human groups. This portion of the continental shelf was exposed to subaerial weathering conditions during the Late Wisconsin low sea level cycle. The lowering of sea level during the Late Wisconsin was a response to expansion of the glacial ice sheets in the polar regions of the continents. By the time of maximum glaciation, the storage of water in the glaciers resulted in a lowering of sea level approximately 425 to 450 feet below the present high stand. This maximum Late Wisconsin sea level recession occurred between 20,000 and 18,000 years ago, and most of the continental shelf was exposed as dry land at this time. The drop in sea level led to a progressive lowering of stream base level, and rivers entrenched channels and valleys into the upper Pleistocene strata across the subaerially exposed continental shelf.

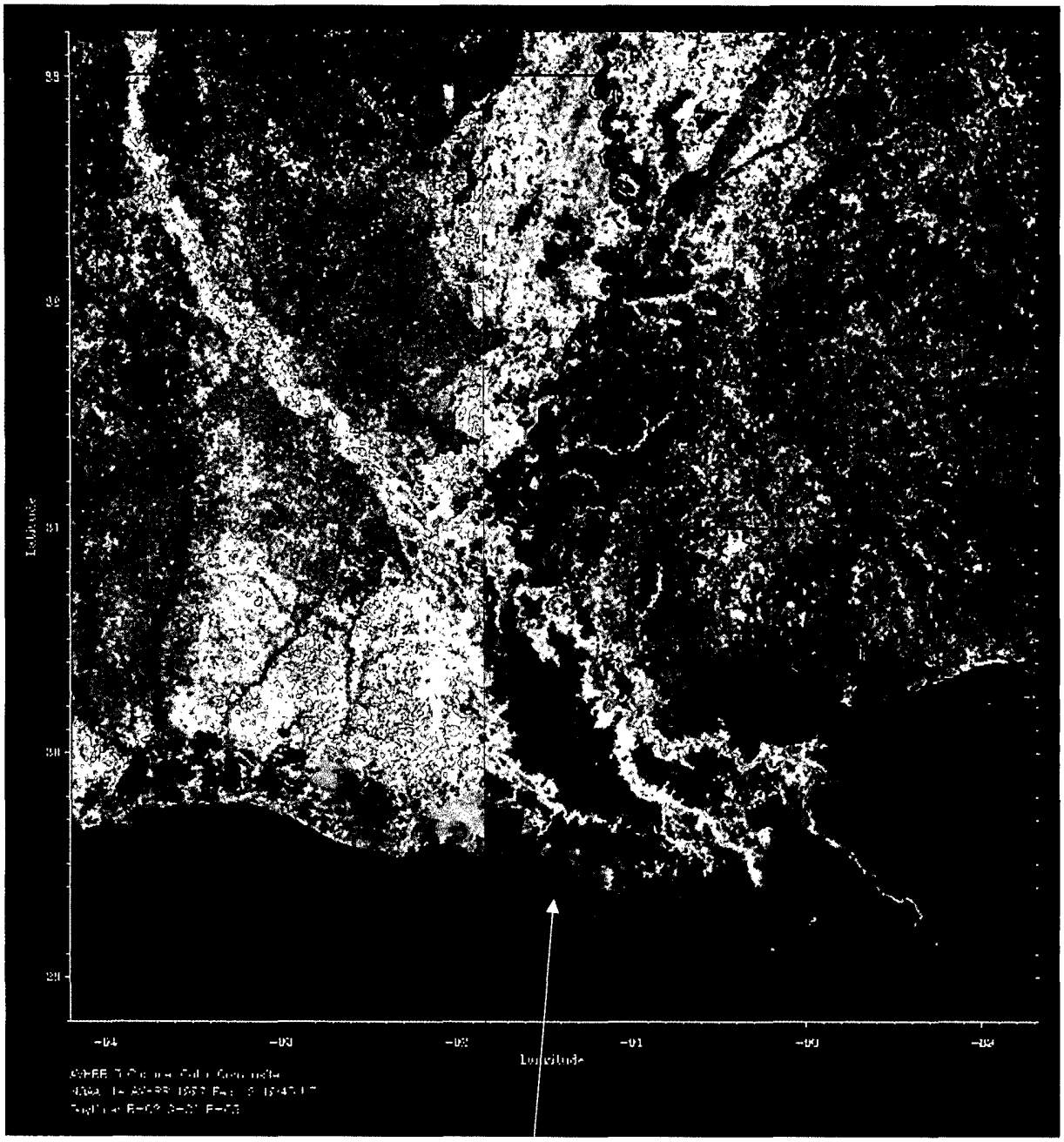
It was during the Late Pleistocene period that at least some groups of Asiatic peoples migrated to North America across the exposed landmass of Beringia, which is presently drowned beneath the Bering and Chukchi seas. During the Late Wisconsin glaciation, Beringia was a vast plain characterized by arctic vegetation and megafauna; the ice free isthmus provided east Asians, including inhabitants of the Japanese Island, and Siberian groups with direct access to what is now called interior Alaska which was ice free.

In August of 2001, the National Academy of Sciences presented a new study on the similarities and differences between recent and prehistoric Old World and New World human groups based on craniofacial data (Brace, et al. 2001). These comparative skull observations indicated that the first human groups in the Western Hemisphere arrived 15,000 years ago and gave rise to continuing native inhabitants south of the U.S. – Canadian border. These earliest inhabitants show ties to the Ainu of Hokkaido and their Jomon predecessors in prehistoric Japan and to the Polynesians of remote Oceania. These groups have ties to the Pleistocene inhabitants of Europe and may represent an extension from a Late Pleistocene continuum of people across the northern fringe of the Old World. The route of entry to the New World was at the northwestern edge, probably along the exposed coast, rather than the central high ground.

CURVE OF RELATIVE CHANGE OF LAND–SEA LEVEL



Relative changes in the level of land and sea during the Late Quaternary (from CEI 1977, revised July, 1982)



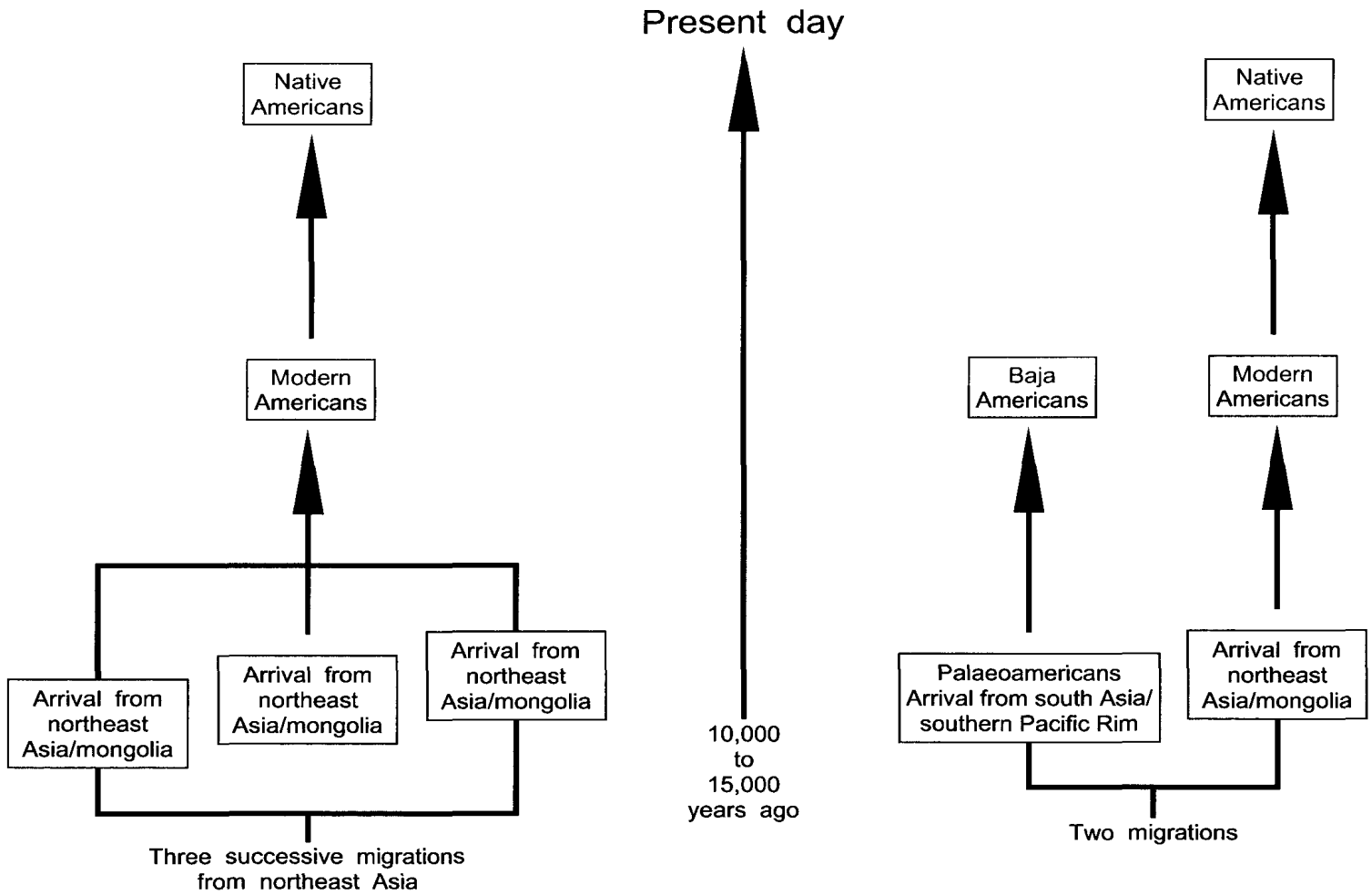
Atchafalaya Bay Freshwater Sediment Plume Primarily Clay

Encompassing Blocks 37, 57 & 58, Eugene Island Area

Modern testing at Oxford's Radiocarbon Accelerator Unit on skulls found decades ago in Mexico indicates that a female skull is almost 13,000 years old (American Archaeology Spring 2003). Two of the oldest skulls from the collection in Mexico City are older than 12,000 years, and the long, narrow-headed traits appear to be of Caucasian ancestry. The collections more recent skulls are short and broad-headed, more typical of the modern day Native Americans and their Mongoloid ancestors from Asia. One supposition holds that these older skulls are very similar to the Pericue group from the southern Baja California Peninsula in Mexico that became extinct in the late 1700's, and the early human migrations may have occurred along the Pacific coast heading north, rather than across the Bering Strait southward. Alternative hypotheses on the human migrations into the Americas are depicted on the following diagram.

Later migrants included the Inuit (Eskimo), the Aluet, and the Na-Dene speakers who had penetrated into the American Southwest within the last 1,000 years. These groups show more similarities to the mainland East Asians, with a mixture of traits characteristic of the northern edge of Old World occupation and the Chinese core of mainland Asia; however the proportion of Chinese mainland features is higher for the more recent Holocene age human entrants.

Excavations at Avery Island, northwest of Blocks 37, 57, & 58, Eugene Island Area indicate that humans reached the northern Gulf of Mexico region approximately 12,000 years ago. At that time, sea level was 50 meters (~165 feet) lower than the present high stand. Paleo-Indians probably exploited the many favorable habitats across the exposed Pleistocene surface of the emerged continental shelf. Small groups of hunters and foragers adapted to various niches within the primary habitats that existed during the last Pleistocene glacial stage and Holocene transition period. Plants and animals are most plentiful along the lines where the primary habitats of earth, water, and air intersect, such as the shores of lakes, rivers, and seas.


Present day
Native Americans
Modern Americans
Arrival from northeast Asia/mongolia
Arrival from northeast Asia/mongolia
Arrival from northeast Asia/mongolia
Three successive migrations from northeast Asia
10,000 to 15,000 years ago
Native Americans
Baja Americans
Modern Americans
Palaeoamericans Arrival from south Asia/ southern Pacific Rim
Arrival from northeast Asia/mongolia
Two migrations

The majority of archaeological sites from the late Pleistocene and early Holocene periods were associated with shorelines and riverbanks where exploitation of the widest variety of plant and animal species could have been accomplished with the least effort and highest degree of success. This area was above sea level when the Maringouin/Sale'- Cypremort delta lobes of the ancestral Mississippi River developed between 7,000 and 5,000 years ago. Paleo-Indian and later Archaic tribal groups occupied Avery Island about 30 miles northwest of this part of Eugene Island Area from at least 11,500 until the arrival of European explorers.

The underlying Pleistocene deposits are not resolved on the subbottom profiles, and any cultural artifacts and remains associated with the Pleistocene landforms are buried by 90 feet of sediment in Blocks 57 and 58. There were no natural levees or buried distributary stream channels resolved on the subbottom profiles. Archaic cultural groups lived in this area between 7,000 and 5,000 years ago, but prehistoric archaeological sites are not indicated in this lease area.

Blocks 37, 57, & 58, Eugene Island Area, are included in a high probability area for historic shipwrecks, and the closest reported wrecks to Blocks 37, 57, & 58 include:

- Block 57 (Eugene Island): **Unknown vessel**. Location reliability: 2 (good to moderate).
- Block 57 (Eugene Island): **Unknown vessel**. Location reliability: 4 (vague to unreliable).
- Block 10 (Ship Shoal): **Unknown vessel**. Location reliability: 4 (vague to unreliable).
- Block 39 (Eugene Island): Fishing vessel **Miss Beverly**, lost December 21st, 1989. Location reliability: 2 (good to moderate).
- Block 38 (Eugene Island): **Marsh Oil Rig**. Location reliability: 4 (vague to unreliable).

The magnetometer data registered massive readings over the existing pipelines, P&A well sites, and adjacent to the existing wells and platforms. The survey vessel was forced to divert around the existing platforms and well caissons. Shrimp trawlers constantly work the area, and prominent side scan sonar features included overlapping drag marks from the

boards that hold the shrimp nets down. If a ship had foundered here or run aground under storm conditions, the wreckage would not have subsided significantly before the hull and components would have been battered by constant wave action and scattered by subsequent storms, tidal surges, and longshore currents.

A total of 14 magnetic anomalies were recorded throughout the survey area. None of these have been marked for archaeological avoidance. Some of these anomalies probably represent buried modern debris, such as magnetized wire or industry debris, but may also represent shipwreck components such as rigging or fasteners. These anomalies should therefore be avoided or if avoidance is not an option, investigated by divers to determine archaeological significance.

Magnetic anomalies that did not correlate directly to the pipelines and wells are plotted on Map 1 and listed in Appendix C. Side scan sonar data recorded a target protruding 4 feet from the seafloor near existing pipelines. The target did not appear to be a probable shipwreck site. The seafloor is swept by strong longshore currents and shrimp nets, and the preservation potential is low to moderate for historic shipwrecks in Blocks 37, 57, & 58, Eugene Island Area.

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