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Via electronic mail

May 6, 2024

Ms. Sam Mickle
Alabama Department of Environmental Management – Coastal Program
3664 Dauphin Street, Suite B
Mobile, Alabama 36608

Re: KNOC Eagle Ford Corporation
Request for ADEM CZMA Consistency Determination
ADEM Tracking Code ACAMP-2024-058
Right-of Way Pipeline Modification
OCS-G 26821, Segment Nos. 15060 and 15062
Gulf of Mexico, Federal Waters, Offshore Louisiana

Dear Ms. Mickle,

In accordance with the regulations contained in Title 15 CFR Part 930 Subpart D, KNOC Eagle Ford Corporation (KNOC) transmits a completed Coastal Zone Management Program consistency certification and copy of the Bureau of Safety and Environmental Enforcement (BSEE) right-of-way pipeline modification application for the subject project. It is requested that ADEM, in concert with the Alabama Geological Survey, review the proposed pipeline modification for consistency with the Alabama Coastal Area Management Program, ADEM Admin. Code R 335-8, and supply written determination of consistency to BSEE and KNOC.

Your office has assigned tracking number ACAMP-2024-058 to this request. KNOC will be making payment of the $24,480.00 consistency review fee by check. Should you have any questions regarding this request, or if I can be of any assistance to your review, please do not hesitate to contact me at (251) 300-0063 or cbryant@projectconsulting.com .

Sincerely,

Clay Bryant

C: Karen Vanacor/KNOC
Jim Elgin/PCS
PCS File No. 22081

COASTAL ZONE MANAGEMENT PROGRAM
CONSISTENCY CERTIFICATION FORMAT

Consistency certification format for all right-of-way pipeline applications that affect Gulf and Atlantic States.

COASTAL ZONE MANAGEMENT PROGRAM
CONSISTENCY CERTIFICATION

South Pass Area Block 60
From (Area and Block)

South Pass Area Block 6
To (Area and Block)

4-inch = 3.42 Statute Miles; 2-inch = 3.40 Statute Miles
Length (miles)

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

KNOC Eagle Ford Corporation
(Right-of-Way Applicant)

Do Hyoung Kim
Sr. Project Manager

(Certifying Official)

5 / 06 / 2024

(Date)

KNOC Eagle Ford Corporation
5599 San Felipe St. Suite 725 Houston, TX, 77056
Phone: (713) 552-9304 Fax: (713) 552-1898

December 22, 2023

Acting Regional Supervisor
Office of Field Operations
U.S. Department of the Interior
Bureau of Safety and Environmental Enforcement
1201 Elmwood Park Boulevard
New Orleans, Louisiana 70123-2394

Attention: Ms. Angie Gobert

Subject: Application for the Modifications of KNOC Eagle Ford Corporation's 4.50-inch O.D. Natural Gas Right-of-Way Pipeline, OCS-G 26821, Segment No. 15062, Gulf of Mexico, Federal Waters, Offshore Louisiana.

Ms. Gobert:

Pursuant to the authority granted in 43 U.S.C. 1334 (a)(2) and (e), and in compliance with all other applicable regulations contained in Title 30 CFR, Part 250, Subpart J, Pipelines and Pipeline Rights of Way on the Outer Continental Shelf, and Subpart Q, Decommissioning Activities, KNOC Eagle Ford Corporation (KNOC), whose address is 5599 San Felipe Street, Suite 725, Houston, Texas 77056, has prepared this application for the modifications of the subject right-of-way for the 4.50-inch O.D. natural gas pipeline which presently extends from the existing KNOC Eagle Ford Corporation Platform "B" in Mississippi Canyon Area, Block 21 to the Platform "F" in South Pass, Block 60 which is scheduled to be removed. KNOC's GOM company number is 3695. KNOC agrees that said modifications will be subject to the terms and conditions of said regulations.

Segment No. 15062 is currently out-of-service under a Temporary Cessation of Operations and has been flushed and filled with inhibited seawater.

The purpose of the modifications of Segment No. 15062 is to provide the following which are combined and submitted in this a single permit application as agreed to in the meeting of December 6, 2023, between Jason Caraher (BSEE) and Alex Alvarado (Project Consulting Services, Inc.) and it is also requested that this application be assigned to Mr. Caraher:

1. Decommission in place a portion of the KNOC 4.50-inch O.D. pipeline (Segment No. 15062) in South Pass, Block 60 to accommodate the modifications noted herein. The total length of pipeline to be decommissioned is 2,020 feet, 0.38 statute miles.

2. Relinquish the portion of the Right-of-Way (OCS-G 26821) occupied by the decommissioned portion of the 4.50-inch. The total length of the pipeline right-of-way to be decommissioned is 2,307 feet, 0.44 statute miles.

3. Modify Segment No. 15062 by increasing the pipeline segment length an additional 46,560 feet (8.82 statute miles) beginning at a subsea connection to the existing 4.50-inch O.D. KNOC pipeline in South Pass Block 60 and ending at a LLOC facility in Plaquemines Parish, Louisiana. The total length of 4.50-inch pipeline that will be added in Federal waters is 18,045 feet (3.42 statute miles). The total length of existing 4.50-inch pipeline that will be restored to service is 49,227 feet (9.32 statute miles). The proposed total length of the KNOC 4.50-inch pipeline will be 95,787 feet (18.14 statute miles).

4. Modify Segment No. 15062 by reversing the direction of flow from the KNOC MC 21 "B" platform.

5. Change the pipeline service of Segment No. 15062 from natural gas to multiphase (oil, water, and natural gas). The pipeline will transport oil and natural gas from the LLOX facility in Plaquemines Parish, Louisiana to the KNOC MC 21 "B" platform through the existing 4.50-inch pipeline and through the proposed 4.50-inch pipeline,

Upon completion, the modified Segment 15062 will serve the purpose of supplying oil, water, and natural gas to the LLOX facility in Plaquemines Parish, Louisiana.

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

1. Block Lease and Pipeline Information, Attachment "A".

2. General Information and Calculations, Attachment "B".

3. Modification Procedures, Attachment "C".

4. Worst Case Spill Volume Calculations, Attachment "D".

5. Vicinity Map, Proposed Bundled 4" Multiphase & 2" Fuel Gas Pipeline Route, DoC Mapping LLC, Sheet 1 of 6.

6. Certified Plats, Proposed Bundled 4" Multiphase & 2" Fuel Gas Pipeline Route, DoC Mapping LLC, Sheet 2 of 6 through Sheet 6 of 6 with ASCII file containing coordinates of modified pipeline route.

7. Pipeline Safety Flow Schematic, 4.50-Inch Pipeline, Plaquemines Parish, LA to Mississippi Canyon 21 "B", Drawing No. PER-001.

8. 4" & 10" Pipeline Decommissioning Plan, South Pass Block 60, Drawing No. 22081_PER-003.

9. Existing KNOC EF Pipelines, SP60 Riser Tie-in Decommissioning, Drawing No. 22081_PER-004

10. 4" & 2" Subsea Pipeline Tie-ins to Existing KNOC EF Pipelines, South Pass 60, Drawing No. 22081_PER-005.

11. 4" Subsea Pipeline Tie-in to Existing 4" KNOC EF Pipeline, South Pass 60, Drawing No. 22081_PER-007.

12. 4" & 2" Subsea Pipeline Tie-ins to Existing KNOC EF Pipelines, Cover Details, Drawing No. 22081_PER-008.

13. Unburied Pipeline Crossing Detail, Drawing No. 22081_PER-009.

14. Buried Pipeline Crossing Detail, Drawing No. 22081_PER-010.

15. 4" Pressure Balance Safety Joint Reorientation, Mississippi Canyon Block 21 "B", Drawing No. 22081_PER-012.

16. Pipeline Spacer & Anodes, Drawing No. 22081_PER-013.

17. Anchor Placements for Pipeline Abandonment at SP 60F Platform, Drawing No. 22081_PER-014

18. Pipe Specifications and General Information, Drawing No. PS-1

19. Pipeline Pre-Lay Geohazard Survey and Phase I Archeological Assessment, Proposed 4" & 2" Pipeline Installation from SSTI in SP60 to Southeast Pass, Louisiana, Report 1 of 2: SSTI in SP60 to State/Federal Boundary, Revision 1, Prepared by DoC Mapping LLC, dated October 25, 2023.

The 4.50-inch natural gas pipeline presently extends through Federal Waters for a distance of 51,566 feet (9.77 statute miles). The 4.50-inch pipeline will be cut at a point in South Pass Block 60 and will be provided with a subsea connection to extend the pipeline route for an additional 46,560 feet (8.82 statute miles) with 4.50-inch pipe. The total length of 4.50-inch pipeline that will be added in Federal waters is 18,045 feet (3.42 statute miles). The total length of existing 4.50-inch pipeline that will be restored to service is 49,227 feet (9.32 statute miles). This extension will provide a total pipeline length of 95,787 feet (18.14 statute miles). The coordinates for the base of riser on the Mississippi Canyon Block 21 "B" Platform are provided below with reference to the Universal Transverse Mercator Plane Coordinate System (UTM), Zone 16, Geodetic Datum: NAD 27, Clarke Spheroid, 1866. The proposed cut point and connection point on the existing KNOC 10.75-inch pipeline is South Pass Block 60, the Federal/State route crossing point, and the LLOX facility in Plaquemines Parish, Louisiana are provided below with reference to Lambert Projection, Louisiana South Zone, Geodetic Datum: NAD 27, Ellipsoid: Clark 1866:

KNOC Eagle Ford Corporation Platform:	X =	1,028,884.44 feet
(Base of Riser @ MC Area Block 21 "B")	Y =	10,506,379.67 feet
(UTM Coordinates)	Lat.	28° 56' 13.700" N
	Long.	88° 54' 44.381" W

Proposed Cut Point / Connection Point:	X =	2,761,947.78 feet
(SP Area Block 60)	Y =	151,621.58 feet
	Lat.	29° 03' 42.472" N
	Long.	88° 56' 54.472" W
Proposed Federal / State Pipeline Crossing Point:	X =	2,746,105.78 feet
(SP Area Block 6)	Y =	158,781.53 feet
	Lat.	29° 04' 56.569" N
	Long.	88° 59' 51.284" W
LLOX Facility	X =	2,722,288.07 feet
(Plaquemines Parish, LA)	Y =	171,809.18 feet
	Lat.	29° 07' 10.245" N
	Long.	89° 04' 16.744" W

The proposed modifications will be done in conjunction with the proposed modifications of the KNOC 10.75-inch Pipeline Segment No. 15060 (Right-of-Way OCS-G 26819) and the proposed modifications of the KNOC 8.625-inch Pipeline Segment No. 15061 (Right-of-Way OCS-G 26820). The applications for these modifications will be submitted under separate cover letters.

The proposed partial decommissioning and pipeline modification work is scheduled to commence on June 17, 2024, with the time required for the work estimated at eighty-five (85) days. KNOC's shore base for operations during the partial decommissioning and modifications will be Venice, Louisiana, and Port Fourchon, Louisiana. KNOC Eagle Ford Corporation (GOM Company Number 3695) will continue to be the Operator for right-of-way OCS-G 26821.

KNOC understands that with regard to requirements in §250.1010(c), that if any site, structure, or object of historical or archaeological significance should be discovered during the conduct of any pipeline construction operations, we shall report immediately such findings to the Regional Director, Gulf of Mexico OCS Region, and make every reasonable effort to preserve and protect the cultural resource from damage until said Manager has given directions as to its preservation.

KNOC hereby agrees that as specified in §250.1010(g), that the area covered by this partial pipeline decommissioning and modification shall be kept open at all reasonable times for inspection by the Bureau of Safety and Environmental Enforcement (BSEE) and will make available all records relative to the design, construction, operation, maintenance and removal, and investigations on or with regard to such area.

The positioning of the equipment with reference to any known obstructions and pipelines will be verified using a Differential GPS surveying system or an equivalent method. With these surveying capabilities, it is not necessary to place buoys on existing pipelines or obstructions for accurate positioning. The coordinates of the existing pipelines, obstructions and all well sites or magnetic

anomalies will be recorded into the construction vessel's on-board navigation and positioning system. The well sites and magnetic anomalies will be avoided during operations. Therefore, KNOC is hereby complying with the requirements of NTL 2008-G05, Section VI.B. in lieu of buoying each potential hazard.

A waiver is hereby requested from the provisions of §250.1010(h) to allow the section of pipe to be decommissioned in place.

Also, under the provisions of the current DOI/DOT pipeline MOU, Section III.B.5. (e) and §250.1000(c)12 and 13, KNOC as a producer operator, is hereby requesting that the modified pipeline be designated as DOI jurisdictional. A request for this exemption has also been submitted to the Department of Transportation PHMSA office.

Contacts for additional information and clarifications are provided below:

General Permit Clarifications:
Karen Vanacor
KNOC Eagle Ford Corporation
5599 San Felipe St., Suite 725
Houston, TX 77056
Telephone: (713) 552-9304
Email: kvanacor@ankorenergy.com

Technical Clarifications:
Jim Elgin
Project Consulting Services, Inc.
3300 W. Esplanade Ave., S. Suite 500
Metairie, Louisiana 70002
Telephone: (985) 212-9705
Email: jelgin@projectconsulting.com

Payment verification in the amount of $4,909 is attached in accordance with the fee schedule provided on the "Fees for Services" page of the BSEE website. This amount includes $4,849 for the application fee for the pipeline modification and $60 for the annual rental fee of $15 per mile for the 3.42 miles of added 2.375-inch pipeline.

A Joint Permit Application for work within the Louisiana Coastal Zone has been filed with the Louisiana Department of Natural Resources, Office of Coastal Management, and with the U.S. Army Corps of Engineers (COE), New Orleans District.

If the above information meets with your approval, we would appreciate your issuance of the necessary permit for the partial decommissioning, partial relinquishment, modifications and change of service of the right-of-way pipeline at your earliest convenience. Inquiries concerning this application may be directed to the contacts listed above.

Sincerely,

KNOC Eagle Ford Corporation

Ho Lim
Secretary, Treasury & Commercial Manager

Attachments and Enclosures

ATTACHMENT "A"

BLOCK LEASE AND PIPELINE INFORMATION

The following (foreign) Pipeline Right-of-Way Holders and lessees were notified of this application by Certified Mail, Return Receipt Requested. (NOTE: The status of the block lease operators and pipelines listed was current as of November 2023, per BSEE Public Information Records.)

SOUTH PASS, BLOCK 60

No Active Lease

KNOC Eagle Ford Corporation	OCS-G 26820 Seg. No. 15061	Right-of-Way Pipeline (Out of Service)
Vastar Resources, Inc. / BP America Production Company	OCS-G 13501 Seg. No. 36	Right-of-Way Pipeline (Abandoned)

SOUTH PASS, BLOCK 59

No Active Lease

No Pipeline Crossings

SOUTH PASS, BLOCK 6

No Active Lease

No Pipeline Crossings

ATTACHMENT "B"
Revision A (01-09-24)

GENERAL INFORMATION AND CALCULATIONS
4.50-INCH O.D. NATURAL GAS PIPELINE MODIFICATIONS
MISSISSIPPI CANYON BLOCK 21 TO SOUTH PASS BLOCK 60

1. The purpose of the proposed 4.50-inch O.D. pipeline modifications will be to transport a multiphase product (oil, water, and natural gas) from the KNOC Mississippi Canyon Block 21 "B" platform to the LLOX processing facility in Plaquemines Parish, Louisiana.

2. The 4.50-inch pipeline presently extends from the KNOC MC Block 21 "B" platform to the South Pass Block 60 "F" platform which is scheduled to be removed. The details for the modifications are described in the following sections. All coordinates provided in the application are with reference to Lambert Projection, Louisiana South Zone, Geodetic Datum: NAD 27, Ellipsoid: Clark 1866, except for the coordinates for the base of the 4.50-inch O.D. riser on the KNOC MC Block 21 "B" platform which are provided with reference to the Universal Transverse Mercator Plane Coordinate System (UTM), Zone 16, Geodetic Datum: NAD 27, Clarke Spheroid, 1866.

3. A 4.50-inch pipeline section will be constructed from a subsea connection to the existing 4.50-inch pipeline in South Pass Block 60 the LLOX facility where it will flow oil, water, and natural gas to the LLOC facility. All construction modification work in Federal waters will be located within South Pass Area Blocks 6, 59 and 60, and Mississippi Canyon Block 21. KNOC Eagle Ford Corporation will continue to be the operator of Segment No. 15062. The length of 4.50-inch O.D. line pipe that will traverse through Federal waters is 77,735 feet (14.72 statute miles). The length of 4.50-inch O.D. pipeline that will remain in service after the modification is 49,227 feet (9.32 statute miles). The total length of 4.50-inch pipeline within the State of Louisiana will be 18,052 feet (3.42 statute miles). Therefore, the total length of the proposed modified Segment No. 15062 (including the portion within the State of Louisiana) will be 77,735 feet (14.72 statute miles). The coordinates for the LLOX production facility, Federal/State crossing, the 4.50-inch subsea connections point and the MC 21 "B" platform are provided below:

LLOX Production Facility:	X =	2,722,288.07 feet
(Plaquemines Parish, LA)	Y =	171,809.18 feet
	Lat.	29° 07' 10.245" N
	Long.	89° 04' 16.744" W

Federal/State Crossing Point:	X =	2,746,105.78 feet
(SP Area Block 6)	Y =	158,781.53 feet
	Lat.	29° 04’ 56.569” N
	Long.	88° 59’ 51.284” W
4.50” Subsea Connection Point	X =	2,761,947.78
(SP Area Block 60)	Y =	151,621.58 feet
	Lat.	29° 03’ 42.472” N
	Long.	88° 56’ 54.472” W
KNOC MC 21 “B” Platform	X =	1,028,884.44 feet
(MC Area Block 21 Base of Riser)	Y =	10,506,379.67 feet
(UTM Coordinates)	Lat.	28° 56’ 13.700” N
	Long.	88° 54’ 44.381” W

4. To accommodate the proposed modifications, there will be a partial pipeline decommissioning of Segment 15062 and a partial relinquishment of Right-of-Way Pipeline, OCS-G 26821. A total distance of 2,020 feet (0.38 statute miles) will be decommissioned in-place and a total distance of 2,307 feet (0.44 statute miles) will be relinquished. This process will consist of disconnecting the riser from the SP 60 “F” platform, cutting the pipeline, and removing approximately 180 feet of the 4.50-inch pipeline using an anchored dive support vessel. The pipeline will also be cut at points approximately 2,400 feet from the SP 60 “F” platform to accommodate the subsea connection of the existing 4.50-inch pipeline segments along with the removal of approximately 55 feet of pipe for onshore disposal. The coordinates for the SP 60 “F” platform and the pipeline cut points are provided below. The segment of the pipeline to be decommissioned in-place will be flushed, filled with seawater, plugged, and the ends buried a minimum of 3 feet below the mudline and covered with sand/cement bags or a concrete mat.

South Pass 60 “F” Platform:	X =	2,759,810.25 feet
(Base of Riser)	Y =	152,393.12 feet
	Lat.	29° 03’ 50.549” N
	Long.	88° 57’ 18.370” W
Cut Point “4”:	X =	2,761,947.78 feet
(SP Area Block 60)	Y =	151,621.58 feet
	Lat.	29° 03’ 42.472” N
	Long.	88° 56’ 54.472” W
Cut Point “5”	X =	2,761,881.41 feet
(SP Area Block 60)	Y =	151,630.71 feet
	Lat.	29° 03’ 42.576” N
	Long.	88° 56’ 55.218” W

Cut Point "6"	X =	2,760,084.70 feet
(SP Area Block 60)	Y =	152,408.67 feet
	Lat.	29° 03' 50.646" N
	Long.	88° 57' 15.275" W

5. Pipeline Segment No. 15062 will be modified by reversing the direction of flow and service. The existing 4.50-inch pipeline is presently configured to flow natural gas from SP Block 60 "F" platform to the MC Block 21 "B" platform. The proposed configuration will flow oil, water, and natural gas from the MC Block 21 "B" platform through the 4.50-inch extension into the existing 10.75-inch section to the LLOX processing facility in Plaquemines Parish, Louisiana.

6. The right-of-way is located in an area that has experienced mudslides. As a precaution against mudslides that may damage the 4.50-inch pipeline and MC Block 21 "B" structure, a breakaway fitting was incorporated in the original system that has safeguards incorporated to reduce the risk of damage to the system resulting from a mudslide event. The breakaway spool section will be reversed at the MC Block 21 "B" location to accommodate a reverse direction of flow.

7. To reduce the risk of damage to the system from a mudslide event, a breakaway fitting will be included in the subsea connection between the existing and proposed 4.50-inch pipeline sections.

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

   a. Existing and Proposed Line Pipe and Subsea Tie-in Piping

      4.50" O.D. x 0.337" W.T., API 5L X42, SMLS pipe. Weight Bare – 14.99 lbs./ft. coated with 14 - 16 mils thin film fusion bonded epoxy.

   b. Existing Riser Pipe (MC Block 21 "B" Platform)

      4.50" O.D. x 0.337" W.T., API 5L X52, SMLS pipe. Weight Bare – 14.99 lbs./ft. coated with 14 - 16 mils thin film fusion bonded epoxy coated with ½" Splashtron in the splash zone area.

   c. Internal Coating

      The existing pipeline is not coated internally. The proposed pipeline section will not be coated internally. The analysis of the transported product will be monitored and preventive measures such as pigging and/or inhibitors will be employed as necessary.

9. The water depth along the existing section of 4.50-inch pipeline that will be placed in service is in water depths greater than 200 feet is not buried. The water depth along the proposed section of 4.50-inch pipeline route extension ranges from approximately (-) 205 feet to (-) 85 feet at the Federal/State Boundary. Approximately, 1,950 feet of the proposed section of 4.50-inch pipeline route is in water depths greater than 200 feet and will not be buried. The remaining section of the 4.50-inch pipeline will be buried to depth of 3 feet below the mudline.

10. The cathodic protection system for the 4.50-inch pipeline section will be Galvotec III, or equivalent, semi-cylindrical bracelet anodes. The calculations provided below confirm that the life expectancy of the proposed pipeline segment meets the minimum regulatory requirement of twenty (20) years. Calculations are as follows:

$Le_{p/l} = 3.82 \times 10^4 \times W^0/(DIR)$

Where:

W^0 = Weight of Anode Unit (23 lbs)
D = Diameter of Pipeline (4.50 inches)
I = Separation Between Anodes (280 ft.)
R = Rate of Consumption (lbs./amp yr.) Galvotec III = 7.6

$Le_{p/l} = (3.82 \times 10^4)(23)/((4.5)(280)(7.6))$
$Le_{p/l} = 91.75$ years

11. The specific gravity of the existing and proposed line pipe and subsea tie-in spools is calculated as follows:

a. 4.50" O.D. X 0.337" W.T. Pipe Coated with 16 mills of FBE (existing and proposed)

$SG = 2.865W/D^2$ W = 14.99 lbs./ft.
SG = 2.12 D = 4.5 in.

12. The design pressure for the line pipe and subsea tie-in pipe is calculated as follows:

a. Existing and Proposed 4.50-Inch Line Pipe

Design Pressure = 2St/D x F x E x T
Design Pressure = 2 (42,000) (0.337 / 4.50) x .72 x 1 x 1
Design Pressure = 4,529 psig

F = 0.72
S = 42,000 psi
D = 4.50in
t = 0.337 in
E = 1 T = 1

b. Existing Riser Pipe

Design Pressure = 2St/D x F x E x T
Design Pressure = 2 (52,000) (0.337 / 4.5) x .50 x 1 x 1
Design Pressure = 3,894 psig

F = 0.50
S = 52,000 psi
D = 4.5 in
t = 0.337 in
E = 1 T = 1

13. Valves and Flange

All above and below water valves and flanges will be either ANSI 600 Class or ANSI 900 class. All flanges will be RTJ. The maximum rated design pressure of the ANSI 600 class flanges and valves associated with KNOC's proposed fuel gas pipeline 1,480 psig. This is based upon the pressure-temperature ratings given in ASME/ANSI B16.5 Pipe Flanges and Flanged Fittings, API 6D, Specification for Pipeline Valves, and ASME B16.34, Valves - Flanged, Threaded, and Welding End, for ANSI Class 600 with a maximum design temperature of 100 °F.

The maximum rated design pressure of the ANSI 900 class flanges and valves associated with KNOC's proposed fuel gas pipeline 2,220 psig. This is based upon the pressure-temperature ratings given in ASME/ANSI B16.5 Pipe Flanges and Flanged Fittings, API 6D, Specification for Pipeline Valves, and ASME B16.34, Valves - Flanged, Threaded, and Welding End, for ANSI Class 900 with a maximum design temperature of 100 °F.

14. The maximum capacity/design capacity of the proposed pipeline is 1,221 BBLS/day of oil, 64 BBLS/day of water, and 1.47MMSCFD of natural gas. Flowing temperature will be 100^0 F. The specific gravities of the product being transported for natural gas are anticipated to be 0.65 (Air = 1.0, T = 60^0 F) and 0.875 (Water = 1.0, T = 60^o F), respectively.

15. The MAOP of the modified Segment No. 15062 will be 1,440 psig. The MAOP is based on the MAOP of the topside facilities at the LLOX processing facility and KNOC MC Block 21 "B" facilities. The calculations provided within this attachment for the design pressure of the existing and proposed pipeline segments support the justification for the MAOP.

16. The requested MAOP of the proposed 4.50-inch oil, water, and natural gas pipeline as determined in accordance with Title 30 CFR Part 250, Subpart "J" and in accordance with Title 49 CFR Part 192 is 1,440 psig.

17. The existing 4.50-inch and the proposed 4.50-inch oil, water, and natural gas line pipe and risers will be hydrostatically tested after installation at a minimum pressure of 1.5 x 1,440 psig = 2,160 psig with a minimum hold time of eight hours. The following calculations show resulting stress during hydrostatic testing:

a. 4.5-inch O.D. Pipe (existing and proposed)

$S_h \leqq FST$	F = 0.95
$S_h \leqq .95 \times 42{,}000 \times 1 = 39{,}900$ psi	S = 42,000 psi
	T = 1
$S_h = PD/2t$	P= 2,160 psig
$S_h = (2{,}160 \times 4.50) / (2 \times 0.337)$	t = 0.337 in
$S_h = 14{,}421$ psi	D = 4.50 in

b. 4.5-inch O.D. Pipe (existing riser)

$S_h \leqq FST$	F = 0.95
$S_h \leqq .95 \times 52{,}000 \times 1 = 49{,}400$ psi	S = 52,000 psi
	T = 1
$S_h = PD/2t$	P= 2,160 psig
$S_h = (2{,}220 \times 4.50) / (2 \times 0.337)$	t = 0.337 in
$S_h = 14{,}421$ psi	D = 4.50 in

18. The proposed pipeline extension will cross over two (2) existing pipelines in Federal waters in South Pass Block 60. Concrete mats will be used to provide the minimum required separation of 18" between the pipelines. Sand/cement bags will be used to provide additional support under the pipeline if required. The 8-inch KNOC (Segment No. 15061) crossing is in a water depth greater than 200 feet. Therefore, additional protective cover will not be installed. The 8" Vastar pipeline (Segment No. 36) is in a water depth less than 200 feet. A concrete mat will be placed over the crossing location to provide protective cover. See Drawing Nos. 22081_PER-009 and 22081_PER-010 for details.

19. Construction Information:

a.	Estimated Starting Date:	June 17, 2024
b.	Method of Construction:	Lay Barge
c.	Method of Burial:	Jetting
d.	Time Required to Lay Pipe:	20 days
e.	Estimated Time to Complete	85 days

ATTACHMENT "C"

MODIFICATION PROCEDURES
4.50- MULTIPHASE PIPELINE
MISSISSIPPI CANYON BLOCK 21 TO PLAQUEMINES PARISH, LOUISIANA

1) GENERAL OVERVIEW

The following is a procedure for the proposed modifications of Pipeline Segment No. 15062 (Right-of-Way OCS-G 26821). The proposed modifications will be done in conjunction with the proposed modifications of the KNOC 10.75-inch Pipeline Segment No. 15060 (Right-of-Way OCS-G 26819) and the proposed modifications of the KNOC 8.625-inch Pipeline Segment No. 15061 (Right-of-Way OCS-G 26820). The modification procedures described in this attachment pertain only to the tasks performed in Federal waters.

The proposed modifications with the extension of Right-of-Way OCS-G 26819 and Right-of-Way OCS-G 26821 will consist of the installation of the 2.375-inch and 4.50-inch pipeline segments concurrently. The lines will be bundled during installation and will share many of the tasks described below.

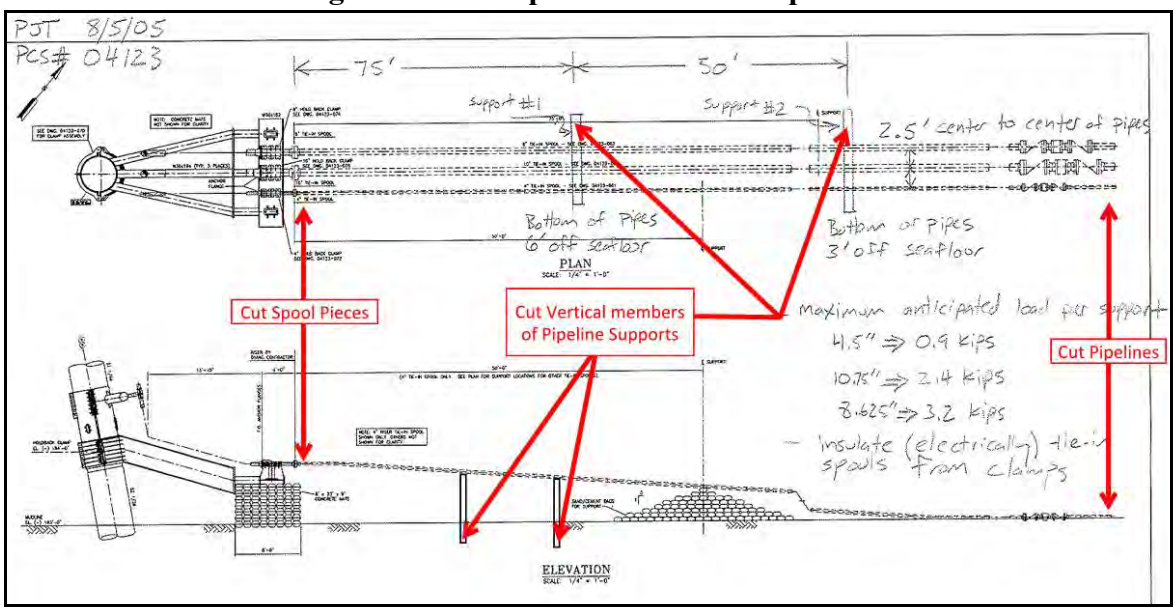
2) PARTIAL DECOMMISSIONING OF SEGMENTS FROM SP 60 SSTI TO SP 60F PLATFORM (See Drawing No. 22081_PER-004)

a) Immediately prior to cutting either the 4" or 10" pipelines at the SSTI location in SP 60, seawater will be pumped into the out-of-service 10" pipeline (S-15060) at MC 21 "B" to flush the treated water currently existing the pipeline. The displaced existing seawater will be routed into the out-of-service 4" pipeline (S-15062) at SP 60 "F" and subsequently discharged at MC 21 "B". A sufficient volume of seawater will be injected into the 10" pipeline to displace the treated water in both the 10" pipeline and approximately 2,500' of treated water in the 4" pipeline.

b) The existing KNOC 10", 8" and 4" risers (S-15060, S-15061 and S-15062) will be cut above the top horizontal of the SP 60 "F" jacket and an approximately 10' long section of the risers removed and disposed of at an onshore facility. The pipe ends shall be capped with a welded steel plate.

c) The 10", 8", and 4" pipelines will be cut at approximately the touchdown to seabed location (approximately 260 feet from the base of the risers) and the cut ends of the pipelines will be lowered to a minimum of three feet (3') below the mudline.

Figure 1 - Cut Pipelines and Riser Spools



d) Plugs will be installed into the cut ends of each of the pipelines.

e) Concrete mats or sand cement bags will be installed over the ends of the pipelines such that the top of the pipelines shall be lowered to three feet (3') below the mudline. The edges of the concrete mats will be buried below the mudline.

f) The 10", 8", and 4" pipelines will be cut on the pipeline side of the tie-in spool flanges adjacent to the hold back clamp assembly at the base of Leg B2 of the SP60 "F" platform. The spool segments between the tube-turns and the seabed touchdown locations shall be cut as appropriate and recovered to the surface.

g) The existing helical pile pipe supports will be removed and the vertical members cut a minimum of three feet (3') below the mudline. Concrete mats or sand cement bags will be placed over the cut sections of the pile supports.

h) All existing concrete mats and sandbags along the centerline of the pipeline spools which may be protruding above the mudline will be removed and disposed of onshore.

i) The existing KNOC EF pipelines will be cut at a location approximately 5' beyond the existing breakaway joints. The breakaway joints will be recovered and shipped to shore for subsequent refurbishment and return to KNOC stock for potential future use.

j) The recovered 10", 8" and 4" break-away joints will be transported to shore for refurbishment with all appropriate procedures required for potentially contaminated components including but not limited to NORM.

3) 4-POINT DIVE VESSEL PIPELINE PREPARATORY WORK

a) A 4-point dive vessel will be rigged up and mobilized to the existing pipeline crossings within Federal waters. Existing seabed materials above the crossings will be removed by divers. Two 9-inch thick concrete mats will be installed over the existing pipelines to provide 18" separation between the existing foreign pipelines and the proposed pipeline bundle.

b) Pre-lay foreign pipeline crossing preparation will be completed for the two pipelines within Federal Waters listed below:

   i) 8" BP (Vastar Resources) pipeline (S-36) at Station 27+34. (See Drawing 22081_PER-010)

   ii) 8" KNOC EF pipeline (S-15061) at Station 7+33. (See Drawing 22081_PER-009)

4) PIPELINE INSTALLATION FEDERAL / STATE BOUNDARY TO SP 60 SSTI LOCATION

a) The new pipeline section will originate at the LLOX facility in Plaquemines Parish, LA. The 4.5-inch and 2.375-inch pipeline sections will be installed in Louisiana state waters to a point near the 14' water depth contour at Station 316+00. The pipelines will be capped and buried to prepare for continuation with equipment suited for deeper water construction in Federal waters.

b) The lay barge will continue the pipeline assembly process initiated in State waters from the Federal / State Boundary at Station 180+52 utilizing typical pipelay techniques until the ends of the proposed 4"/2" pipeline bundle is lowered to the seabed within the target area for the subsea tie-ins in Block SP 60.

c) The 4" pipeline will be installed through the lay barge tension machine. The 2" pipeline will be strapped to and supported by 4" pipeline as shown in Drawing No. 22081_PER-013.

d) After the pipelay operation has reached the appropriate termination point in SP 60, pipelay operations will be terminated and flanges will be welded to the pipeline ends.

e) Pigs for flooding the pipelines during the subsea tie-in operation will be loaded into the ends of the pipelines prior to attachment of pipeline laydown heads.

f) Pipeline laydown heads will be bolted onto the flanges on the ends of both pipelines. The laydown cable from the abandonment / laydown winch will be

attached to 4” laydown head. The lay barge will continue moving ahead while paying out the laydown cable until the pipeline bundle is lowered to the seabed within the respective target tie-in locations for the 4” and 2” pipelines.

g) The lay barge will be repositioned and a diver from the lay barge will disconnect the abandonment cable from the 4” and 2” pipeline laydown head.

h) The pigs that were loaded into the ends of the pipelines will be pushed with filtered seawater from SP 60 to the top of risers on the LLOX production facility prior to pipeline lowering and subsequent tie-ins.

5) PIPELINE LOWERING FEDERAL / STATE BOUNDARY TO SP 60 SSTI LOCATION

a) The lay barge will then be set up for the pipeline jetting mode. The proposed pipeline bundle from the SP 60 SSTI location through the Federal / State Boundary at Station 180+52 to Station 316+00 will be lowered to three feet (3’) below the existing seabed elevation in Federal waters. Additional jetting passes may be required to obtain the required depth of cover. The lay barge will then be set up for the pipeline jetting mode. The proposed pipeline bundle from the SP 60 SSTI location through the Federal / State Boundary at Station 180+52 to Station 316+00 will be lowered to three feet (3’) below the existing seabed elevation in Federal waters.

b) Additional jetting passes may be required to obtain the required depth of lowering.

c) The pipelay / jetting barge will demobilize upon completion of the lowering operations.

6) DIVE VESSEL POST-LAY PIPELINE WORK FEDERAL / STATE BOUNDARY TO SP 60 SSTI LOCATION

a) The 4-point dive vessel will be relocated to the 8” BP (Vastar Resources) pipeline (S-36) in South Pass Block 60.

b) A 9-inch thick concrete mat will be placed over the pipeline for protective cover. (See Drawing No. 22081_PER-010)

c) The water depth at the 8” KNOC pipeline (S-15061) is greater than 200 feet. No additional cover will be required at this location.

7) 4" SUBSEA TIE-IN IN BLOCK SP 60 (See Drawing No. 22081_PER-005)

a) The 4-point dive vessel will be relocated and set up at the 4" Subsea Tie-in (SSTI) location in SP 60.

b) A section of the existing 4" pipeline (S-15062) will be uncovered in the SP 60 tie-in area as designated in the drawings. (See Drawing No. 22081_PER-003) The pipeline will be cut to remove and recover an 80' long section of the pipeline onshore disposal.

c) The cut end of the 4" pipeline toward the SP 60 "F" platform will be plugged and a concrete mat or sand/cement bags will be placed over the pipeline such that the end of the pipeline is a minimum of 3' below the natural bottom. The edges of the concrete mat will be buried below the mudline.

d) The cut end of the 4" pipeline toward the MC 21 "B" platform will be inspected and prepared for installation of the pipeline end connector fitting, after which the end connector will be installed on the pipeline.

e) The 4" pipeline spool piece containing the 4" breakaway joints assembly will be lowered to the seabed and bolted to the 4" end connector fitting. (See Drawing 22081_PER-007)

f) All prefabricated piping sections, including the 4" breakaway joint spool assembly and the 4" closing spool with random pipe length, will be hydrostatically pressure tested to 2220 psig during onshore fabrication prior to shipment to the field for subsea installation.

g) Divers will take measurements between the 4" breakaway joint flange and the 4" flange that was welded onto the end of the pipeline during the pipelay laydown operation. These measurements will be used to determine the lengths at which the random pipe as well as the angle at which the 4" segmentable bend should be cut.

h) Final fabrication of the 4" closing spool will be completed on deck of the 4-point dive vessel. The closing spool will then be lowered to the seabed and connected to the 4" breakaway joint and the flange welded to the end of the 4" pipeline.

8) 2" / 10" SUBSEA TIE-IN IN BLOCK SP 60

a) The dive vessel will then be relocated to perform the 2" tie-in operation onto the 10" pipeline.

b) The existing 10" pipeline (S-15060) will be uncovered in the SP 60 tie-in area as designated on the drawings. The pipeline will be cut and an 180' length of the

pipeline recovered to the surface for subsequent onshore disposal. (See Drawing No. 22081_PER-003)

c) The cut end of the 10" pipeline toward the SP 60 "F" platform will be plugged and a concrete mat or sand/cement bags will be placed over the pipeline such that the end of the pipeline is a minimum of 3' below natural bottom. The edges of all concrete mat will be buried below the mudline.

d) The cut end of the 10" pipeline toward the MC 21 "B" platform will be inspected and prepared for installation of the pipeline end connector fitting. after which the end connector will be installed on the pipeline.

e) The 10" pipeline spool piece containing the 10" breakaway joint assembly and the 2" to 10" bypass spool assembly will be lowered to the seabed and bolted to the 10" end connector fitting. (See Drawing No. 22081_PER-006)

f) All prefabricated piping sections, including the 10" breakaway joint spool assembly, the 2" to 10" bypass spool and the 2" closing spool with random pipe length, will be hydrostatically pressure tested to 2220 psig during onshore fabrication prior to shipment to the field for subsea installation.

g) Divers will take measurements between the flange on the 2" to 10" bypass spool and the 2" flange that was welded onto the end of the pipeline during the pipelay laydown operation. These measurements will be used to determine the lengths at which the random pipe as well as the angle at which the 2" segmentable bend should be cut.

h) Final fabrication of the 2" closing spool will be completed on deck of the 4-point dive vessel. The closing spool will then be lowered to the seabed and connected to the 2" to 10" bypass spool and the flange on the end of the 2" pipeline.

9) DYNAMICALLY POSITIONED DIVE VESSEL REWORK BREAKAWAY JOINTS AT MC 21B (See Drawing Nos. 22081_PER-011 and 22081_PER-012)

a) A dynamic positioning dive support vessel (DPDSV) with saturation diving will be mobilized to MC 21 "B" to remove and replace the existing 10" and 4" breakaway joints with new assemblies at the base of the risers.

b) Divers will remove any concrete mats from the pipelines and hand jet to remove seabed materials above pipelines.

c) Divers will disconnect the hold-back rigging assemblies between the breakaway joints and the hold-back pile.

d) The existing 4" breakaway joint will be recovered to the surface by unbolting the flange connection between the check valves and the adjacent sections of the 4” pipeline.

e) The new 4” breakaway joint will be lowered to the seabed pre-rigged with bolt tensioning equipment for diver installation into the pipeline in the opposite flow direction from the previous configuration.

f) Remove the lift bags and crane from the 4” holdback rigging.

g) Divers will install new hold-back rigging (turnbuckle and shackles) into the 4" hold-back chain and tension the chain.

h) Divers will disconnect the hold-back rigging assemblies between the breakaway joints and the hold-back pile.

i) The existing 10" breakaway joint will be recovered to the surface by unbolting the flange connection between the check valves and the adjacent sections of the 10” pipeline.

j) The new 10" breakaway joint will be lowered to the seabed pre-rigged with bolt tensioning equipment for diver installation into the pipeline in the opposite flow direction from the previous configuration.

k) Remove the lift bag and crane from the 10” hold-back rigging.

l) Divers will install new hold-back rigging (turnbuckle and shackles) into the 10" hold-back chain and tension the chain.

m) Demobilize the DPDSV.

10) PRE-COMMISSIONING OF THE COMPLETED 4” PIPELINE SYSTEM

a) Hydrostatic testing spreads will be mobilized to both the LLOX facility in Plaquemines Parish, LA and to MC 21 “B”.

b) The additional seawater required for hydrostatic testing will be acquired and discharged at MC 21 “B”.

c) The additional seawater required for hydrostatic testing will be acquired and discharged at MC 21 “B”.

d) Water treatment chemicals shall not be required in the hydrostatic test water unless the dwell time of water within the tested segments exceeds thirty (30) days.

e) The completed pipeline facilities will be hydrostatically tested to 2220 psig between the tops of risers at the MC 21 “B” and the LLOX facilities.

f) Upon completion of hydrostatic testing, the water will remain in the 4” pipeline and will be displaced by a pig train pushed with product flow from MC 21 “B”. The seawater in the 4” pipeline ahead of the pig train will be received at the LLOX production facility for subsequent disposal at the LLOX saltwater disposal well associated with those facilities.

11) PRE-COMMISSIONING OF THE COMPLETED 10”/2” PIPELINE SYSTEM

a) The 4-point dive vessel will remain at the SP 60 SSTI location to facilitate the hydrostatic testing of the 10” and 2” pipeline sections.

b) The additional seawater required to pressurize the pipeline systems for hydrostatic testing will be acquired and discharged at MC 21B.

c) The completed pipeline facilities will be hydrostatically tested to 2220 psig between the tops of risers at both the MC 21B and the LLOX facilities.

d) The 4-point dive vessel will remain at the SP 60 SSTI location to facilitate receiving and launching 10” and 2” pigs.

e) Upon completion of hydrostatic testing, the water will remain in the 4” pipeline and will be displaced by a pig train pushed with product flow from MC 21 “B”. The seawater in the 4” pipeline ahead of the pig train will be received at the LLOX production facility for subsequent disposal at the LLOX saltwater disposal well associated with those facilities.

f) Upon completion of hydrostatic testing, the ball valve on the 2” to 10” bypass spool will be closed and the 10” pipeline will be dewatered with compressed air from the SP 60 SSTI toward MC 21 “B”. The hydrotest water will be disposed of at MC 21 “B”.

g) The air in the 10” pipeline will subsequently be displaced by a pig train run with nitrogen from either the LLOX facility or from the SP 60 SSTI toward MC 21 “B”. After receipt of the pig train at MC 21 “B”, nitrogen pressurization will continue until a 50 psig nitrogen blanket has been installed in the 10” pipeline.

h) The hydrotest water in the 2” pipeline will be discharged at the SP 60 SSTI using a pig train pushed with nitrogen from the LLOX facility.

i) Nitrogen in the 2” / 10” system will be displaced with a pig train propelled by natural gas from the LLOX facility toward MC 21 ”B” during facilities commissioning. A diving support vessel will be required to manipulate valves at the SP 60 SSTI during system commissioning.

j) Upon completion of running all pigs through the system, the temporary subsea 10” and 2” pig barrels will be removed and replaced with blind flanges. The main line valve in the subsea connection will be placed in the open position for normal flow operations.

k) Concrete mats will be placed over the 10”/2” and 4” subsea connections. (See Drawing 22081_PER-008)

l) All marine equipment will be demobilized.

ATTACHMENT "D"
Revision A (01-09-24)

KNOC EAGLE FORD CORPORATION
4.50-INCH O.D. MULTIPHASE PRODUCT PIPELINE
WORST CASE SPILL VOLUME CALCULATIONS

Given:

Oil Flow Rate	= 1,221 bpd
Water Flow Rate	= 64 bpd
Gas Flow Rate	= 1.47 mmscfd
Pipeline Diameter	= 4.50 inches
Pipeline Wall Thickness	= 0.337 inches
Pipeline Length	= 95,787 feet
	= 18.14 miles
Pipeline MAOP	= 1,440 psig
Minimum Water Depth	= 668 feet

Assumptions:

Pipeline leak detection time	= 15 minutes
Shutdown response time	= 45 seconds

Find:

Worst-case spill volume

Calculations:

1. I.D. = 4.50 – (2) (0.337) = 3.826 inches

2. Internal Vol. = π $((3.826/2)/(12))^2$ (95,787) (7.48/42)
   = 1,362 barrels

3. Hydrostatic Pressure at 668 feet
   P = (668 ft) (64 lb/ft^3) (1 ft/12 $in)^2$
   P = 296.89 psi

4. Oil content per barrel liquid (Assuming Homogeneous Liquid)
   Oil = (1,221) ÷ (1,221 + 64)
   = 0.950

5. Liquid Rate
   = (1,221 + 64) ÷ 1.47 mmscfd
   = 874 b/mmscfd

6. Total time for leak detection and response
   = 15 min + 45 sec = 15.75 min

7. Gas flow during detection and response time
   = (1.47 mmscfd) (15.75/60(1/24)) = 0.016 mmscf

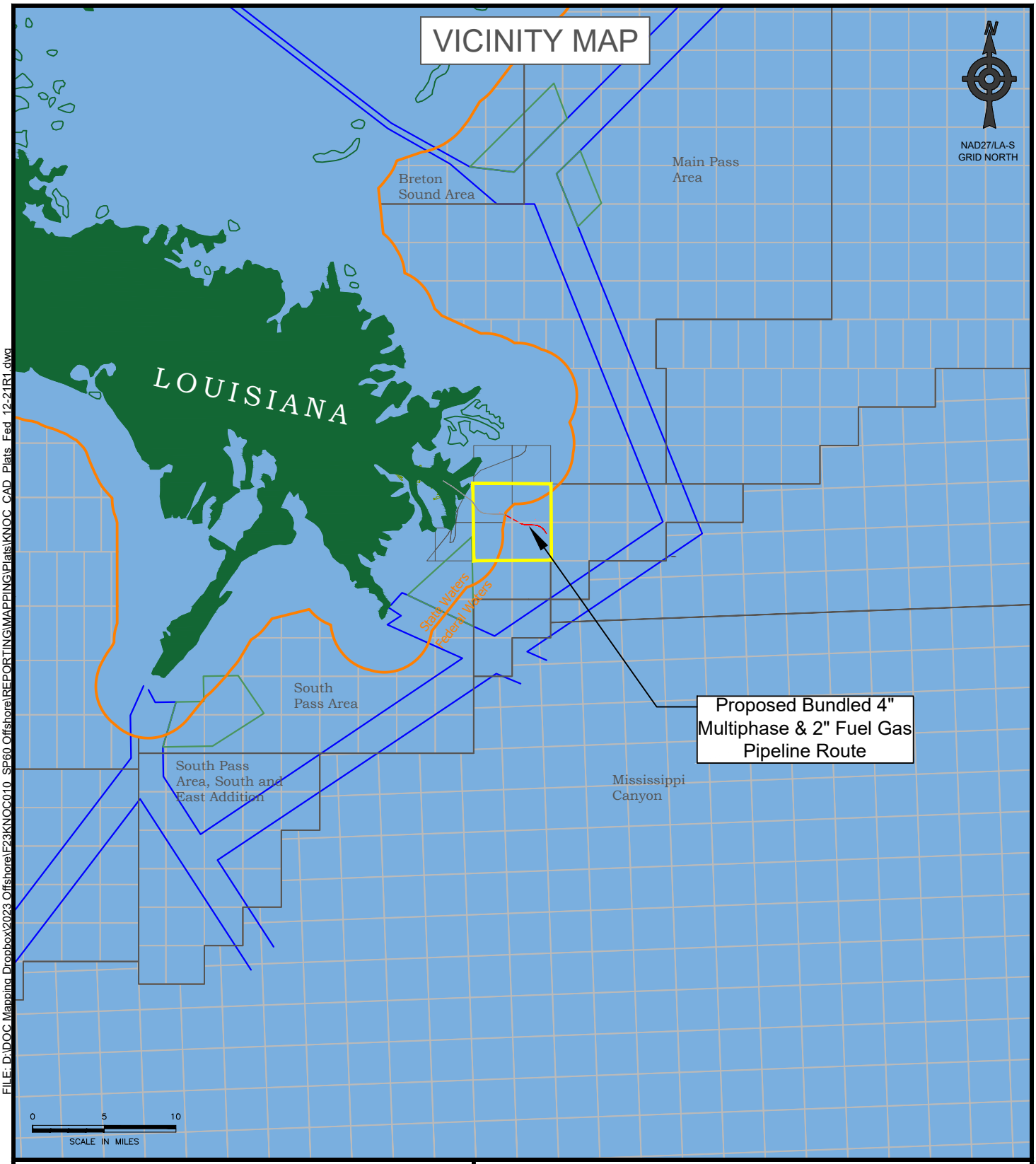
8. Post shut in gas release volume
   = $[(3.826)^2 (1{,}440\text{-}296.89)(18.14)(5.28)(0.372)] \div 1x10^6$ = 0.596 mmscf

   Reference: McAlister, E.W., Pipeline Rules of Thumb Handbook
   4th Ed: Gulf Publishing Co., Houston, TX, 1998.

9. Total gas lost
   = 0.016 + 0.596 = .612 mmscf

10. Total liquid spill
    = (0.612 mmscf) (874 bbl/mmscf)
    = 535 bbl

11. Total oil spill
    = (0.950) (535)
    = 508 bbl



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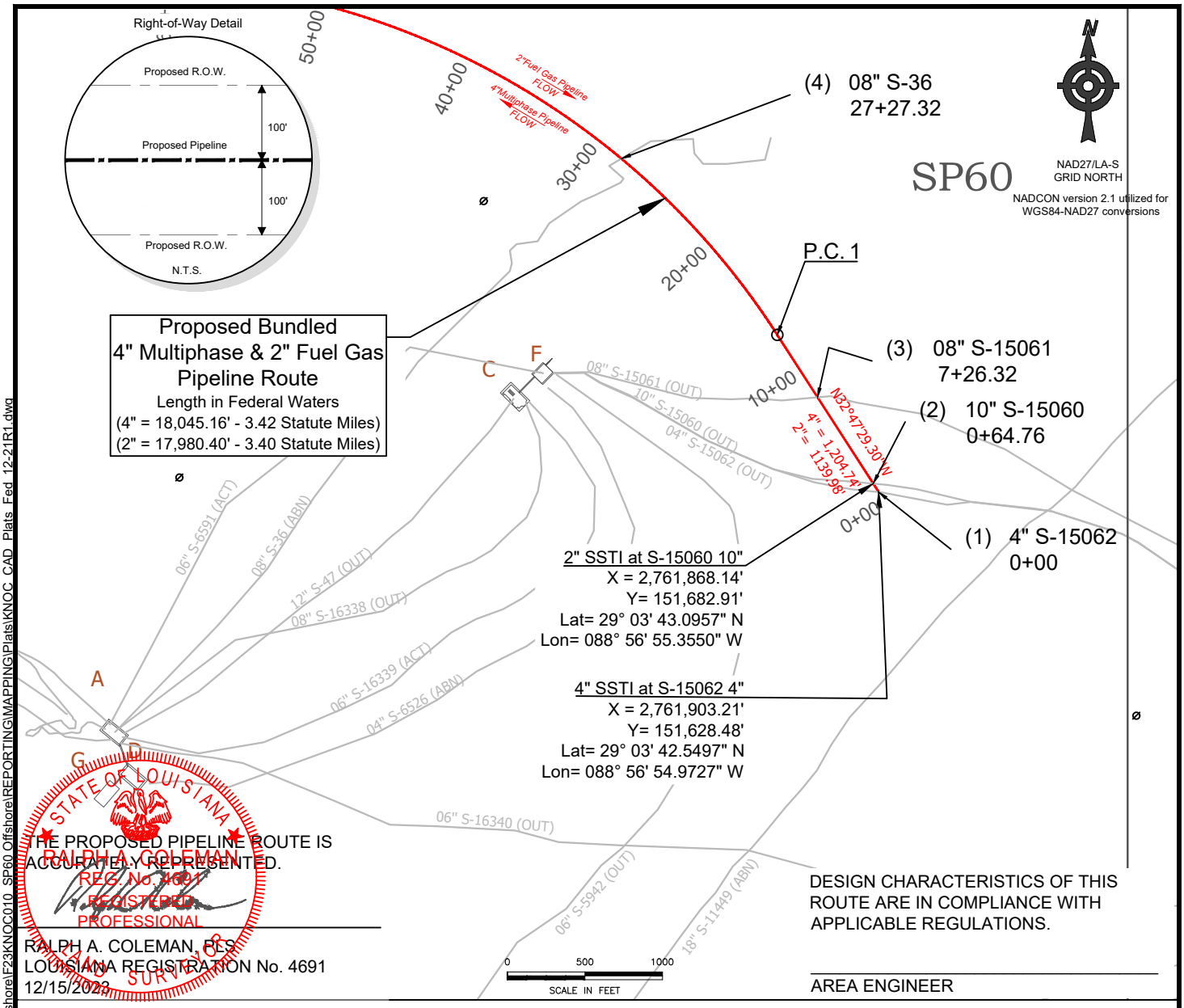
PREPARED FOR: KNOC KOREA NATIONAL OIL CORPORATION

PREPARED BY: DOC MAPPING

DoC Mapping, LLC
805 Distributors Row
New Orleans, LA 70123
LA Registration VF859

PROPOSED BUNDLED 4" MULTIPHASE & 2" FUEL GAS PIPELINE ROUTE
4" SSTI ON 4" S-15062 & 2" SSTI ON 10" S-15060
BLOCK 60 TO BLOCK 6 FED/STATE LINE
SOUTH PASS AREA

JOB: F23KNOC010	DRW: SRB	SHEET 1 of 6	REV. 1
CKD: EMF	APP: RAC		
DATE: 12/21/23			



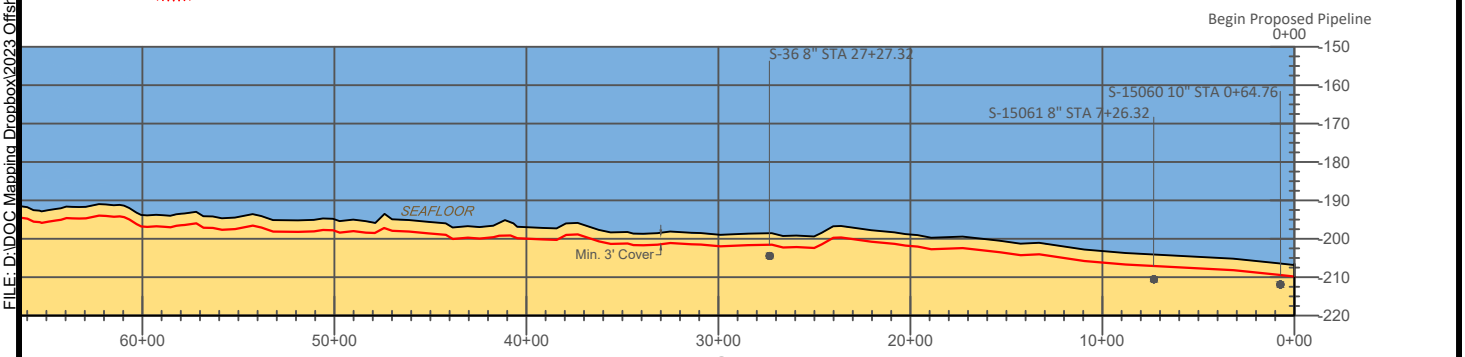
STATE OF LOUISIANA
RALPH A. COLEMAN
REG. No. 4691
REGISTERED
PROFESSIONAL
LAND SURVEYOR

THE PROPOSED PIPELINE ROUTE IS ACCURATELY REPRESENTED.

RALPH A. COLEMAN, PLS
LOUISIANA REGISTRATION No. 4691
12/15/2023

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

AREA ENGINEER



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PROFILE

VERTICAL EXAGGERATION = 20

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SHEET 2 of 6

REV. 1

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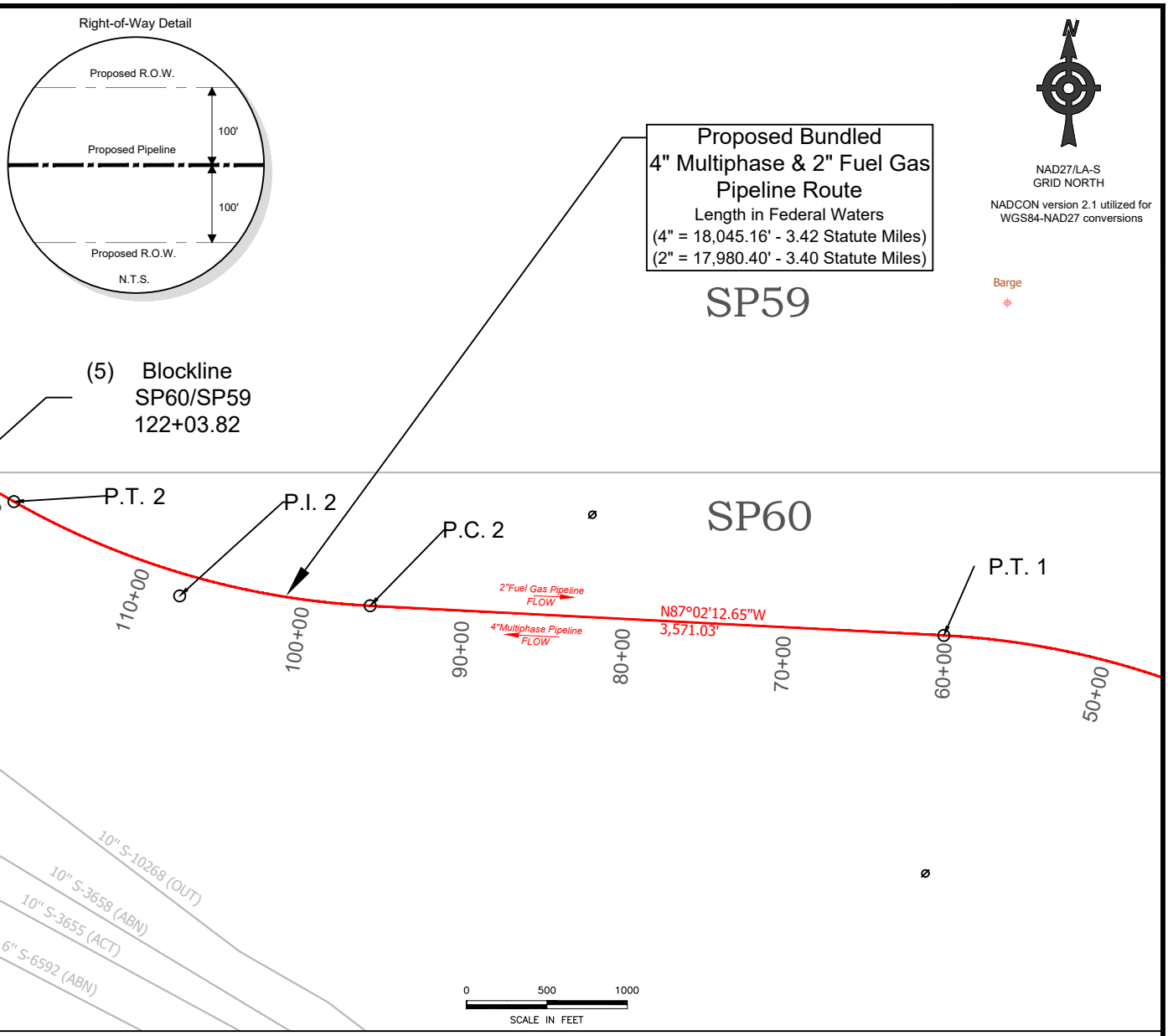

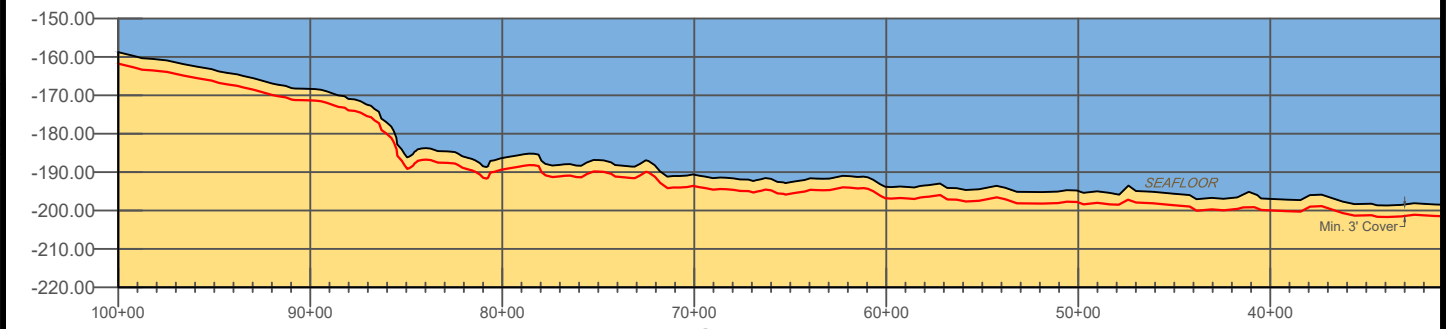

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BLOCK 60 TO BLOCK 6 FED/STATE LINE
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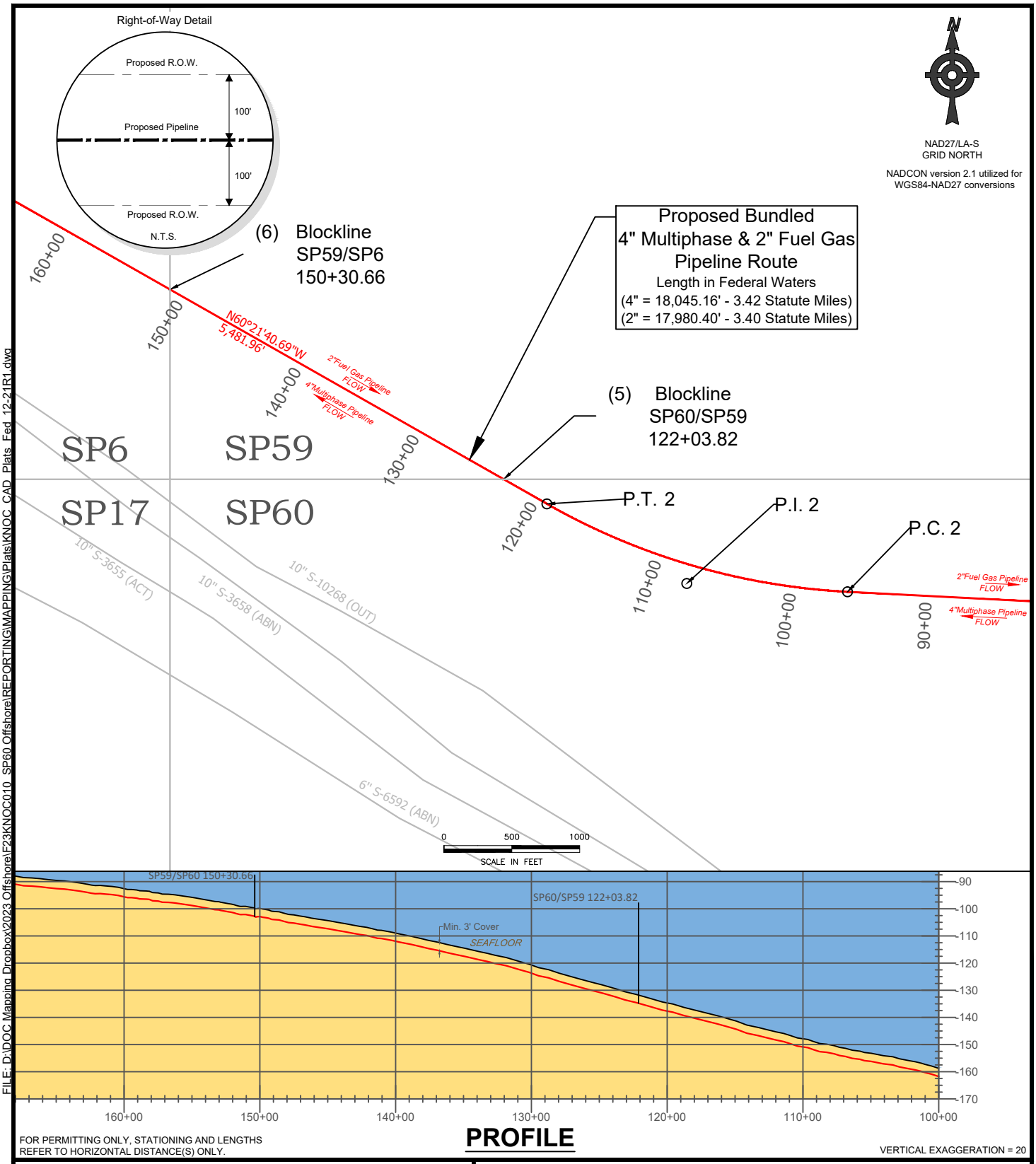
SHEET 3 of 6

REV. 1



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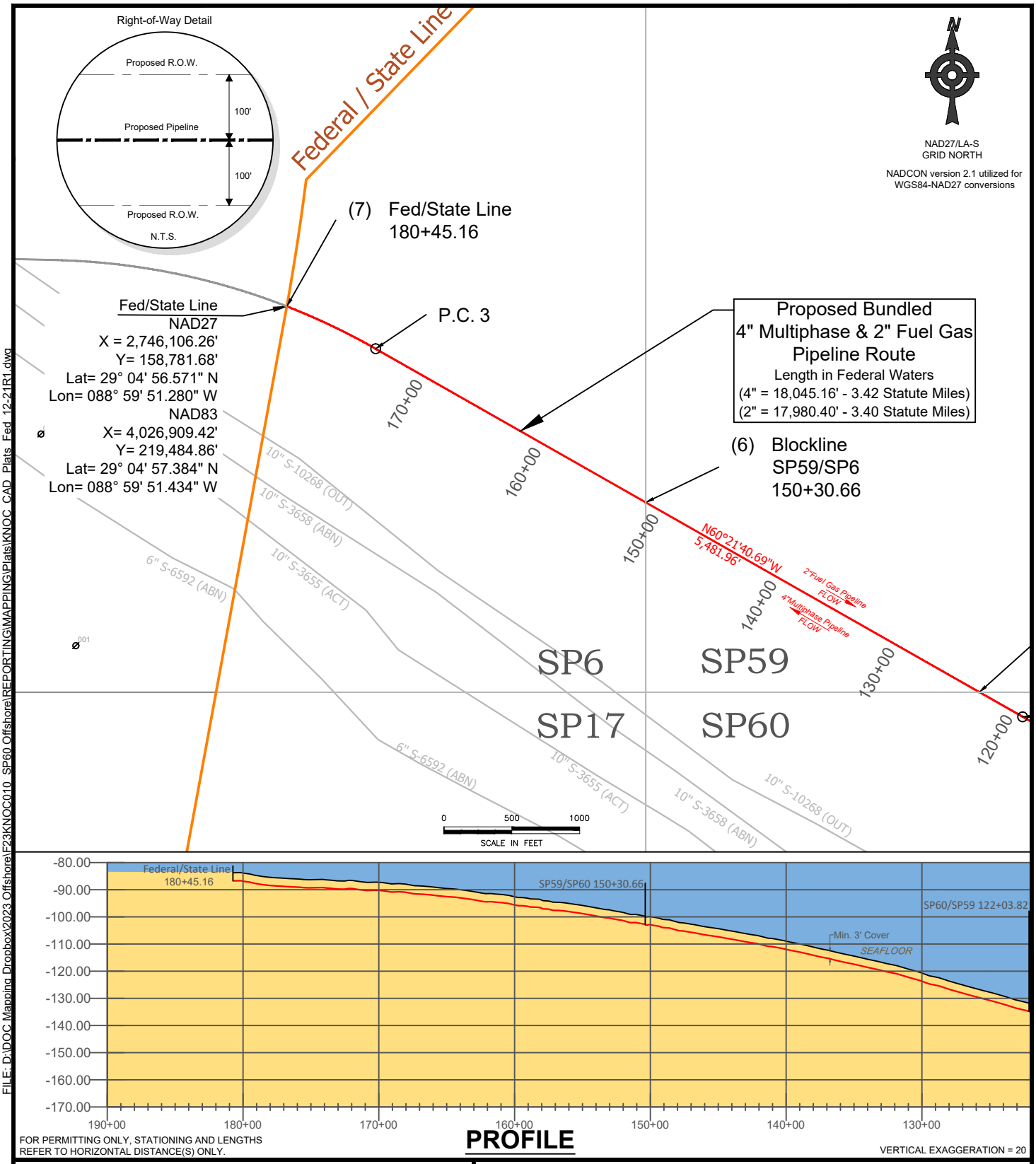

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Appurtenances

ID	Description	NAD27 X	NAD27 Y	NAD27 LAT	NAD 27 LONG
1	4" SSTI at S-15062 4"	2,761,903.21	151,628.48'	29° 03' 42.5497" N	088° 56' 54.9727" W
2	2" SSTI at S-15060 10" & 4" Crossing	2,761,868.14'	151,682.91'	29° 03' 43.0957" N	088° 56' 55.3550" W
3	Crossing S-15061	2,761,509.84'	152,239.06'	29° 03' 48.6740" N	088° 56' 59.2608" W
4	Crossing S-36	2,760,245.41'	153,776.94'	29° 04' 04.1556" N	088° 57' 13.1445" W
5	Blockline Crossing - SP59/SP60	2,751,206.98'	155,940.00'	29° 04' 27.4119" N	088° 58' 54.4656" W
6	Blockline Crossing - SP59/SP6	2,748,750.00'	157,337.95'	29° 04' 41.7468" N	088° 59' 21.8239" W
7	Fed/State Line	2,746,106.26'	158,781.68'	29° 04' 56.571" N	088° 59' 51.280" W

Curve Data

CURVE 1 DATA		CURVE 2 DATA	
P.C. 12+12 X= 2,761,250.74' Y= 152,641.24' LAT.= 29° 3' 52.71" LONG= 88° 57' 2.09"	P.I. CURVE 1 X= 2,759,863.67' Y= 154,794.25' LAT.= 29° 4' 14.30" LONG= 88° 57' 17.21"	P.C. 95+17 X= 2,753,739.71' Y= 155,111.24' LAT.= 29° 4' 18.69" LONG=88° 58' 26.12"	P.I. CURVE 2 X= 2,752,555.86' Y= 155,172.52' LAT.= 29° 4' 19.54" LONG= 88° 58' 39.45"
P.T. 59+46 X= 2,757,305.97' Y= 154,926.64' LAT.= 29° 4' 16.14" LONG=88° 57' 45.99"	R= 5,000.00' L= 4,733.80' Δ= 54° 14' 43.32" T= 2,561.13'	P.T. 118+45 X= 2,751,525.53' Y= 155,758.75' LAT.= 29° 4' 25.55" LONG=88° 58' 50.92"	R= 5,000.00' L= 2,327.88' Δ= 26° 40' 31.96" T= 1185.43'

CURVE 3 DATA	
P.C. 173+27 X= 2,746,760.83' Y= 158,469.74' LAT.= 29° 4' 53.35" LONG=88° 59' 43.97"	P.I. CURVE 3 X= 2,745,670.74' Y= 159,089.97' LAT.= 29° 4' 59.71" LONG= 88° 59' 56.11"
P.T. 197+84 X= 2,744,416.98' Y= 159,122.27 LAT.= 29° 5' 0.28" LONG= 89° 0' 10.23"	R= 5,000.00' L= 2,457.63' Δ= 28° 9' 45.45" T= 1,254.18'

FILE: D:\DOC Mapping Dropbox\2023 Offshore\F23KNOC010_SP60 Offshore\REPORTING\MAPPING\Plats\KNOC_CAD_Plats_Fed_12-21R1.dwg

NOTES: This map was prepared by DoC Mapping, LLC (DoC) for KNOC (Client) for permitting purposes only.

PREPARED FOR: KNOC KOREA NATIONAL OIL CORPORATION

PROPOSED BUNDLED 4" MULTIPHASE & 2" FUEL GAS PIPELINE ROUTE
4" SSTI ON 4" S-15062 & 2" SSTI ON 10" S-15060
BLOCK 60 TO BLOCK 6 FED/STATE LINE
SOUTH PASS AREA

PREPARED BY: DoC MAPPING

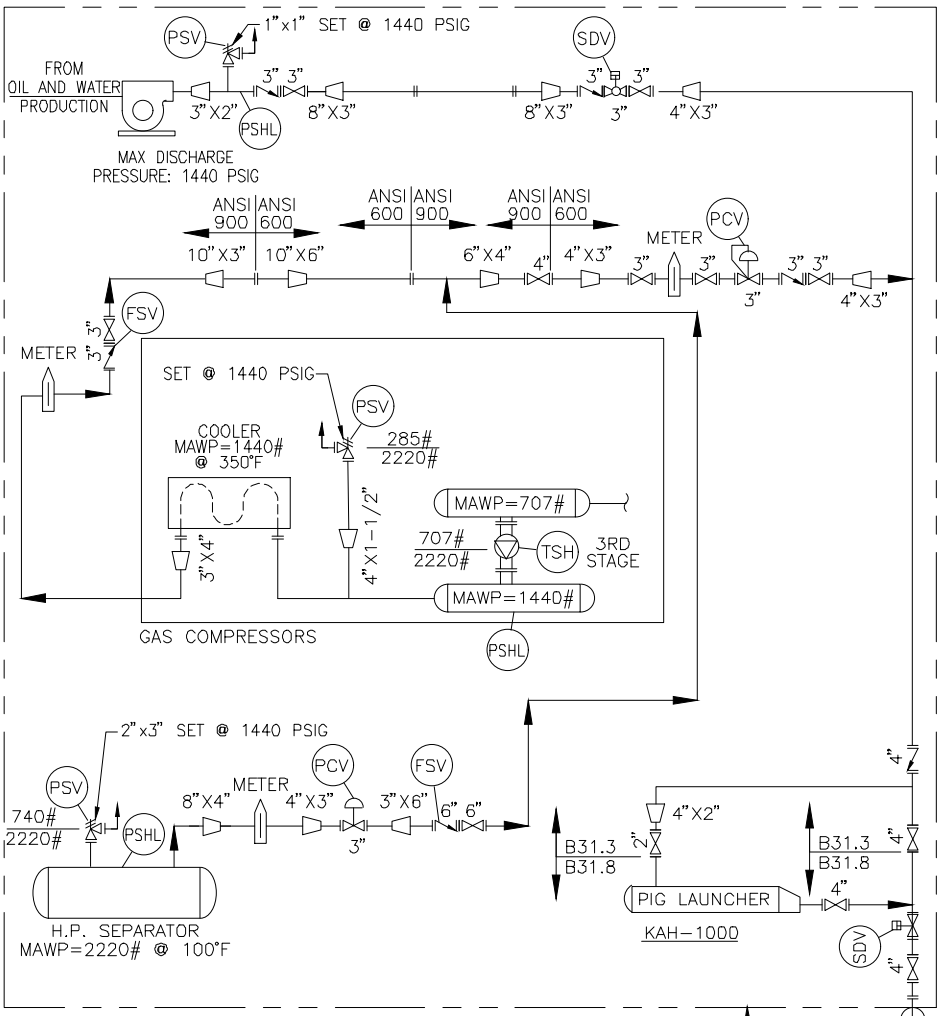
DoC Mapping, LLC
805 Distributors Row
New Orleans, LA 70123
LA Registration VF859

JOB: F23KNOC010 | DRW: SRB
CKD: EMF | APP: RAC
DATE: 12/21/23

SHEET 6 of 6

REV. 1

KNOC EAGLE FORD CORPORATION
MISSISSIPPI CANYON BLOCK 21
PLATFORM "B" TO
LLOX SOUTHEAST PASS
OCS-G 28351
(WATER DEPTH ~668')



GENERAL NOTES

1. KNOC EAGLE FORD CORPORATION PIPELINE COMPLIES WITH TITLE 30, PART 250, SUBPART J, OF THE CODE OF FEDERAL REGULATIONS AND ASME B31.8.
2. KNOC EAGLE FORD CORPORATION RELATED FACILITIES ON THE PLATFORM COMPLIES WITH TITLE 30, PART 250, SUBPART J, OF THE CODE OF FEDERAL REGULATIONS, ASME B31.8 AND ASME B31.3, AS APPLICABLE.
3. HIGH-LOW PRESSURE SENSORS WILL BE SET AT 15% ABOVE AND BELOW THE NORMAL PIPELINE OPERATING PRESSURE. THE HIGH PRESSURE SENSOR SETTING OF THE DEPARTING PIPELINE WILL NOT EXCEED 1440 PSIG, WHICH IS THE MAOP OF THE PIPELINE.
4. ALL PIPELINE VALVES AND FLANGES WILL HAVE ANSI CLASS 600 OR 900 RATINGS. ALL SUBSEA FLANGES WILL BE RTJ.
5. MAOP OF THE PIPELINE IS 1440 PSIG.
6. TOTAL MODIFIED LENGTH OF 4.50" O.D. PIPELINE IN FEDERAL WATERS IS 77,735 FEET, OR 14.72 STATUTE MILES.

A= 4.50" O.D. x 0.337" W.T. API 5L X42 SMLS, RISER PIPE, WEIGHT BARE = 14.99 LBS./FT. COATED WITH 14-16 MILS THIN FILM FUSION BONDED EPOXY. RISER IS COATED WITH 1/2" SPLASHTRON OR EQUIVALENT IN THE SPLASH ZONE AREA.

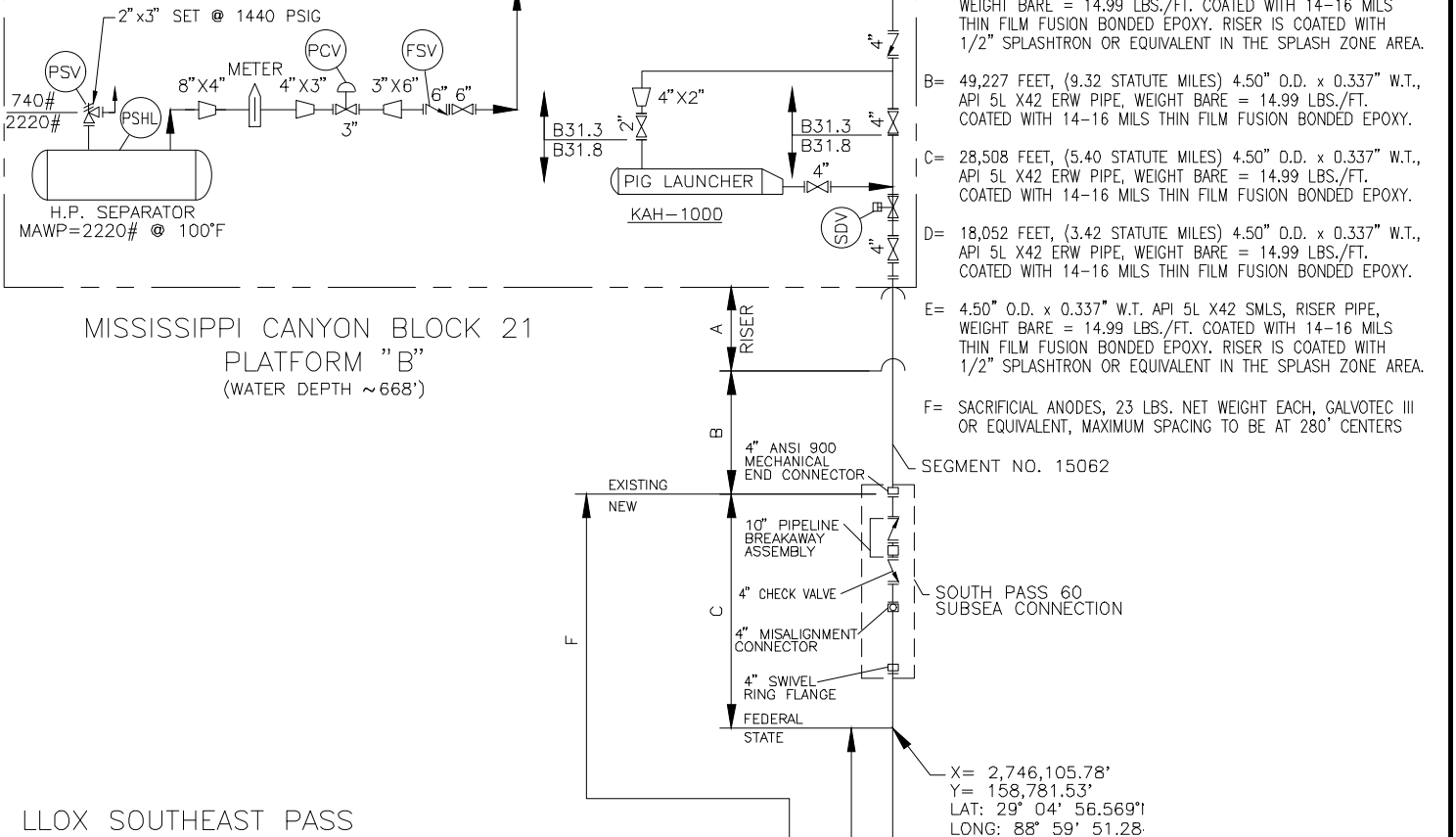
B= 49,227 FEET, (9.32 STATUTE MILES) 4.50" O.D. x 0.337" W.T., API 5L X42 ERW PIPE, WEIGHT BARE = 14.99 LBS./FT. COATED WITH 14-16 MILS THIN FILM FUSION BONDED EPOXY.

C= 28,508 FEET, (5.40 STATUTE MILES) 4.50" O.D. x 0.337" W.T., API 5L X42 ERW PIPE, WEIGHT BARE = 14.99 LBS./FT. COATED WITH 14-16 MILS THIN FILM FUSION BONDED EPOXY.

D= 18,052 FEET, (3.42 STATUTE MILES) 4.50" O.D. x 0.337" W.T., API 5L X42 ERW PIPE, WEIGHT BARE = 14.99 LBS./FT. COATED WITH 14-16 MILS THIN FILM FUSION BONDED EPOXY.

E= 4.50" O.D. x 0.337" W.T. API 5L X42 SMLS, RISER PIPE, WEIGHT BARE = 14.99 LBS./FT. COATED WITH 14-16 MILS THIN FILM FUSION BONDED EPOXY. RISER IS COATED WITH 1/2" SPLASHTRON OR EQUIVALENT IN THE SPLASH ZONE AREA.

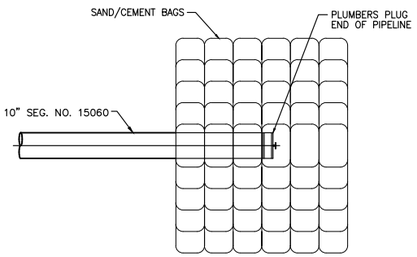
F= SACRIFICIAL ANODES, 23 LBS. NET WEIGHT EACH, GALVOTEC III OR EQUIVALENT, MAXIMUM SPACING TO BE AT 280' CENTERS



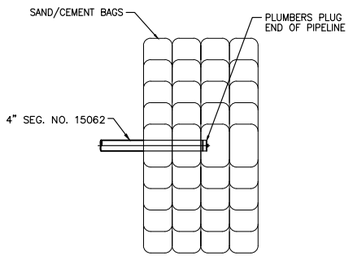
KOREA NATIONAL OIL CORPORATION EAGLE FORD
4" PIPELINE
SAFETY FLOW SCHEMATIC

DRAWN BY: LRW	CHK'D. BY:
DATE: 12-14-23	APPRV. BY:
DWG. NO. PER-001	REV B

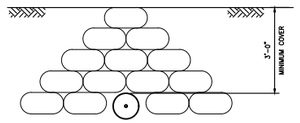
01-12-24 10:52 8 NMS



PLAN



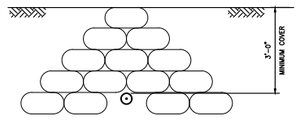
PLAN



SECTION

10" PLUG

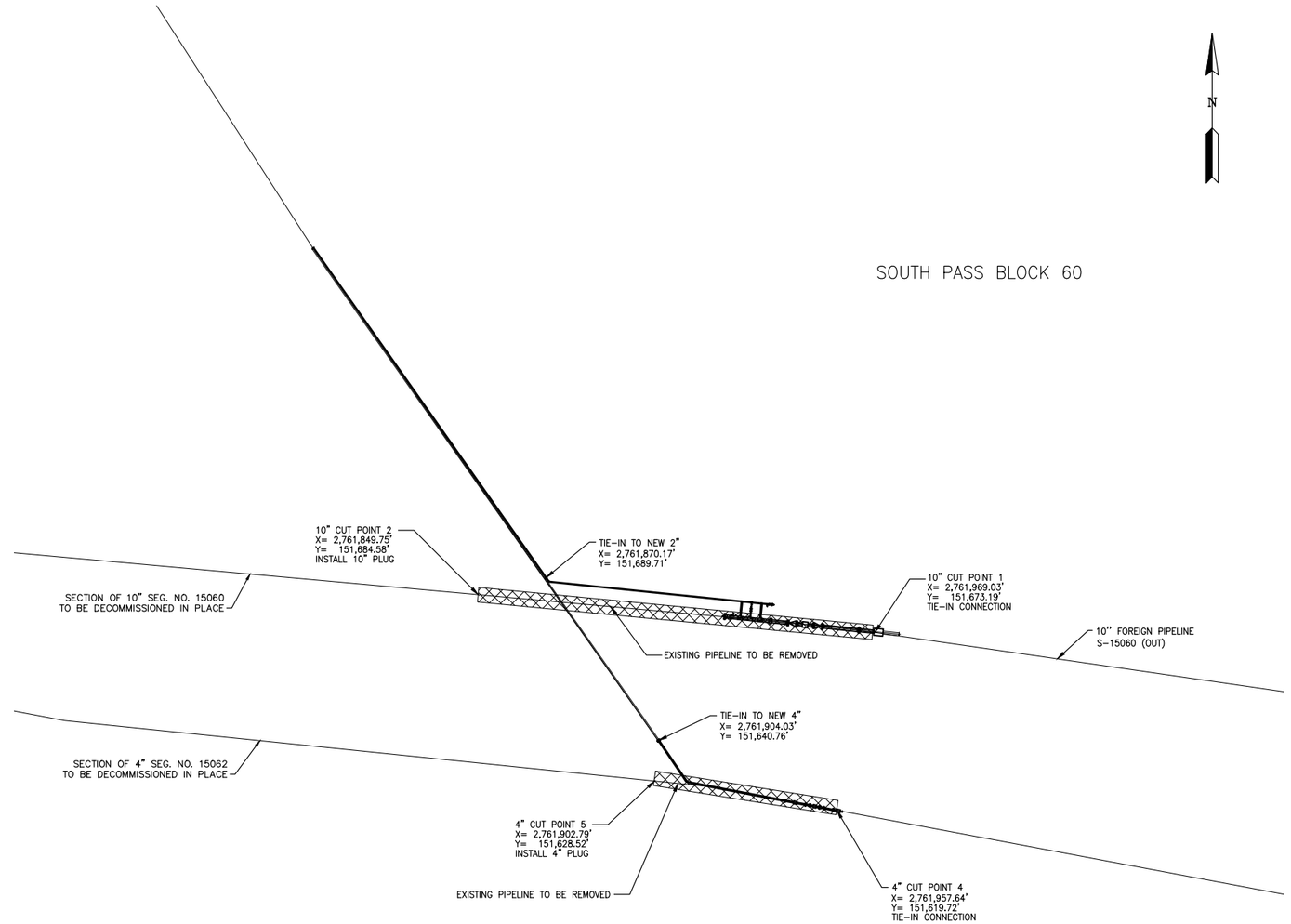
SCALE: NTS



SECTION

4" PLUG

SCALE: NTS



KEY MAP

SCALE: 1"= 20'-0"

GENERAL NOTES:

1. SCALES DENOTED IN THIS DRAWING ARE BASED UPON AN ARCH D (36"X24") PAPER SIZE.
2. FOR ASSEMBLIES REFER TO DWG. NOS. SSTI-001, SSTI-002, SSTI-003 AND SSTI-004.
3. SAND/CEMENT BAGS SHALL BE 1 PART CEMENT / 3 PARTS SAND.
4. HORIZONTAL DATUM: LOUISIANA STATE PLANE, SOUTH ZONE, U.S. FEET COORDINATES: NAD 27

REFERENCE DRAWINGS

NO.	DATE	DESCRIPTION	DRAWN	CHK'D.	APPRV'D.
B	01-05-24	ISSUED FOR PERMITTING	MFZ	RAA	DPT
A	12-20-23	ISSUED FOR PERMITTING	BWC	RAA	DPT

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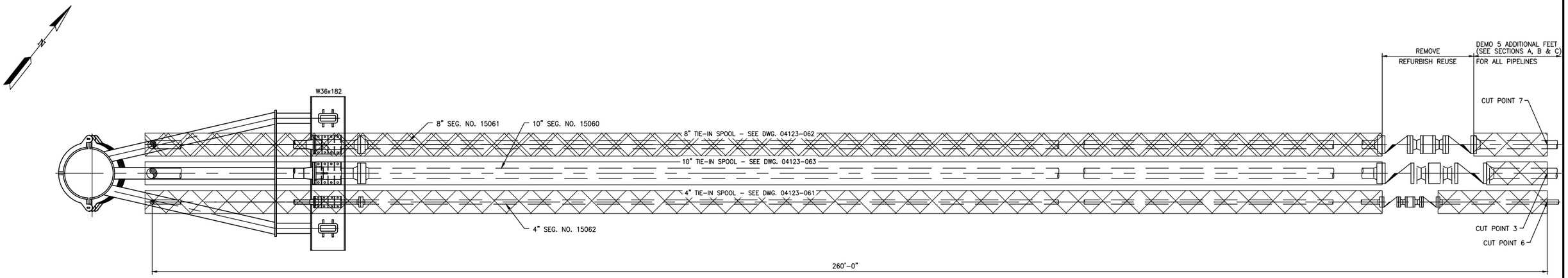
www.projectconsulting.com

KOREA NATIONAL OIL CORPORATION EAGLE FORD
4" & 10" PIPELINE DECOMMISSIONING PLAN
SOUTH PASS BLOCK 60

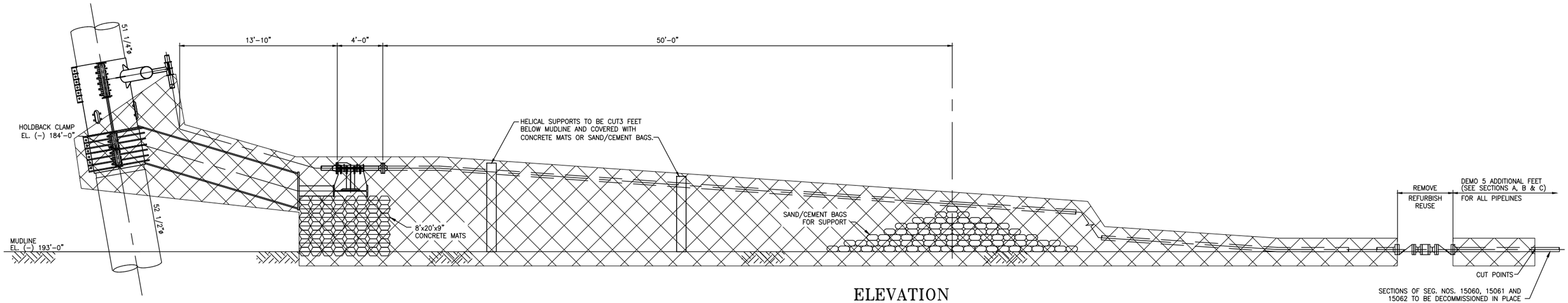
DRAWN BY:	BWC	APPROVED BY:	DPT
SCALE:	AS NOTED	PROJ. ENGR.:	DPT
DATE:	12-18-23	PROJ. MGR.:	JHE
CHECKED BY:	RAA	SHEET:	1 OF 1

DWG. NO. 22081_PER-003 REV: B

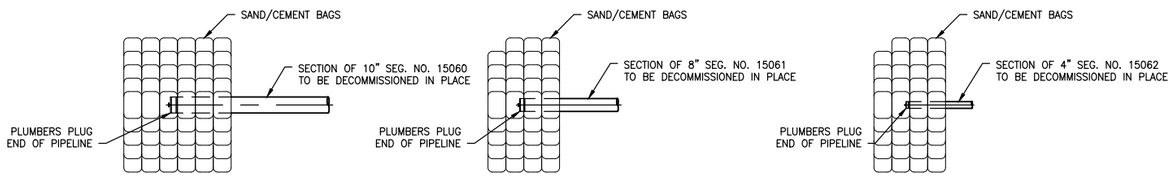
22081_PER-003.DWG
01-12-24 11:56 5 KMA



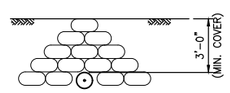
PLAN
SCALE: 1/4" = 1'-0"



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

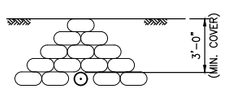


PLAN



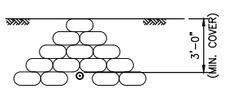
SECTION A
10" PLUG
SCALE: NTS

PLAN



SECTION B
8" PLUG
SCALE: NTS

PLAN



SECTION C
4" PLUG
SCALE: NTS

LEGEND

= TO BE REMOVED.

GENERAL NOTES:

1. ALL PIPELINES SHALL BE CUT, PLUMBER'S PLUGS INSTALLED IN OPEN END AND COVERED WITH CONCRETE MATS SUCH THAT TOP OF MAT IS THREE FEET (3') BELOW THE SEABED.
2. ALL SANDBAGS LESS THAN THREE FEET (3') BELOW SEABED SHALL BE REMOVED AND DISPOSED OF ONSHORE.
3. ALL HELICAL PILE IPPE SUPPORTS SHALL BE CUT THREE FEET (3') BELOW SEABED AND DISPOSED OF ONSHORE. LOCATIONS OF HELICAL PILE PIPS SUPPORTS SHALL BE FIELD VERIFIED.

REFERENCE DRAWINGS

NO.	DATE	DESCRIPTION	DRAWN	CHK'D.	APPRV'D.
B	01-05-24	ISSUED FOR PERMITTING	MFZ	RAA	DPT
A	12-20-23	ISSUED FOR PERMITTING	BWC	RAA	DPT

REVISIONS

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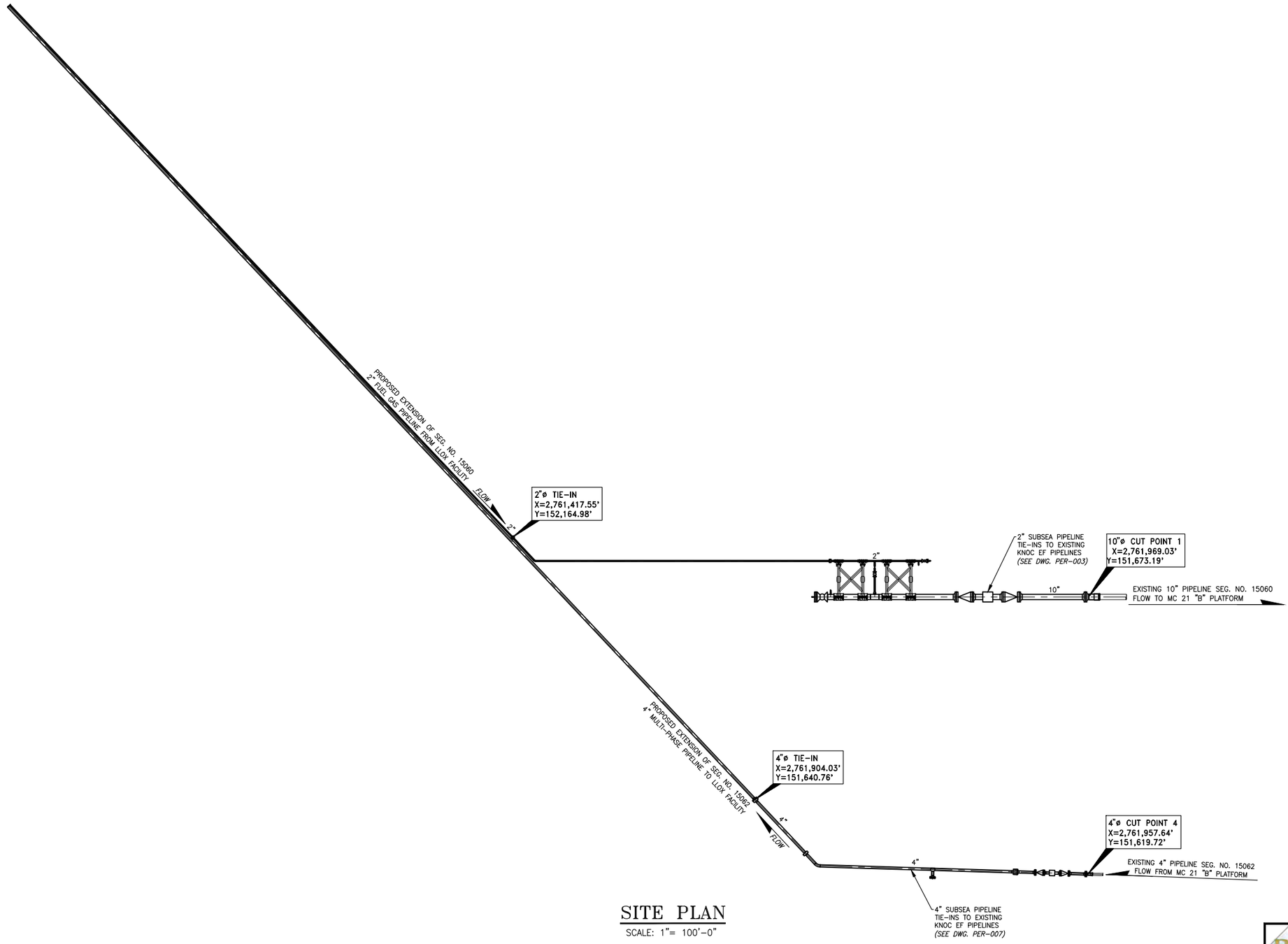
www.projectconsulting.com

KOREA NATIONAL OIL CORPORATION EAGLE FORD
EXISTING KNOC EF PIPELINES
SP60 RISER TIE-IN DECOMMISSIONING

DRAWN BY:	BWC	APPROVED BY:	
SCALE:	AS NOTED	PROJ. ENGR.:	
DATE:	12-18-23	PROJ. MGR.:	
CHECKED BY:		SHEET:	1 OF 1

DWG. NO. 22081_PER-004 REV. B

22081_PER-004.DWG
4 MFZ
10:30
01-04-24



SITE PLAN

SCALE: 1"= 100'-0"

GENERAL NOTES:

1. SCALES DENOTED IN THIS DRAWING ARE BASED UPON AN ARCH D (36"X24") PAPER SIZE.
2. HORIZONTAL DATUM: LOUISIANA STATE PLANE, SOUTH ZONE, U.S. FEET COORDINATES: NAD 27.

REFERENCE DRAWINGS

NO.	DATE	DESCRIPTION	DRAWN	CHK'D.	APPRV'D.
B	01-05-24	ISSUED FOR PERMITTING	MFZ	RAA	DPT
A	12-20-23	ISSUED FOR PERMITTING	BWC	RAA, JHE	DPT

REVISIONS

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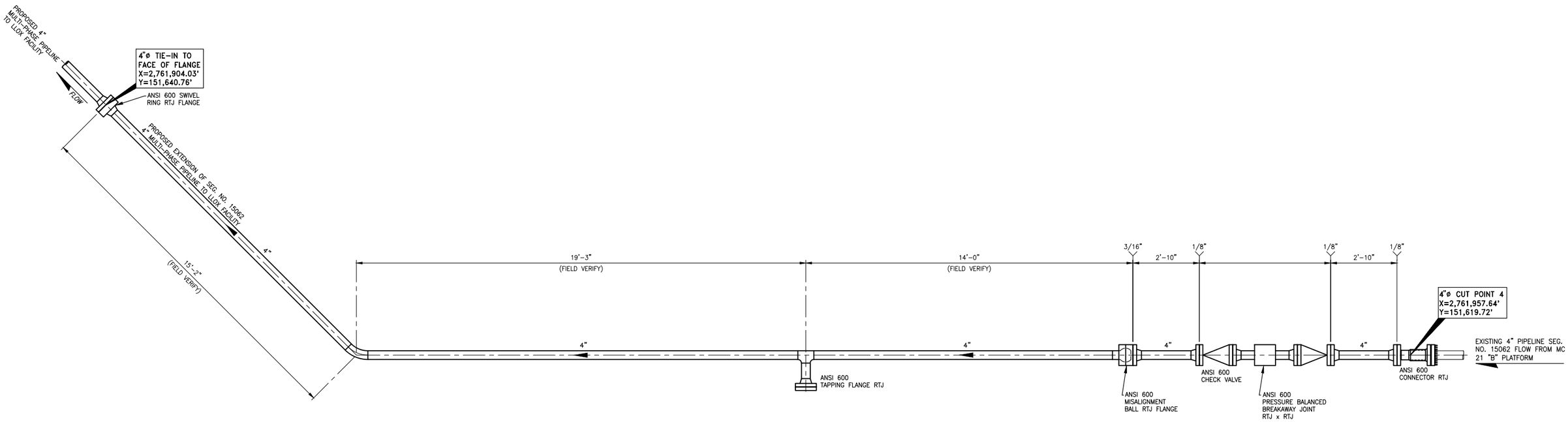
METAIRIE, LA 70002-7406
(504) 833-5321 Fax (504) 833-4940
www.projectconsulting.com

KOREA NATIONAL OIL CORPORATION EAGLE FORD
4" & 2" SUBSEA PIPELINE TIE-INS TO EXISTING KNOC EF PIPELINES
SOUTH PASS BLK. 60

DRAWN BY:	BWC	APPROVED BY:	
SCALE:	AS NOTED	PROJ. ENGR.:	
DATE:	12-18-23	PROJ. MGR.:	
CHECKED BY:		SHEET:	1 OF 1

DWG. NO. 22081_PER-005 REV. B

22081_PER-005.DWG 7 KMA 12:02 01-12-24



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

GENERAL NOTES:

1. SCALES DENOTED IN THIS DRAWING ARE BASED UPON AN ARCH D (36"X24") PAPER SIZE.
2. HORIZONTAL DATUM: LOUISIANA STATE PLANE, SOUTH ZONE, U.S. FEET COORDINATES: NAD 27.

REFERENCE DRAWINGS

KNOC

NO.	DATE	DESCRIPTION	DRAWN	CHK'D.	APPRV'D.
B	01-05-24	ISSUED FOR PERMITTING	MFZ	RAA	DPT
A	12-20-23	ISSUED FOR PERMITTING	BWC	RAA, JHE	DPT

REVISIONS

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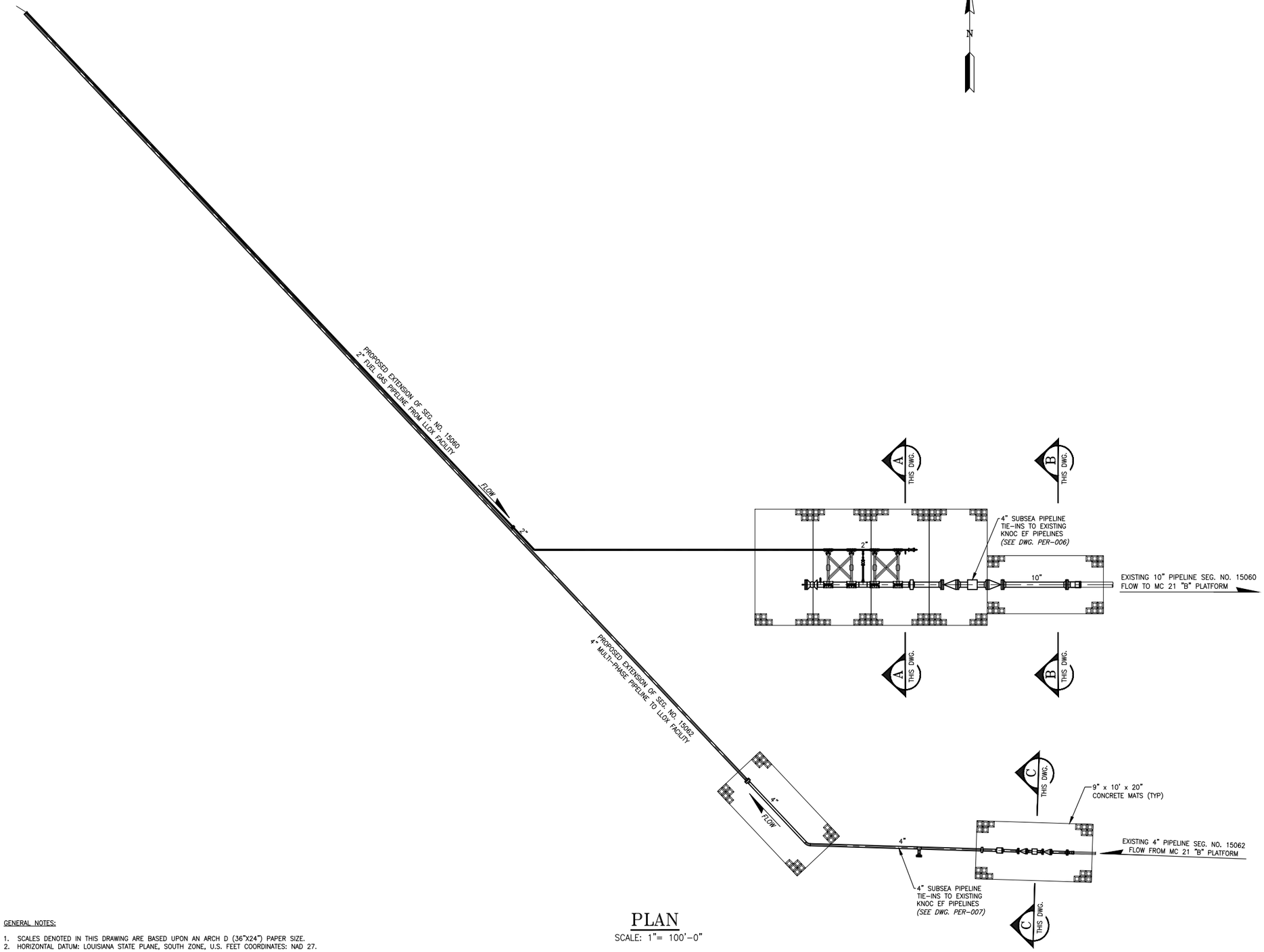
KOREA NATIONAL OIL CORPORATION EAGLE FORD
4" SUBSEA PIPELINE TIE-IN TO EXISTING KNOC EF PIPELINE
SOUTH PASS BLK. 60

DRAWN BY:	BWC	APPROVED BY:	DPT
SCALE:	AS NOTED	PROJ. ENGR.:	DPT
DATE:	12-18-23	PROJ. MGR.:	JHE
CHECKED BY:	RAA	SHEET:	1 OF 1

DWG. NO. 22081_PER-007 REV. B

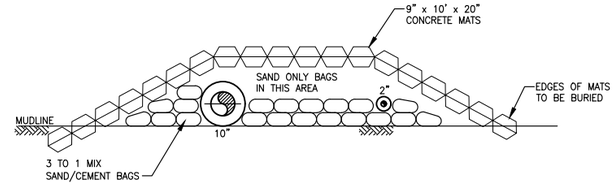
22081_PER-007.DWG 7 KMA 12:08 01-12-24



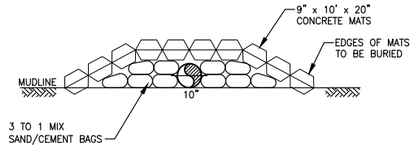
PLAN
SCALE: 1"= 100'-0"

GENERAL NOTES:

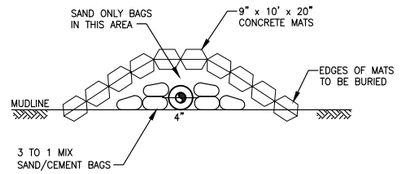
1. SCALES DENOTED IN THIS DRAWING ARE BASED UPON AN ARCH D (36"X24") PAPER SIZE.
2. HORIZONTAL DATUM: LOUISIANA STATE PLANE, SOUTH ZONE, U.S. FEET COORDINATES: NAD 27.



SECTION A
SCALE: 3/8"= 1'-0"



SECTION B
SCALE: 3/8"= 1'-0"



SECTION C
SCALE: 3/8"= 1'-0"

GENERAL NOTES:

1. SAND/CEMENT BAGS TO BE 3 PARTS SAND TO 1 PART CEMENT.
2. SAND/CEMENT BAGS SHALL BE INSTALLED AFTER SUCCESSFUL COMPLETION OF THE LEAK TEST.
3. NO SAND/CEMENT BAGS SHALL BE PLACED WITHIN OR ON TOP OF TIE-IN ASSEMBLY, USE SAND ONLY BAGS.
4. SAND/CEMENT BAGS ABOVE NATURAL BOTTOM SHALL BE INSTALLED WITH A 3:1 SLOPE.

REFERENCE DRAWINGS

NO.	DATE	DESCRIPTION	DRAWN	CHK'D.	APPRV'D.
B	01-05-24	ISSUED FOR PERMITTING	MFZ	RAA	DPT
A	12-20-23	ISSUED FOR PERMITTING	BWC	RAA	DPT

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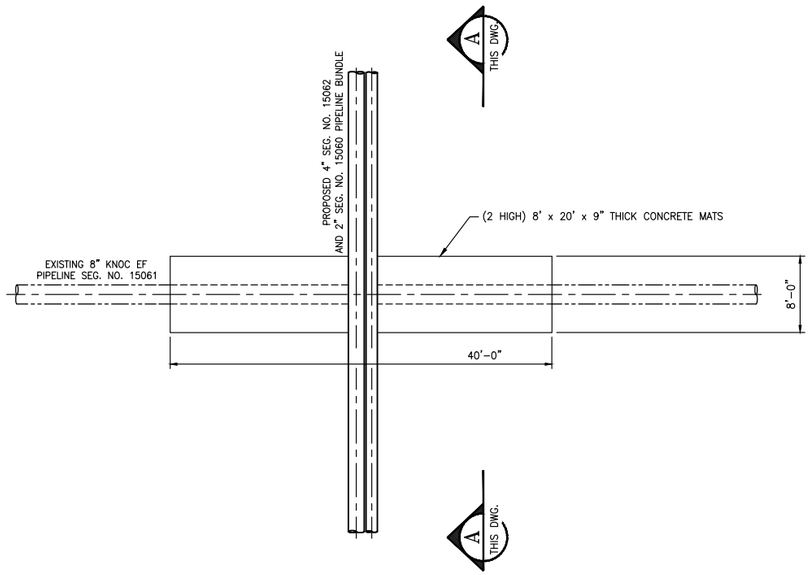
KOREA NATIONAL OIL CORPORATION EAGLE FORD
4"& 2" SUBSEA PIPELINE TIE-INS TO EXISTING KNOC EF PIPELINES – COVERS DETAILS
SOUTH PASS BLK. 60

DRAWN BY:	BWC	APPROVED BY:	
SCALE:	AS NOTED	PROJ. ENGR.:	
DATE:	12-18-23	PROJ. MGR.:	
CHECKED BY:		SHEET:	1 OF 1

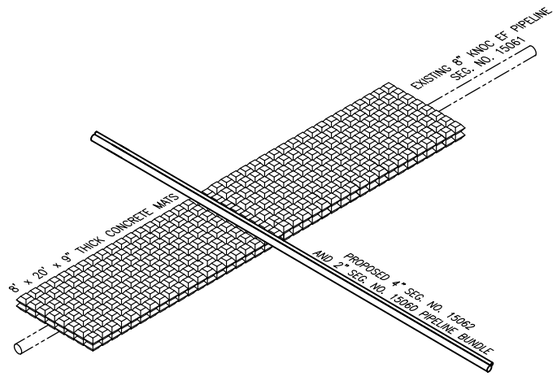
DWG. NO. 22081_PER-008 REV. B

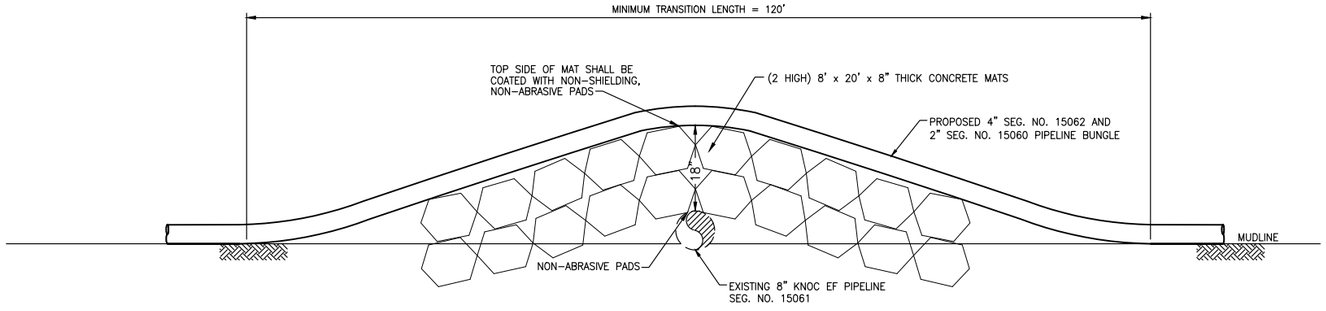
22081_PER-008.DWG 6 KMA 12:16 01-12-24

STATION NUMBER	EXISTING PIPELINE COMPANY NAME	PIPELINE DIAMETER	SEGMENT NUMBER	X–COORD. FT.	Y–COORD. FT.	LATITUDE	LONGITUDE	WATER DEPTH	AREA AND BLOCK NUMBER
7+33	KNOC EAGLE FORD	8"	S–15061	2761509.84	152239.06	26° 03 59.58	89° 00' 48.96"	–203.00	SOUTH PASS 60



PLAN





SECTION A THIS DWG.
SCALE: N.T.S.

NOTES:

1. SAND/CEMENT BAGS MAY BE USED SEPARATELY OR IN COMBINATION WITH CONCRETE MATS TO ACHIEVE 18 INCH SEPARATION BETWEEN PIPELINES.
2. EDGES OF CONCRETE MATS SHALL BE BURIED BELOW MUDLINE.
3. TRANSITION LENGTH MAY VARY DEPENDING UPON DEPTH OF EXISTING PIPELINE, CONTRACTOR SHALL VERIFY.
4. HORIZONTAL DATUM: LOUISIANA STATE PLANE, SOUTH ZONE, U.S. FEET COORDINATES: NAD 27.

REFERENCE DRAWINGS

NO.	DATE	DESCRIPTION	DRAWN	CHK'D.	APPRV'D.
B	01–05–24	ISSUED FOR PERMITTING	MFZ	RAA	DPT
A	12–20–23	ISSUED FOR PERMITTING	BWC	RA	DPT

REVISIONS

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(504) 833–5321 Fax (504) 833–4940
www.projectconsulting.com

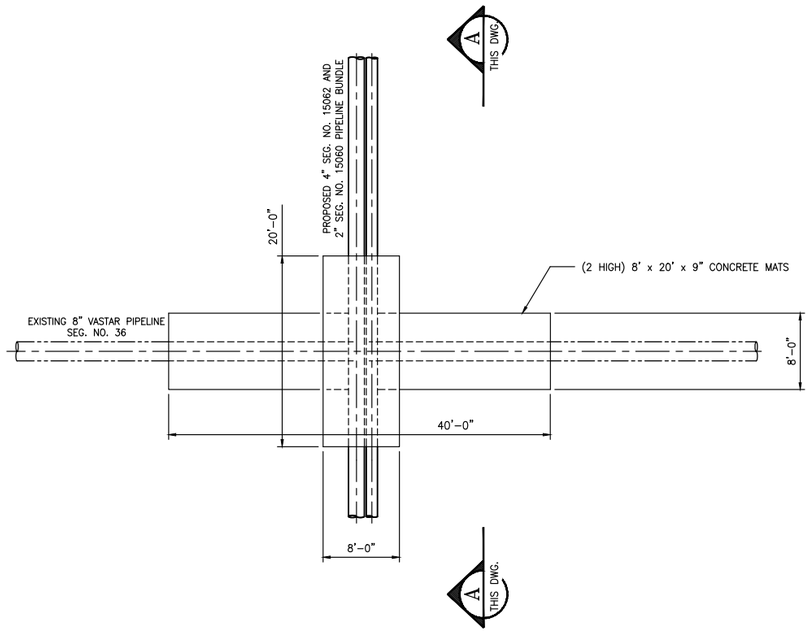
2" & 4" MC21 PIPELINE REROUTES CONCRETE MAT PIPELINE CROSSING UNBURIED PIPELINE CROSSING DETAIL

DRAWN BY:	BWC	APPROVED BY:	
SCALE:	AS NOTED	PROJ. ENGR.:	
DATE:	12–19–23	PROJ. MGR.:	
CHECKED BY:	RA	SHEET:	1 OF 1

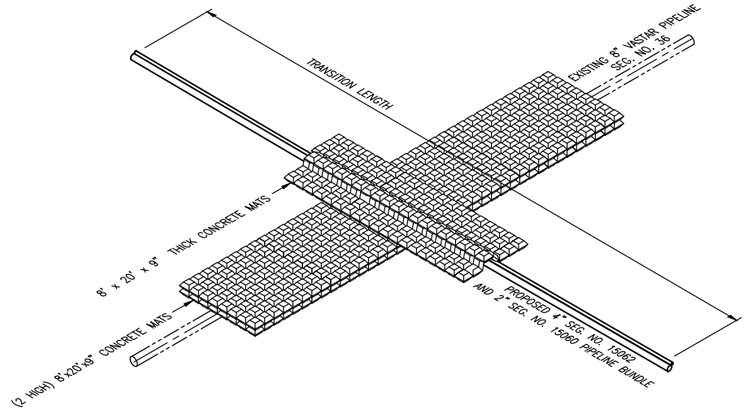
DWG. NO. 22081_PER–009 REV. B

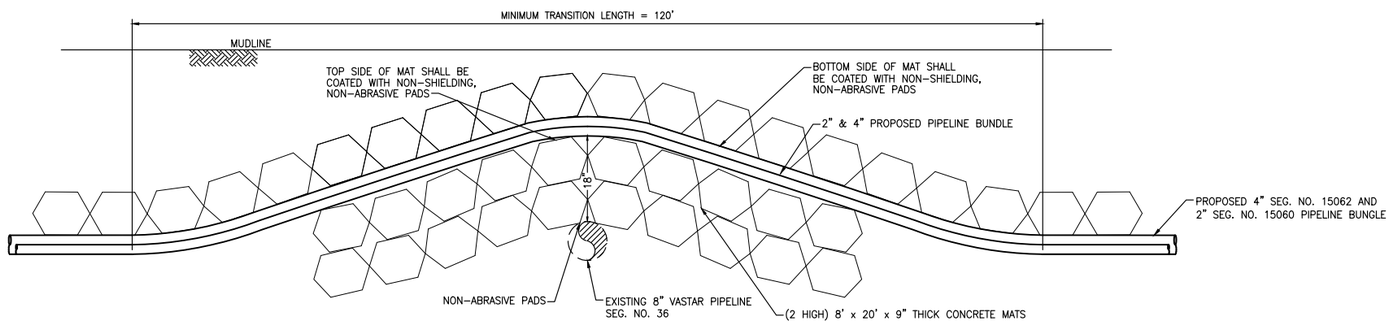
22081_PER–009.DWG 5 KMA 12:24 01–12–24

STATION NUMBER	EXISTING PIPELINE COMPANY NAME	PIPELINE DIAMETER	SEGMENT NUMBER	X–COORD. FT.	Y–COORD. FT.	LATITUDE	LONGITUDE	WATER DEPTH	AREA AND BLOCK NUMBER
27+34	VASTAR (ABANDONED)	8"	S–36	2760245.41	153776.94	26° 04' 15.03"	89° 01' 02.52"	–199	SOUTH PASS 60



PLAN





SECTION
SCALE: N.T.S.

A
THIS DWG.

NOTES:

1. SAND/CEMENT BAGS MAY BE USED SEPARATELY OR IN COMBINATION WITH CONCRETE MATS TO ACHIEVE 18 INCH SEPARATION BETWEEN PIPELINES.
2. EDGES OF CONCRETE MATS SHALL BE BURIED BELOW MUDLINE.
3. TRANSITION LENGTH MAY VARY DEPENDING UPON DEPTH OF EXISTING PIPELINE, CONTRACTOR SHALL VERIFY.
4. HORIZONTAL DATUM: LOUISIANA STATE PLANE, SOUTH ZONE, U.S. FEET COORDINATES: NAD 27.

REFERENCE DRAWINGS

NO.	DATE	DESCRIPTION	DRAWN	CHK'D.	APPRV'D.
B	01–05–24	ISSUED FOR PERMITTING	MFZ	RAA	DPT
A	12–20–23	ISSUED FOR PERMITTING	BWC	RA	DPT

REVISIONS

PROJECT CONSULTING SERVICES, INC.
3300 WEST ESPLANADE AVE., S., SUITE 500
METAIRIE, LA 70002–7406
(504) 833–5321 Fax (504) 833–4940
www.projectconsulting.com

2" & 4" MC21 PIPELINE REROUTES CONCRETE MAT CROSSING BURIED PIPELINE CROSSING DETAIL

DRAWN BY:	BWC	APPROVED BY:	
SCALE:	AS NOTED	PROJ. ENGR.:	
DATE:	10/19/23	PROJ. MGR.:	
CHECKED BY:	RA	SHEET:	1 OF 1

DWG. NO. 22081_PER–010 REV. B

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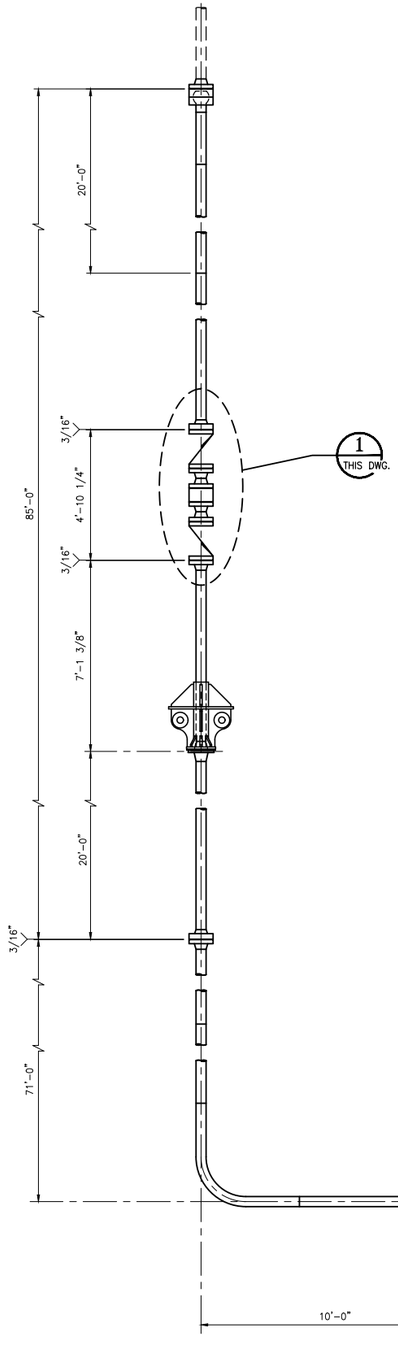
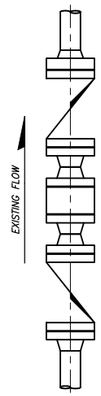
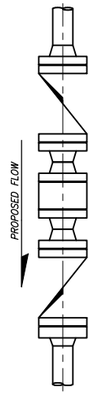
4" PRESSURE BALANCE SAFETY JOINT REORIENTATION TO ACCOMMODATE CHANGE IN DIRECTION OF FLOW

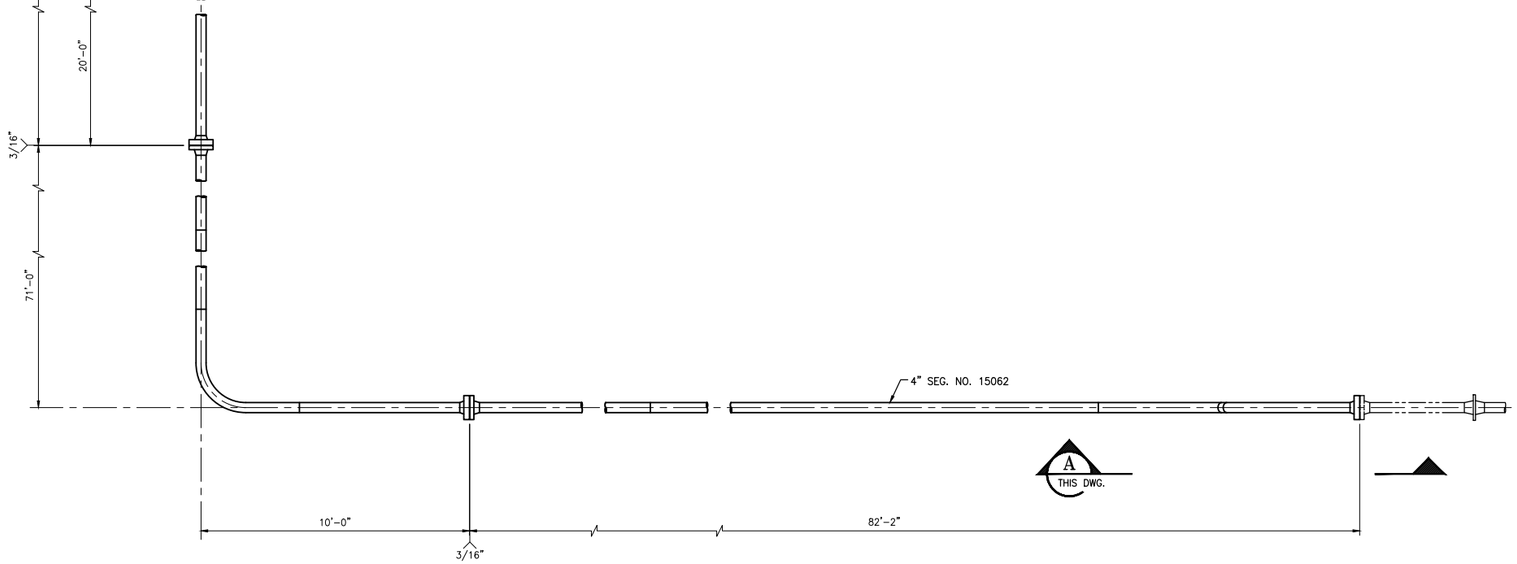




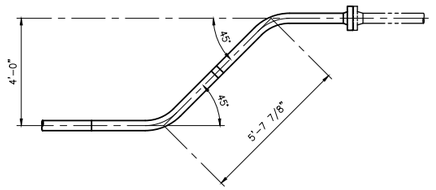
4" PBSJ EXISTING CONFIGURATION



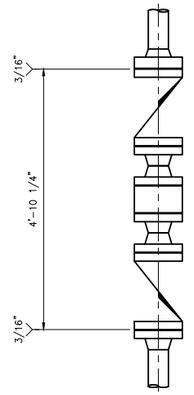
4" PBSJ PROPOSED CONFIGURATION



PLAN
SCALE: 3/8" = 1'-0"
EXISTING 4" PIPELINE RISER TIE-IN AT MC 21



SECTION 'A-A'
SCALE: 3/8" = 1'-0"



DETAIL 1
SCALE: 3/4" = 1'-0"

REFERENCE DRAWINGS

NO.	DATE	DESCRIPTION	DRAWN	CHK'D.	APPRV'D.
B	01-05-24	ISSUED FOR PERMITTING	MFZ	RAA	DPT
A	12-20-23	ISSUED FOR PERMITTING	BWC	RAA	DPT

REVISIONS

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METAIRIE, LA 70002-7406
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www.projectconsulting.com

KOREA NATIONAL OIL CORPORATION EAGLE FORD
4" PRESSURE BALANCE SAFETY JOINT REORIENTATION
MISSISSIPPI CANYON BLOCK 21

DRAWN BY:	BWC	APPROVED BY:	DPT
SCALE:	AS NOTED	PROJ. ENGR.:	DPT
DATE:	12-19-23	PROJ. MGR.:	JHE
CHECKED BY:	RAA	SHEET:	1 OF 1

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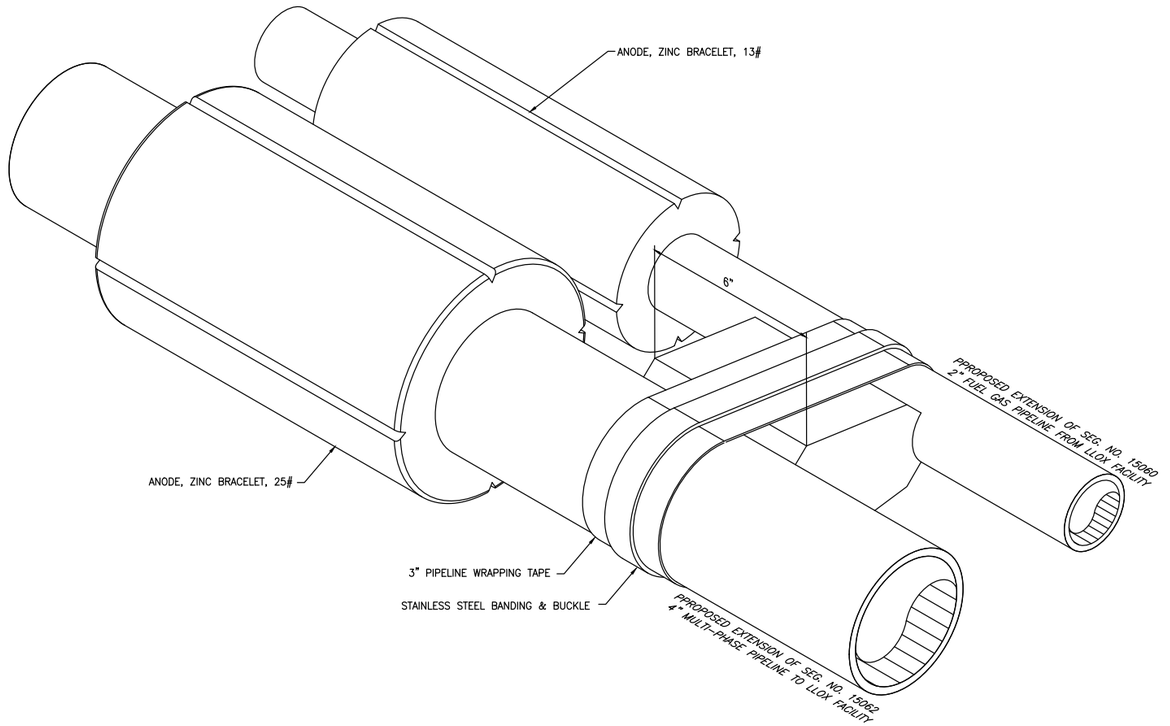
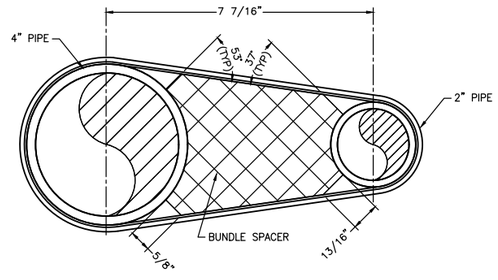


ISOMETRIC VIEW

SCALE: 6" = 1'-0"



END VIEW

SCALE: 6" = 1'-0"

REFERENCE DRAWINGS

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A	12-20-23	ISSUED FOR PERMITTING	BWC	RA	DPT

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METAIRIE, LA 70002-7406
(504) 833-5321 Fax (504) 833-4940
www.projectconsulting.com

2" & 4" MC21 PIPELINE REROUTES
TYPICAL
PIPELINE SPACER & ANOIDE

DRAWN BY:	BWC	APPROVED BY:	
SCALE:	AS NOTED	PROJ. ENGR.:	
DATE:	12-19-23	PROJ. MGR.:	
CHECKED BY:	RA	SHEET:	1 OF 1

DWG. NO. 22081_PER-013 REV. B

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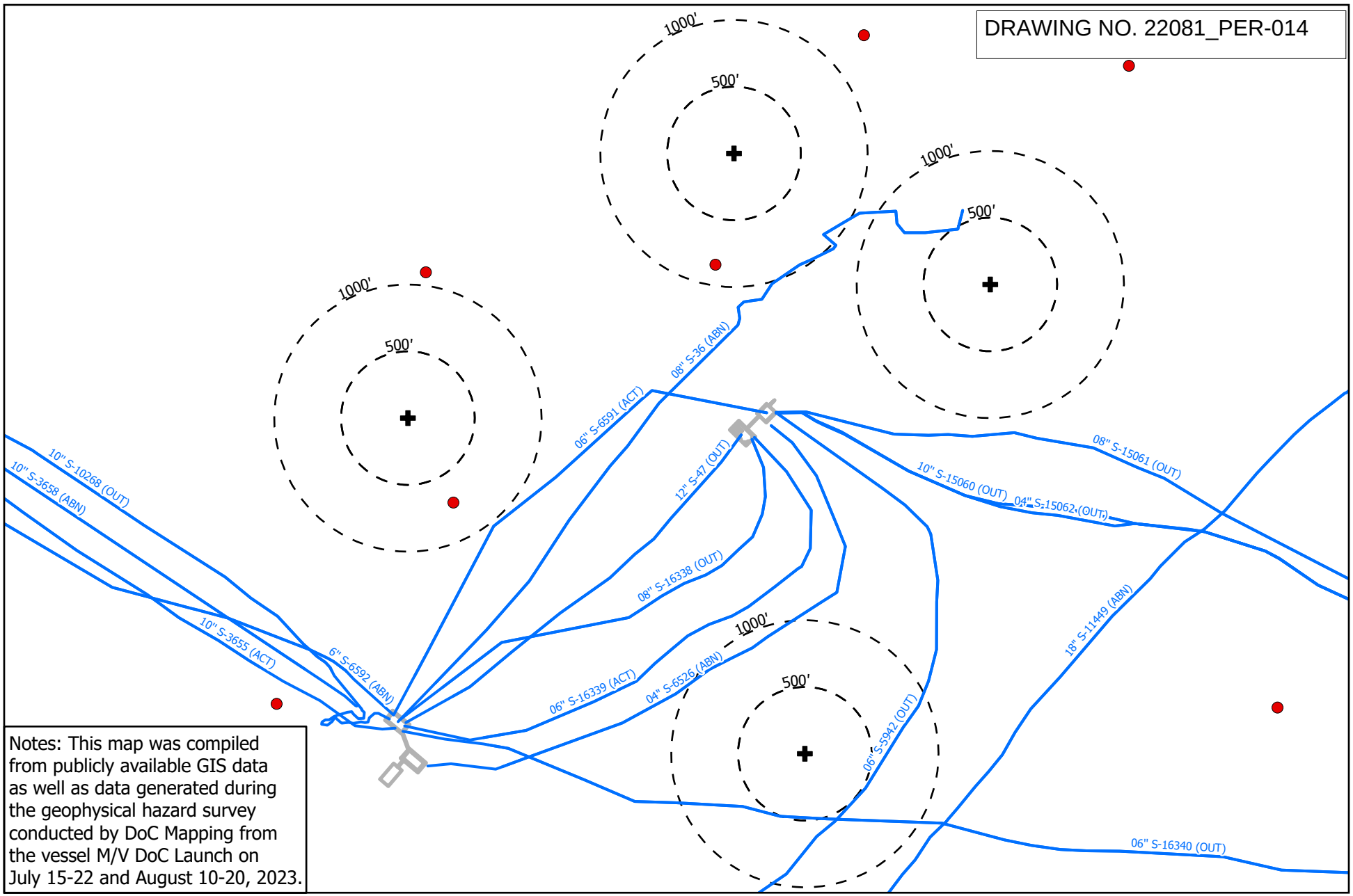
DRAWING NO. 22081_PER-014



Notes: This map was compiled from publicly available GIS data as well as data generated during the geophysical hazard survey conducted by DoC Mapping from the vessel M/V DoC Launch on July 15-22 and August 10-20, 2023.

- Wells
- Pipelines
- Platforms
- Anchor Points
- Anchor Point Buffers

N

KOREA NATIONAL OIL CORPORATION
ABANDONMENT OF PIPELINES AT SP 60F PLATFORM
BLOCK 60
SOUTH PASS AREA
GULF OF MEXICO

12/18/2023 NAD 1927 StatePlane Louisiana South FIPS 1702 8.5" x 11"

0 500 1,000 US Feet

PIPE SPECIFICATIONS & GENERAL INFORMATION

1) EXISTING LINE PIPE SPECIFICATIONS: FROM: M.C. BLOCK 21 "B" PLATFORM TO S.P. BLOCK 60 SUBSEA CONNECTION

O.D.	W.T.	GRADE	LENGTH	MAOP
4.50"	0.337"	X 42	49227'	1,440 PSIG

2) PROPOSED LINE PIPE SPECIFICATIONS: FROM PROPOSED SUBSEA CONNECTION IN S.P. BLOCK 60 TO F/S BOUNDARY

O.D.	W.T.	GRADE	LENGTH	MAOP
4.5"	0.337"	X 42	28,508'	1,440 PSIG

4) PROPOSED LINE PIPE COATING: 12 - 14 MILS THIN FILM FUSION BONDED EPOXY
NO CONCRETE COATING REQUIRED.

5) NAME OF PRODUCT: MULTIPHASE (OIL, NATURAL GAS, AND WATER)

6) GOVERNING CODE: TITLE 30, PART 250, SUBPART J AND TITLE 49, PART 195 OF THE CODE OF FEDERAL REGULATIONS.

7) GRID PROJECTION BASED UPON LOUISIANA (LAMBERT) PLANE COORDINATES SYSTEM, SOUTH ZONE, GEODETIC: NAD 1927, CLARKE SPHEROID 1866 AND THE UNIVERSAL TRANSVERSE MERCATOR PLANE COORDINATE SYSTEM (UTM), ZONE 16, GEODETIC DATUM, NAD 27, CLARKE SPHEROID, 1866

8) THE MAOP OF THE PROPOSED MODIFIED PIPELINE IS 1,440 PSIG, BASED UPON THE REQUIREMENTS OF TITLE 30, PART 250, SUBPART J AND TITLE 49, PART 195 OF THE CODE OF FEDERAL REGULATIONS.

9) THE SECTION OF THE EXISTING 4.50" PIPELINE THAT WILL BE PLACED IN SERVICE IS IN WATER DEPTHS GREATER THAN 200 FEET AND WILL REMAIN UNBURIED. THE SUBSEA CONNECTION AND APPROX. 1,950 FEET OF 4.50" WILL BE IN WATER DEPTHS GREATER THAN 200 FEET AND WILL NOT BE BURIED. THE REMAINDER OF THE 2.375" WILL BE BURIED 3 FEET BELOW THE MUDL

10) PRESSURE TESTING

NEW PIPELINE SECTION	EXISTING PIPELINE SECTION
2,160 PSIG FOR 8 HOURS (HYDROTEST) OR 4 HOUR IF TESTED ONSHORE	2,160 PSIG FOR 8 HOURS (HYDROTEST)

MODIFICATION OF KNOC EAGLE FORD CORPORATION 4.50-INCH O.D. NATURAL GAS RIGHT-OF-WAY PIPELINE, OCS-G 26821, SEGMENT NO. 15062, GULF OF MEXICO, FEDERAL WATERS, OFFSHORE LOUISIANA

APPLICATION BY:

KNOC EAGLE FORD CORPORATION

SHEET 1 OF 1	01/09/24
DWG. NO.	PS-2

Pipeline Pre-Lay Geohazard Survey and Phase I Archaeological Assessment

Proposed 4" & 2" Pipeline Installation

From SSTI in SP60 to Southeast Pass, Louisiana

Report 1 of 2: SSTI in SP60 to State/Federal Boundary

BOEM Lease Blocks 6, 7, 59, 60, 67, & 68
South Pass Area
Gulf of Mexico

Prepared by:

DOC MAPPING
New Orleans, Louisiana

Prepared for:

KNOC

Houston, Texas

Project #: F23KNOC010_SP60 Offshore
Revision 1

DoC Mapping LLC
805 Distributors Row
New Orleans, LA 70123

October 25, 2023

RE: Phase I Archaeological Assessment SP60

Korea National Oil Corporation – Eagle Ford
5599 San Felipe St #725
Houston, Texas 77056

Project #: F23KNOC010_SP60 Offshore

Dohyoung Kim,

DoC Mapping LLC (DoC) conducted a geophysical survey from the vessel M/V *DoC Launch* on July 15-22 and August 10-20, 2023. The survey was conducted to support the required Geohazard and Archaeological Assessment for a proposed 4" and 2" pipeline installation from Block 60, South Pass Area to inshore Louisiana, Gulf of Mexico.

Thank you for the opportunity to complete this Geohazard and Archaeological Assessment. DoC is dedicated to providing the best customer service, safety measures, and efficient timelines. If you have any questions regarding this project or wish to discuss further, please do not hesitate to contact us.

Sincerely,

Tyler McLellan
Marine Archaeologist – DoC Mapping
E-Mail: tyler.mclellan@docmapping.com

Eric Fischer
Geophysical Manager – DoC Mapping
E-Mail: eric.fischer@docmapping.com

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List of Figures

List of Tables

Appendices

List of Acronyms

Acronym	Definition
APE	Area of Potential Effects
AWOIS	Automated Wreck and Obstruction Information Service
BSEE	Bureau of Safety and Environmental Enforcement
BOEM	Bureau of Ocean Energy Management
DoC	DoC Mapping, LLC
ft	feet
HRG	High Resolution Geophysical
km	kilometer
LA SHPO	Louisiana State Historic Preservation Office
m	meter
MBES	Multi beam echosounder
mi	mile
NOAA	National Oceanic and Atmospheric Administration
nm	Nautical mile
NRHP	National Register of Historic Places
nTs	nanoteslas
SBES	Single beam echosounder
SBP	Sub-bottom profiler
SSTI	Sub-sea tie-in

EXECUTIVE SUMMARY

- KNOC EF contracted DoC Mapping to conduct an Archaeological and Hazard Survey of a 3,000-foot radius anchor area in preparation for a proposed pipeline and a proposed Subsea Tie-in (SSTI) in SP60 to a facility in Southeast Pass, Louisiana.
- The proposed pipelines are a bundled 4" Multiphase Pipeline (flow from the proposed SSTI in SP60 to shore); and a 2" Fuel Gas Pipeline (flow from Shore to proposed SSTI in SP60).
- This Archaeological and Hazard Assessment is based on the interpretation of geophysical data collected aboard the M/V *DoC Launch* on July 15-22 and August 10-20, 2023.
- The Archaeological Assessment was completed in-house by a Qualified Marine Archaeologist.
- Multibeam bathymetry, side scan sonar, magnetometer, and subbottom profiler data were acquired.
- Water depth across the study area ranged between 84 and 270 feet Mean Lower Low Water (MLLW).
- There are eighteen (18) pipelines, three (3) platforms, and numerous abandoned wells within the survey area. All infrastructure was confirmed in the geophysical data.
- Forty (40) unidentified magnetic anomalies were recorded within the project area.
- Fifty-eight (58) unidentified sonar contacts were interpreted within the survey area.
- Anchor placement should be conducted to minimize the potential for entanglement with debris associated with magnetic anomaly and sonar contact positions.
- Anchor locations should avoid sonar contact 7, identified as a shipwreck, by 500 feet from all visible extents to minimize potential entanglement of anchor cables with the wreck.
- There are numerous mudflow gullies within the project area that should be considered when designing anchor placements.

INTRODUCTION

Korea National Oil Corporation Eagle Ford (KNOC EF) contracted DoC Mapping (DoC) to collect high resolution geophysical (HRG) survey data in Federal Lease Blocks 6, 59, 60, 67, and 68, South Pass (SP) Protraction Area, Gulf of Mexico, and to provide a shallow hazard and archaeological analysis and report based on the findings of the survey. High resolution geophysical (HRG) data provided by DoC will be utilized by KNOC EF for bottom disturbance planning. The proposed pipeline bundle includes a 4" multiphase and 2" gas pipeline. The proposed 4" pipeline begins at a sub-sea tie-in (SSTI) in SP60 at the 4" S-15060 pipeline and terminates at a third-party processing facility in Southeast Pass, in Plaquemines Parish, Louisiana. The proposed 2" pipeline begins at two locations near Southeast Pass, in Plaquemines Parish, Louisiana and terminates at a SSTI in SP60 at the 10" S-15062 pipeline. The Area of Potential Effects (APE) contains both a federal and state portion; this report reviews HRG data collected in federal waters. The full APE is located approximately 22 mi (35 km) from Venice, Louisiana (Figure 1).

This archaeological report is provided to ensure compliance with the Bureau of Ocean Energy Management (BOEM)'s Notice-to-Lessees 2005-G07 (Archaeological Resource Surveys and Reports) and with the National Historic Preservation Act of 1966, as amended, and its implementing regulation, the Protection of Historic Properties (36 CFR 800). Other historic and archaeological regulations adhered to include the Abandoned Shipwrecks Act of 1987 (43 USC Chapter 39, Sections 2101-2106), and the Secretary of the Interior's Standards and Guidelines for Archeology and Historic Preservation (FR 48, No. 190). All HRG data collected within the project's Area of Potential Effects (APE) for ground-disturbing activity was reviewed by a marine archaeologist that meets or exceeds the Interior's Professional Qualification Standards in the Standards and Guidelines (FR 48, No. 190, 44739). This report is also provided to ensure compliance with the Louisiana Office of Cultural Development, Divisions of Archaeology and Historic Preservation (serving as the Louisiana State Historic Preservation Office [LA SHPO]). The results of the archaeological assessment are based on information gathered from BOEM databases, publicly available data and publications, and proprietary data collected by DoC specific to the project area. Final recommendations are based on an analysis of the assessment results.

SURVEY METHODS

DoC conducted the survey for the federal waters portion of the APE using the M/V *DoC Launch* on July 15-22 and August 10-20, 2023. Weather conditions varied throughout the duration of the survey, with winds recorded between 6 and 12 mph. Full details of the daily surveys can be found in Appendix B. The M/V *DoC Launch* was equipped with an Applanix POS M/V system interfaced into Hypack 2022 for accurate positioning, survey navigation, and data collection. DoC collected data using side scan sonar, subbottom profiler (SBP), single and multi-beam echosounder (SBES and MBES) at 200 kHz and 400 kHz respectfully, and magnetometer; equipment was rigged in both towed and hull mounted positions (Table 1). The setup and layout of the vessel is provided in Appendix B. The side scan sonar operating nominally at 500 kHz was utilized at 328.1 ft (100 m) range per channel for full overlapping coverage at 164 ft (50 m) line spacing and the magnetometer was towed behind the sonar on a 32.8 (10 m) tether. Upon acquisition, the HRG

data were interpreted with Chesapeake SonarWiz v7 software. All data were examined for acceptable contrast and resolution before interpretation.

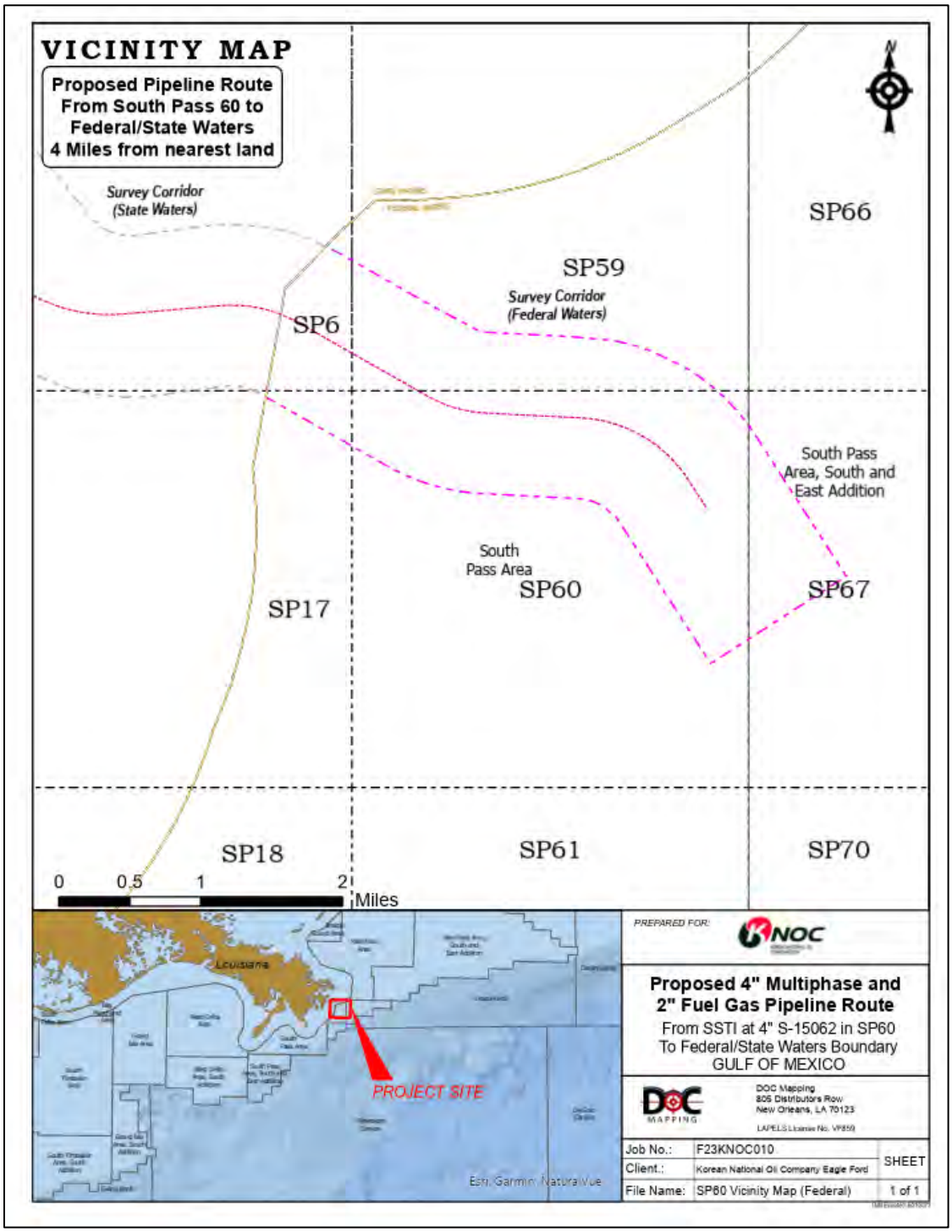

Fig. 1. Survey area in Gulf of Mexico.

Table 1. Survey instruments.

Instrument Type	Instrument Specifics	Instrument Position	Data Type Collected
Primary GNSS	Applanix POS M/V	N/A	Mounted above bridge
Side Scan Sonar	Klein 4000	Towed using winch	Sonar imagery
SBP	Odom Innomar SES2000 Compact	Pole-mounted, port side	Near surface geologic strata
MBES	R2Sonic 2024	Pole-mounted, port side	Water Depths
Magnetometer	Geometrics G-882	Towed 32.8 ft (10 m) behind sonar	Detection of ferrous material

KEY PROJECT PERSONNEL

The project personnel (Table 2) included the following at DoC: Tim Boyer, Primary Contact; Eric Fischer, Geophysical Manager; Madeleine Greene, Vice President of Data Operations; Travis Viener, Geologist; Tyler McLellan, Marine Archaeologist, and Ralph Coleman, Registered Professional Surveyor.

Table 2. Key project personnel.

Name	Title	Role	Company
Eric Fischer	Geophysical Manager	Management of all aspects of data collection and reporting	DoC Mapping
Tim Boyer	Sales Manager	Primary Client Contact	DoC Mapping
Madeleine Greene	VP Data Operations	Data Review and QC	DoC Mapping
Travis Viener	Geophysicist	Data Interpretation and Reporting	DoC Mapping
Tyler McLellan	Marine Archaeologist	Data Interpretation and Archaeological Assessment	DoC Mapping
Ralph Coleman	Registered Professional Surveyor	Senior Survey Professional	DoC Mapping
Steven Bingham	GIS / CAD Tech	GIS Mapping	DoC Mapping

GEOLOGIC BACKGROUND

The survey area is located 4 to 8 miles (6 to 12 kilometers) from the nearest shore at Southeast Pass, Louisiana and approximately 23 miles (37 kilometers) of the nearest port in Venice, in Plaquemines Parish, Louisiana. The seafloor sediments consist of marine clays and muds. This sediment originated in shallow waters outlet of the Mississippi River, most sediments are of Holocene age, and the top layers are less than 550 years old (Figure 2). The South Pass area, offshore Louisiana, is a large salt-dome dominated, Miocene sandstone reservoir. At least five major episodes of deltaic progradation occurred during the Pleistocene because of major marine regressions, which lowered sea levels 350-400 ft (106.7-121.9 m) per episode. These cyclic episodes generated overlapping sequences of deltaic, alluvial plain, shelf deposits separated by unconformities and strand-plain transgressive sand sheets. The Holocene sediments (primarily <5,000 years old) were expected to be 230-500 ft (70-150 m) thick (Kulp, 2002) in what is now the modern Balize Delta (<550 years old) of the Mississippi River.

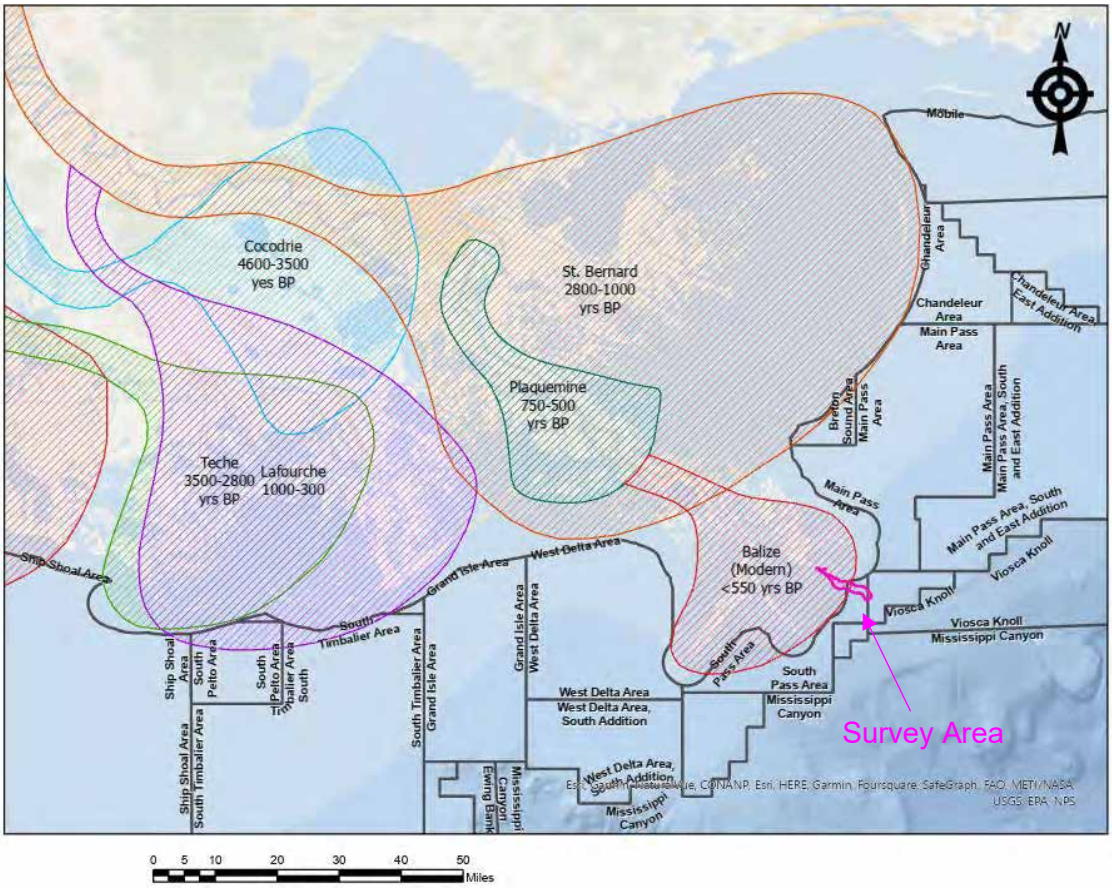

Fig. 2. Mississippi River Subdeltas (Coleman 1988).

Biochemical degradation of organic matter entrained in the shallow deltaic and estuarine deposits generated methane and carbon dioxide that mask underlying strata by absorbing and scattering acoustic energy from subbottom systems. Acoustic voids represent volumes of dispersed gas bubbles as small as 3% by volume (Whelan, Coleman, Suhayda, and Roberts, 1977).

Mudflows

Mudflows and other submarine slope failures are found within areas of specific geologic and bathymetric regions of the Gulf of Mexico near the Mississippi River delta. Mudflows are part of a complex, dynamic system of sediment transport and deposition developed on the seafloor. Some of the dictating factors include water depth, slope of the sea floor, and the sedimentary depositional environment of the area. The seafloor around the survey area is characterized by a high rate of sediment deposition, making mudflows highly active (Figure 3). These mudflows continue down the slope of well-defined submarine channels or gullies into deeper water in a southeast direction (Figure 4). Mudflows travel is a chaotic process that influences the acoustic properties of the subsurface and makes the area divergent from traditionally deposited sediment by spreading out onto the seafloor to form overlapping lobes of thick, viscous silty clay (Shepard, 1955; Hooper, 1980).

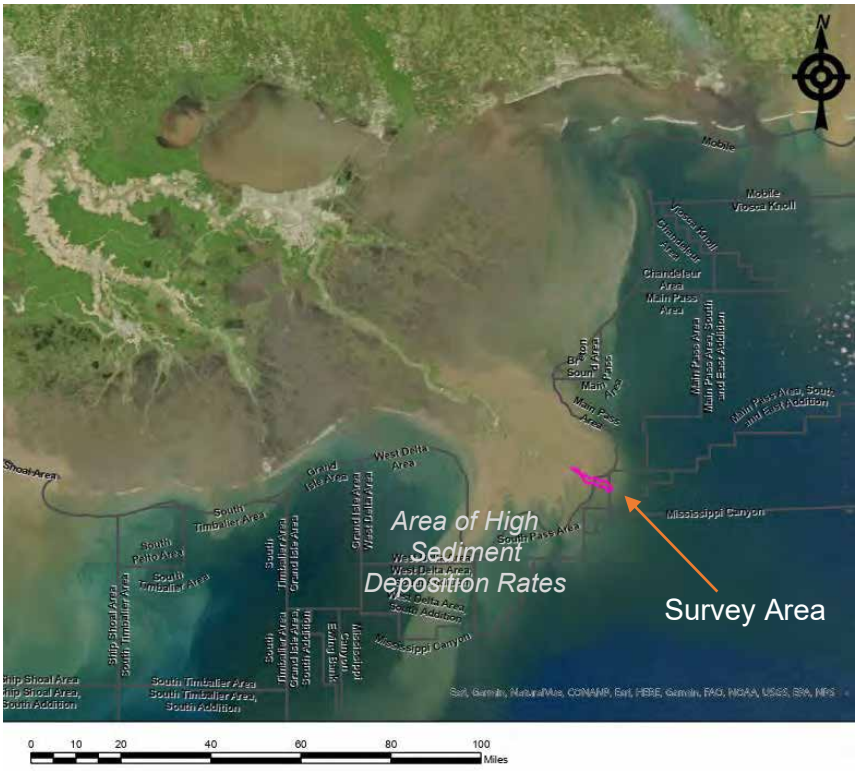

Fig. 3. Satellite image of high sediment deposition areas.

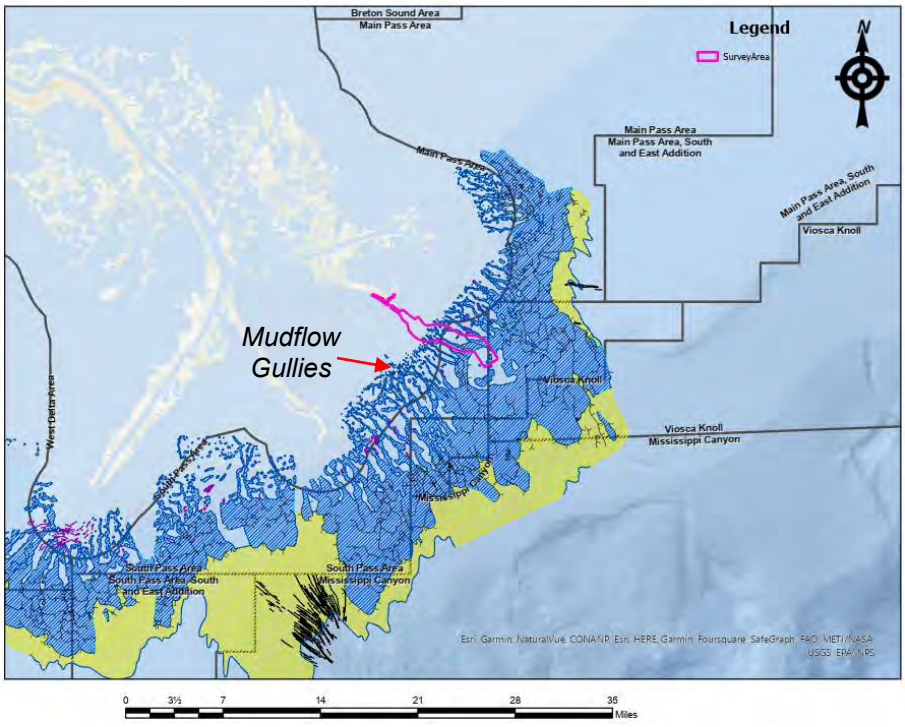

Fig. 4. Deposition of sediment from the Mississippi River subdeltas (BLM 1980).

Mudflows can be grouped into two broad temporal categories: creep like motion and catastrophic down-slope failures. Creep motion can be characterized as a continuous, but slow, downslope transportation of sediment that is generally confined to gullies that connect upslope retrogradational failures with downslope depositional lobes. Catastrophic down-slope failures occur when the build-up of sediment collapses and causes a rapid down-slope movement. These can prove hazardous to offshore facilities. Semi-stable areas between the mudflow channels are vulnerable to failure as mudflow scarps migrate upslope and/or mud channels grow over time, cannibalizing the regions between the active mudflow channels. However, based on our examination of historic bathymetric data, areas between mudflow gullies are surprisingly stable with low sediment accumulation rates. As such, these areas likely provide the least hazardous locations for production facilities and pipeline routing.

Hurricanes

Since 1980 at least eight (8) major storm events have passed within a 50-mile (80 km) radius of the survey site (Figure 5). During these events, the offshore oil and gas industry suffered damage to platforms, pipelines, and personnel. During Hurricane Katrina alone, over 100 platforms were destroyed and over 500 pipelines were damaged. Large storms can displace pipelines miles from their reported as built positions where the recent Holocene sediments are more prone to wave-induced bottom pressures, causing seafloor failures and mudflow overruns of deep-water regions from upslope sources (Hooper, 1980; Hooper and Suhayda, 2005). These events can cause damage to all offshore oil and gas industry assets and pose a risk to the life and safety of personnel.

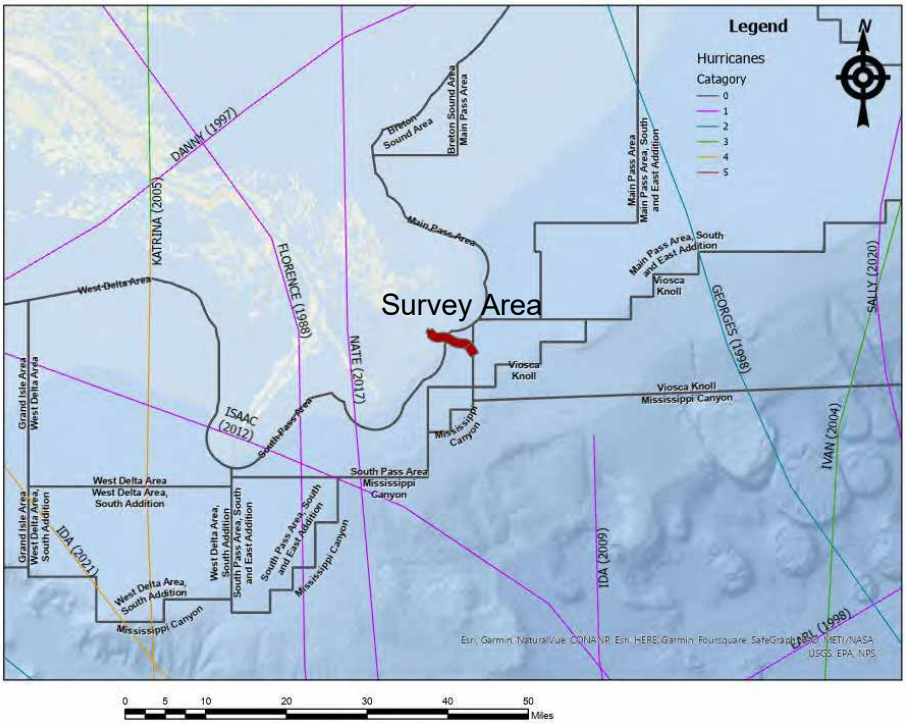

Fig. 5. Hurricane paths since 1980.

Benthic Assessment

The geophysical data was assessed to determine if any Potentially Sensitive Biological Features (PSBF's) exist within the area of impact for proposed anchors. The high-resolution side scan sonar, multibeam echosounder and subbottom data were all reviewed in an integrated dataset. None of the APE is listed in the Blocks with stipulations in NTL 2009-G39 (BOEM) and the nearest listed blocks are 30 miles to the north-northeast (listed as Pinnacle Trend Area).

The seafloor within SP60 and SP67 contains areas of authigenic carbonate outcrops approximately 1,200 ft (366 m) southwest of Platform 'A'. These outcrops are created by escaping hydrocarbons, mostly methane, from faults associated with shallow salt diapirs (Figures 6 and 7). Salt diapirs are formed by salt intruding into the overlying rock, disrupting surrounding sediment layers. The hydrocarbons, along with crude oil, cause microbial oxidation that provides an abundant source of bicarbonates in the water, which in turn triggers the chemical reaction for the formation of carbonates. Seafloors around the shallow salt diapirs are generally considered a "rough bottom" area, consisting of course carbonate sediments that can form features ranging from a few feet to over 80 ft (24.4 m) in height. These carbonates can provide major hazards for seafloor construction and anchor placement (Roberts et. al., 1990).

The outcrops in the survey area are extensive, with individual outcrops exceeding 30 ft (9.1 m) above the seafloor and 45-50 ft (13.7-15.2 m) across. The extents of these outcrops are outlined in the Sonar Mosaic and Seafloor Features maps accompanying this report.

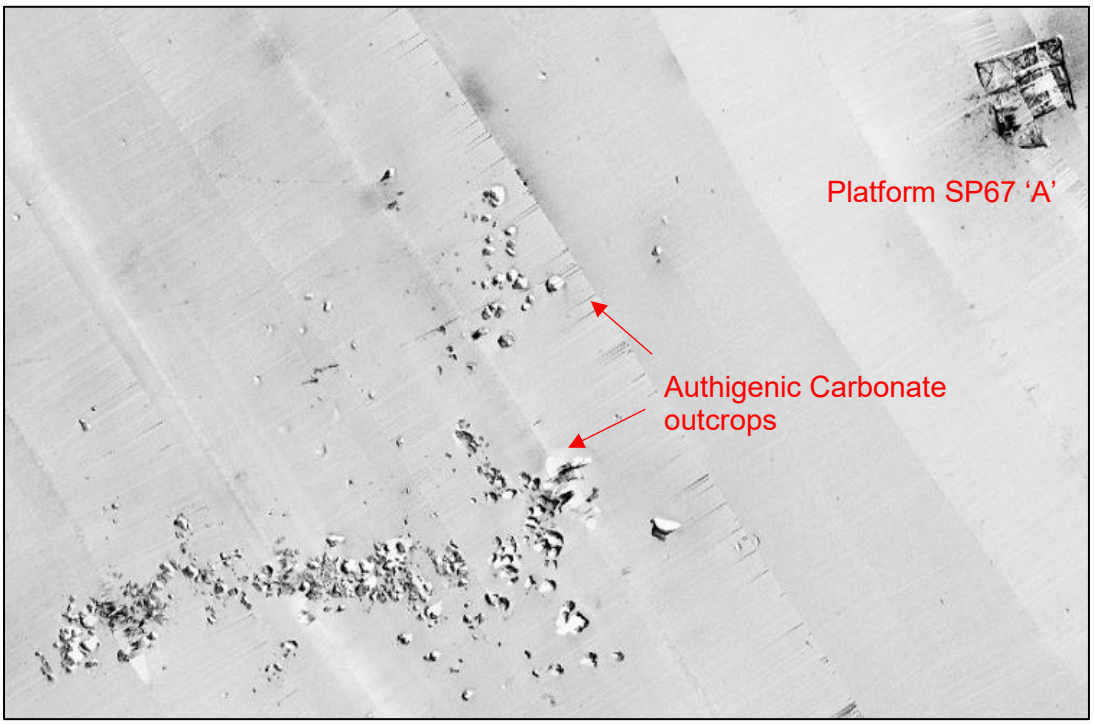

Fig. 6. Sonar imagery of carbonate outcrops southwest of SP67 Platform 'A'.

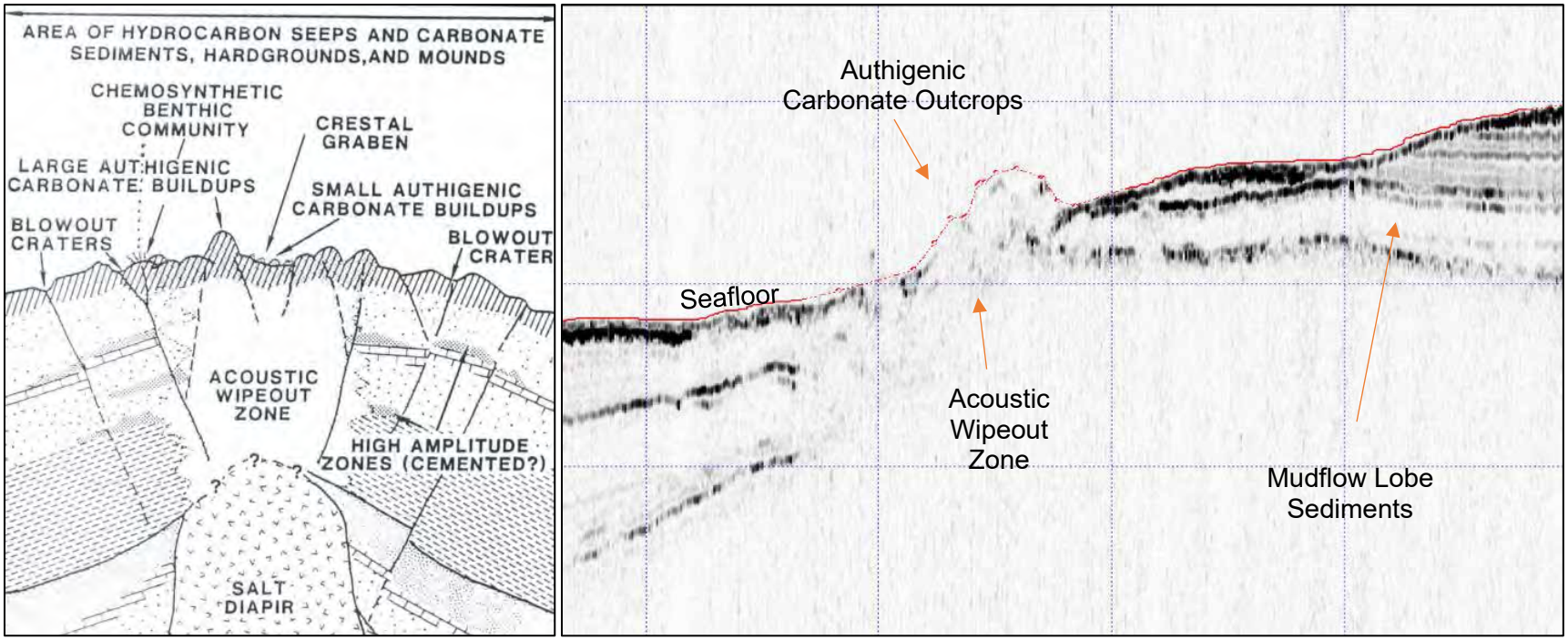

Fig. 7. Diagram of a shallow salt diapir and related seafloor features (image from Roberts et. al., 1990) (left) and subbottom data at outcrop area (Line 5018) (right).

SHALLOW HAZARD SUMMARY

Water depths range from 87 to 210 feet between the federal/state line and the proposed SSTI in SP60 (Figure 8). Seafloor soils consist primarily of clayey silts; the sonar data highlighted variations in soil texture along the seafloor at various mudflow areas. The seafloor is marked with mudflow gullies, slope changes and outcrops, with a few noted anchor divots and biogenic gas vents. The steepest slope from the mudflow along the proposed route is in SP60, where the depth changes 13 ft (4 m) over 200 ft (61 m) distance (3-4° slope) A region of hard outcrops in SP67 and a shipwreck in SP60 are present within the APE of the planned pipeline route and should be considered when planning anchor placements. This wreck is further detailed in the Archaeological Assessment and Final Recommendations section below.

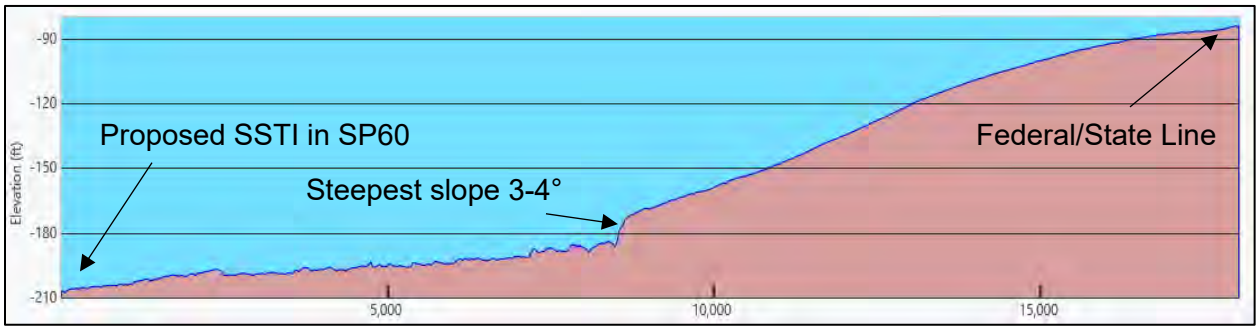

Fig. 8. Bathymetry profile from SP60 proposed SSTI to Federal/State Line.

The following existing Platform Structures within the APE were confirmed in the survey data:

- SP60 ‘C’
- SP60 ‘F’
- SP67 ‘A’

Magnetic readings verified these buried pipelines in the survey grid:

- Vastar 6" S-6592 (ABN)
- BP 10" S-3655 (ACT)
- Arco 10" S-3658 (ABN)
- Fieldwood 10" S-10268 (OUT)
- BP 12" S-47 (OUT)
- BP 6" S-5942 (OUT)
- BP 12" S-6521 (OUT)
- Fieldwood 18" S-11449 (ABN)
- KNOC Eagle Ford 10" S-15060 (OUT)
- KNOC Eagle Ford 8" S-15061 (OUT)
- KNOC Eagle Ford 4" S-15062 (OUT)
- BP 8" S-16338 (OUT)
- BP 6" S-16339 (ACT)
- BP 6" S-16340 (OUT)
- BP 6" S-6520 (OUT)
- Fieldwood 4" S-6526 (ABN)
- BP 6" S-6591 (ACT)
- Vastar 8" S-36 (ABN)

The pipelines will be marked with marine survey equipment to comply with BOEM On-Site Requirements NTL No. 2022-G01. The features will be marked with real-time DGPS navigation integrated to computer graphic screens aboard rigs, construction vessels, and all anchor handling vessels. A map at a scale of 1:12,000 (1” = 1,000 feet) will be provided to key personnel on the lay-barge, pipeline lowering vessels, and all anchor handling vessels.

OVERVIEW ARCHAEOLOGICAL BACKGROUND

Native American Cultures in Gulf

Approximately 20,000 to 12,000 years ago at the recession of the Late Wisconsin glaciation, a rapid vegetation growth resulted in a diversification in faunal life. Retreating glaciers created rivers and other waterway systems through landforms. Early humans utilized resources around the mouths of rivers valleys, point bars, and coastal terraces, where archaeological sites are often discovered. Sea level rising caused many sites along the continental shelf to become submerged and further covered in sediment, which may act as a protective layer. Avery Island is the earliest known occupational site in Louisiana, located on a large salt piercement dome in Iberia Parish. Artifacts such as sharp-edged scrapers and cutters, as well as Pleistocene megafauna such as giant bison and mastodon were identified at the site, and radiocarbon dates collected in 1968 provided absolute dates of 12,000 (+/-400 years) and 10,900 (+/-300 years) BP. These dates correlate the site to the Early and Middle Paleoindian periods, respectively. Early Paleoindians in Louisiana were hunter-gatherers that hunted mastodon and *Bison antiquus*, while later Paleoindians adapted to smaller game such as deer. This adaptation is represented by a shift in projectile points from larger points used to hunt megafauna to smaller points to hunt deer and fish. Further, these smaller points displayed an increase in regionalization and a decrease in exotic material use. The smaller and regionalized points suggest a decrease in population mobility and an increase in total population in the Late Paleoindian period. Other studies indicate that Paleoindian populations had the highest densities in deltaic and littoral zones, which occurred during lower shoreline positions now submerged (Evans 2016).

Early Exploration and Colonization

Spain's Maritime Empire

The Spanish were the first Europeans in the Gulf with the earliest explorations beginning in 1508. Explorations were followed by conquests aimed at exploiting the rich natural resources of the Americas, primarily gold and silver. The Spanish employed the *flota*, or treasure fleet system, to ensure protection of the cargo ships carrying riches between the Americas and Spain from French privateers, which were additionally provided armed escorts during times of war. The *flota* system consisted of two separate fleets that sailed on a prescribed schedule each year for almost 300 years, averaging nearly 100 ships each year. One fleet sailed into Veracruz where it would remain through winter. The second sailed to South American main ports. When returning to Spain, both fleets rendezvoused at Havana, following one of two routes dictated by prevailing winds. When traveling from Veracruz and other South American ports to Havana, ships of the *flota* system were lost with regular frequency to storms. Three wrecks from this period were discovered in 4,000 ft (1,219.2 m) water depth nearly 200 mi (321.9 km) from land (Monterrey A, B, and C) (Krivor et al. 2011; BOEM 2021).

France, Spain, and the American Revolution

France also developed an interest in settling the Gulf; the first settlement was attempted by La Salle in 1685, who lost three of his four vessel fleet (two wrecked, one stolen by the Spanish) and was forced to abandon his ambitions to colonize the area. One of the two wrecks, *La Belle*, was excavated beginning in 1995. The French successfully established a colony at Biloxi in 1699 and at Mobile in 1709 under Pierre Le Moyne d'Iberville. New Orleans was established under

Iberville's brother Jean-Baptiste Le Moyne de Bienville in 1718, which became the capital of French Louisiana within five years due to its important location for trade between coastal ports and the Mississippi River. In 1762, French Louisiana was ceded to Spain as Spanish interests in the Gulf further increased. Both the Spanish and French aided the American colonies against the British during the American Revolution, with the Spanish governor of Louisiana Bernardo de Galvez seizing British holdings throughout the Gulf, denying any base of operation along the coast. Several wrecks have been identified from this period. Two Spanish vessels were driven to the Louisiana coast by a storm in 1766; one wreck, *El Nuevo Constante*, was documented in 1995 but the other, *Corazon de Jesus y Santa Barbara*, has not been located. Another wreck from this period was the Spanish brig *El Cazador* which was looted after being discovered by fishermen in 1993 (Francaviglia 1998; BOEM 2021).

19th Century

War and American Expansion in the Gulf

At the turn of the century, the Gulf became a theater of rivalry between the Spanish, British, and Napoleon's France. In 1800, Louisiana was given back to France from Spain as Spanish strength weakened. Napoleon desired to rebuild French possessions in North America; however, with many of his troops sent to quell a slave revolt in Saint Domingue (present day Haiti) dying of yellow fever and imminent war with the British in Europe, he was convinced by his minister of finance to sell the territory to the United States. In 1803, Napoleon sold Louisiana to the United States in the Louisiana Purchase for $15 million. Napoleon's usurpation of the Spanish throne in 1808 ended the Bourbon dynasty and began the dissolution of the Spanish Empire in the Americas, which ended in 1821 with the independence of New Spain. As the French and Spanish pulled back from the Gulf, the United States gained a greater presence, where it came into conflict with the British during the War of 1812. On January 8, 1815, the British attacked and were repelled by Major General Andrew Jackson's forces during the Battle of New Orleans. The British focus on the city further proved its importance as one of the largest shipping ports in the Gulf, with major imports including weapons, clothing, tools, different food items (flour, salt, lard, and wine), and slaves, while major exports included beaver and deer skins, wood, and indigo. Other threats to Gulf shipping included privateers and acts of piracy (Francaviglia 1998; Krivor et. al. 2011; BOEM 2021; Thomas Jefferson Foundation 2023).

Trade and Steam

The early to mid-19th century saw a massive increase in trade through major ports in the Gulf, boosted by changes in sailing technology. Between October and December 1811, the steamboat *New Orleans*, completed in Pittsburgh the previous spring, traveled from the city of its birth down the Ohio and Mississippi Rivers to its namesake city (Blanchette 2011). *New Orleans* was the first steamboat to enter Louisiana; the introduction of which meant that vessels could travel from the Gulf through the deep channel upstream straight into New Orleans without having to detour through shallow water passages and Lake Pontchartrain. Travelling straight upstream saved large amounts of time. The steam engine also largely removed wind and tide as a factor in travel time (although not completely); vessel schedules could now be accurately predicted. Charles Morgan, a New York businessman from Killingsworth, Connecticut, monopolized on the reliability of the steamship as a partial owner of the New York and Charleston Steam Packet Company. Morgan

bought out his partners in the 1830s and established the Southern Steam Packet Company which expanded into the Gulf and provided the first regular steamship route to Texas. Morgan later began investing in railroads and iron works. By 1855, Morgan incorporated his assets into the Southern Steamship Company and operated six routes throughout the Gulf by 1860, including New Orleans. Of the 117 steamships owned by Charles Morgan, three wrecks were identified in the Gulf (*Mary*, *New York*, and *Josephine)* (Irion and Ball 2001; BOEM 2021).

Other industrial changes in this region of the Gulf include the explosion of the seafood industry in Biloxi, which was already a large supplier of shrimp and oysters to local markets. By 1870 railroads joined New Orleans with Mobile which expanded tourism and together with artificial ice allowed Biloxi to expand its commercial outreach. Canning factories were built and by 1903, the population had more than quadrupled and Biloxi was referred to as “the Seafood Capital of the World”. Factory owners also operated their own fleets of fishing vessels, from Biloxi schooners to later gasoline powered trawlers (Irion and Ball 2001; Nuwer 2006; BOEM 2021).

The American Civil War

The early capture of New Orleans by Union forces in the spring of 1862 was essential to the Anaconda Plan (crippling the Southern economy using blockades and splitting the South in two) due to the size of the city, the importance of the port, and the city’s strategic position on the Mississippi River. To combat the Union blockade, Confederate President Jefferson Davis issued letters of marque to Confederate privateers to target US shipping. With the blockade of southern ports, the south also utilized blockade runners to maintain a trade and supply network. With the Union capture of Biloxi in December 1861 and New Orleans in May 1862 followed by the Confederate abandonment of Pensacola, Mobile became a primary port for blockade runners; Mobile was not captured until 1864. Blockade runners imported war materials such as weapons, clothing, food, medical supplies, and some luxuries while exporting southern goods such as cotton, tobacco, and other agricultural goods to be transported for sale in Europe.

Confederate privateers, or commerce raiders, exacted a heavy toll on US shipping. The CSS *Sumter* was a converted mail steamer that caused massive losses in the Gulf. The CSS *Alabama* was perhaps the most famous raider, sending 76 US vessels to the bottom. Naval actions in the south also included ship-to-shore attacks, especially between US ships and Confederate forts guarding major ports and cities, such as Fort Jackson and Fort St. Philips, located 30 miles upriver from the mouth of the Mississippi protecting New Orleans. The forts (and Confederate naval protection) engaged Flag Officer David Farragut’s fleet in the river as Farragut moved to take the city. Many Southern ports were also protected by harbor obstructions that proved disastrous even after the war to unknowing vessels entering port. In 1866, the iron-hull, screw-driven steamship *Thomas Sparks* wrecked on an obstruction constructed by Confederate engineers to protect the harbor at Mobile. The destruction wrought by the Civil War left the south in tatters, however the ports along the Gulf quickly recovered; larger numbers of foreign vessels began to call at southern ports and defined new sailing routes, opening new major ports such as Tampa (major exporter of phosphate) and Port Arthur (oil). The export of lumber greatly increased in the decade following the war (Irion 1986; Francaviglia 1998; Symonds 2012; BOEM 2021; Zombek 2022).

20th Century

Oil Boom and the First World War

The shift from sail to steam caused profound changes to the Gulf in the late 19th century, while the transition from sternwheel steamships to screw propeller driven vessels marked the early 20th century. This was further heightened by the changing economy of the Gulf; while lumber was still a large export, the oil boom in Texas that began in 1900 caused maritime traffic to shift to large oil tankers, while bulk goods were transported by freighters (BOEM 2021).

The Second World War

After the entrance of the United States into the Second World War, the Vice Admiral Karl Donitz, head of Germany's U-boat arm, launched Operation Paukenschlag, or Operation Drumbeat (also named Drumroll); an attack on American shipping along the east coast and in the Gulf of Mexico. The first vessel sunk in the Gulf was the freighter *Norlindo* near the west end of Cuba on 4 May 1942 by a torpedo from U-507 (Korvettenkappitan Harro Schact). Schact sank an additional seven vessels during his career in the Gulf. U-506 would later follow with eight additional vessels. In total, twenty-four U-boats sank 56 vessels in 1942 and damaged fourteen others. For the 56 merchant vessels destroyed, only one German U-boat was sunk in the Gulf. U-166 (Oberleutnant zur See Hans-Gunther Kuhlmann) engaged and sank the passenger freighter SS *Robert E. Lee* on 30 July 1942 off Louisiana. The U-boat was in turn sunk by the naval escort PC-566. Mounting U-boat losses in other waters along the American front as well as an increase in escorts, convoys, and an enforcement of coastal blackouts caused the U-boat presence in the Gulf to decrease. The conclusion of the Second World War ended vessel losses due to warfare in the Gulf; typical vessel losses post-war were caused by either weather or human error (Wiggens 1995; Church and Warren 2002; Church et. al., 2007; BOEM 2021).

SITE ARCHAEOLOGICAL BACKGROUND

BOEM's confidential shipwreck database lists six wrecks and one object within 5 nautical miles (nm) (9.3 km) of the survey area (Table 3). The database includes potential shipwrecks from historical sources and offshore surveys as well as shipwrecks verified by offshore site investigations. Each wreck is given a locational accuracy rating based on the source of information. The ratings begin at 1 for wrecks with a high level of accuracy (a confirmed location of a possible or likely shipwreck) and end at 4 for wrecks with a low level of accuracy (somewhere in the Gulf of Mexico).

Table 3. BOEM Shipwrecks within 5 nm (9.3 km) of the Survey Area.

Vessel ID	Classification	Locational Reliability	Year Lost
796	VESSEL	2	1957
877	VESSEL	3	1967
1095	VESSEL	2	1994
1422	VESSEL	2	1978
11649	OBJECT	2	NA
11847	VESSEL	4	NA
15468	VESSEL	1	NA

The National Oceanic and Atmospheric Administration (NOAA)'s Automated Wreck and Obstruction Information Service (AWOIS) lists an additional five wrecks within 5 nmi of the survey area (Table 4).

Table 4. NOAA Shipwrecks within 5 nm (9.3 km) of the Survey Area.

Record	Notes
14136	LNM36, 92, CGD08, 08/28/92; 65' F/V REPORTED SUNK AT APPROX POS: LAT 29 03 30.0N LON 089 05 00.0W
14122	LNM15/96, CGD08. 04/04/96; NEW ORLEANS COE REPORTS VISIBLE WRECK IN APPROX POS: LAT 29 07 30.0N LON 089 00 57.0W. POSSIBLY THE SAME VESSEL AS AWOIS #14127
14123	LNM52/93, CGD08, 12/22/93; DERELICT F/V REPORTED SUNK IN APPROX POS: LAT 29 07 36.0N LON 089 00 54.0W
14124	LNM17/87, CGD08; CAPSIZED JACK-UP RIG "MR. DON" REPORTED IN APPROX POS: LAT 29 05 12.0N 089 00 18.0W RELOCATED FROM ORIG POS: LAT 29 04 00.0N 089 02 00.0W - H11835/2008; NOS-- THE CHARTED OBSTRUCTION PA, CAPSIZED JACK-UP RIG, WAS LOCATED AT 29-05-07.
14126	LNM51/94, CGD08, 12/01/94; CG STATION VENICE REPORTS SUNKEN VESSEL 68' F/V MISS CARRIE IN APPROX POS'N: LAT 29 08 53.0N 089 00 00.0W

Much of the APE contains pipelines and other oil related structures; it can therefore be assumed that debris from the oil industry may be found on the bottom. The possibility of encountering a historic wreck is moderate, as historic trade routes passed near the survey area. More recent studies conducted by BOEM (Pearson et. al. 2003) determined that preservation levels in the Gulf are greater than previously thought; thus, preserved historical archaeological sites may be encountered. Studies show that Paleoindians occupied Pleistocene era shorelines; however, these are deeply buried below Holocene sediments, largely due to the sediment output and shifting mudflows of the Mississippi River and its deltas (Kulp et. al. 2002). The seafloor around the survey area consists of loose sediments due to the impact of the Mississippi River and frequent mudflows. As such, possible shipwrecks are more likely to be buried; historic shipwrecks that are exposed are more likely to be severely damaged and disarticulated due to frequent storms.

HRG Survey Data Analysis

Side Scan Sonar Data Analysis

Sonar contacts were analyzed based on size and appearance, shadow, and association with unknown magnetic anomalies. Sonar contacts were filtered out from sonar noise (such as dolphins) by ensuring that the contact appeared on multiple overlapping sonar lines during processing. Additional attention was paid to contacts near charted shipwreck positions. DoC identified 58 sonar contacts within federal waters of the KNOC EF survey area. Sonar contacts ranged in size from 1.5 ft (0.5 m) to 314.1 ft (95.7 m). A full list of sonar contacts is listed in Appendix A. The sonar mosaic around the platforms and along the pipeline route were further analyzed for geologic and other features. The connected 'A' and 'F' platforms in SP60 are highly visible in the sonar imagery (Figure 9). One sonar contact was identified as a potential cultural resource that may be a modern barge. Sonar contact 7 was marked on survey line 4031 and measured 314.1 ft (95.7 m) in length, 60.7 ft (18.5 m) wide, and 33.7 ft (10 m) in height off the seafloor. The contact was further associated with several large magnetic anomalies, all selected on parallel survey lines to 4031. A detailed description and analysis of the wreck is given in the Archaeological Assessment and Final Recommendations section below.

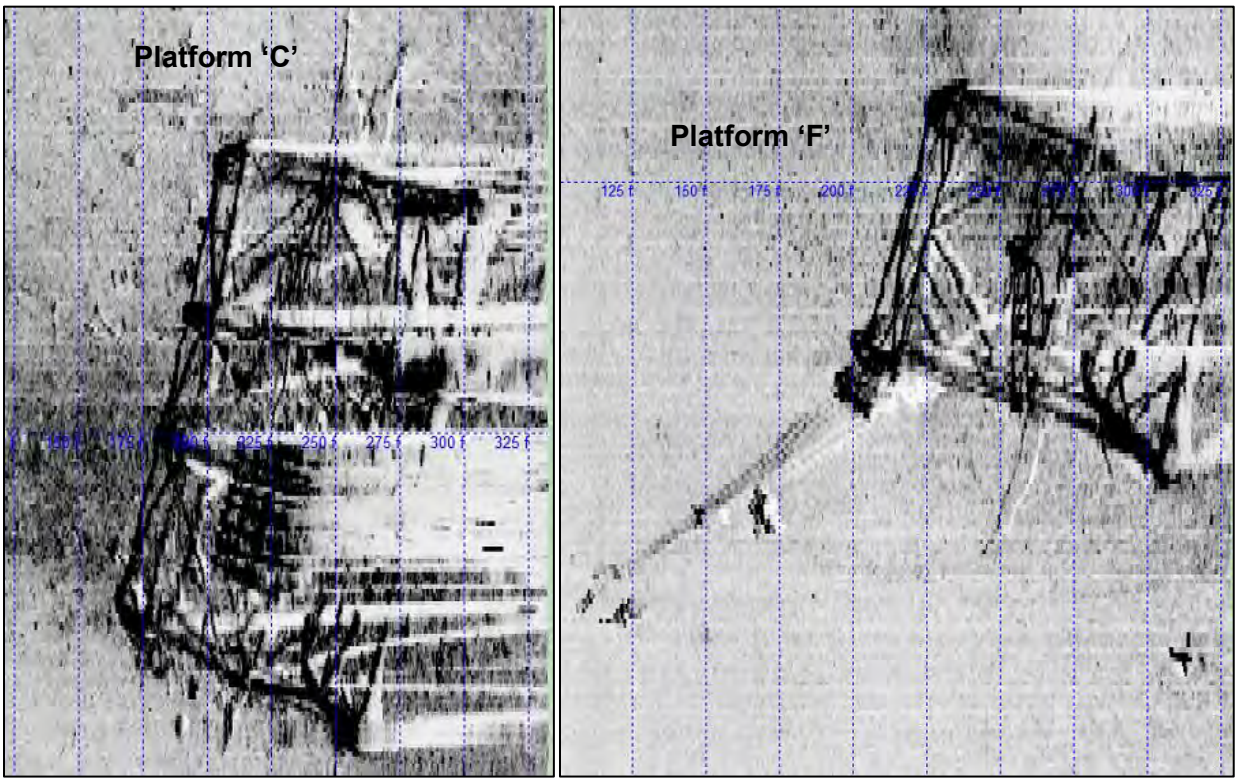

Fig. 9. Sonar imagery of connected Platforms 'C' (line 5008) and 'F' (line 5011) in SP60.

Magnetometer Data Analysis

The Geometrics 882 marine magnetometer utilized in this survey was towed 32.8 ft (10 m) behind the side scan sonar and sampled at a rate of 2 Hz. Data was contoured at both a 5 nT and 10 nT interval for analysis and mapping. Magnetic anomalies were analyzed based on amplitude (anomalies over 50 nT were given further attention), width (the area covered by the anomalies magnetic contours [+/- 5 nT], with contours having a width greater than 135 ft [41.1 m] given further attention), orientation, association to sonar contacts, and clustering. Many prior studies determined that identifying historic shipwrecks, especially wooden wrecks that may be broken up and/or buried in sediment, using magnetometer data is based solely on the interpretation of the archaeologist, using subjective methodology that could not be scientifically repeated by other archaeologists. As such, potential historic shipwrecks could often not be distinguished from modern marine debris without diver investigation and ground truthing, which is further complicated in areas throughout the Gulf due to the prevalent oil and gas industry and the fishing/trawling industry (Gearhart 2011).

As it is not feasible to ground truth all anomalies in a survey area, methodologies described by Gearhart (2011) can be used to rule out much marine debris from potential shipwrecks. Due to the complexity of shipwrecks (the scatter of iron material such as fasteners) in a close vicinity, shipwrecks often display an induced magnetic moment, which orients the contours to Earth's local field lines, with an average deviation of +/- 10 degrees of magnetic north (0 degrees) with the negative poles facing north. Marine debris, by contrast, is often a simple magnetic source and displays a permanent magnetic field (aligns with object's position), which can deviate further from magnetic north. This is assuming the statistical likelihood that an object's position (and thus magnetic orientation) does not align with magnetic north by chance. All magnetic components display a permanent magnetic field; the individual permanent magnetic moments cancel, leaving only induced magnetization. Due to the line spacing in the survey area, anomalies may only be detected on a single line. As all the survey lines (apart from the tie lines) were on a mostly east/west axis, dipoles were less visible (Breiner 1973; Gearhart 2011).

Anomalies greater than 50 nT were given a 98.4 ft (30 m) hazard avoidance area in accordance with BOEM NTL 2022-G01; all but one anomaly over 50 nT were identified along lines adjacent to the shipwreck and fell under the avoidance area outlined for the wreck. The magnetometer was towed at a higher altitude for safe survey operations due to the varied water depths and geologic outcrops exceeding 30 ft (9.1 m) off bottom. DoC identified 40 unknown magnetic anomalies in the KNOC EF federal waters survey area (note: anomalies are not in numeric order) (Appendix A). Of the anomalies, there were 15 dipolar anomalies and 25 monopolar anomalies. Amplitudes ranged from 5.5 to 10,578.2 nT. Durations (wavelengths) ranged from 101.1 ft (3.1 m) to 2,734.7 ft (833.5 m). Magnetometer data along survey line 5020 noted that positions for pipelines 18" S-11449, 04" S-15062, 06" S-16340, 06" S-6520, and 12" S-6521 are roughly in their charted locations as noted by BSEE (Figure 10).

There are twelve anomalies associated with the shipwreck (anomalies 321, 422, 423, 424, 425, 426, 427, 428, 431, 432, 434, and 435) which ranged from 62.8 to 10,578.2 nT; each anomaly was identified on a separate parallel survey line over the wreck. Several of these anomalies (all

>50 nT) fall outside of the avoidance area and would normally receive a hazards avoidance. However, as these anomalies are subsequent detections of the same wreck over adjacent lines, they do not represent discreet hazards and as such are not recommended for avoidance. See Archaeological Assessment and Final Recommendations below.

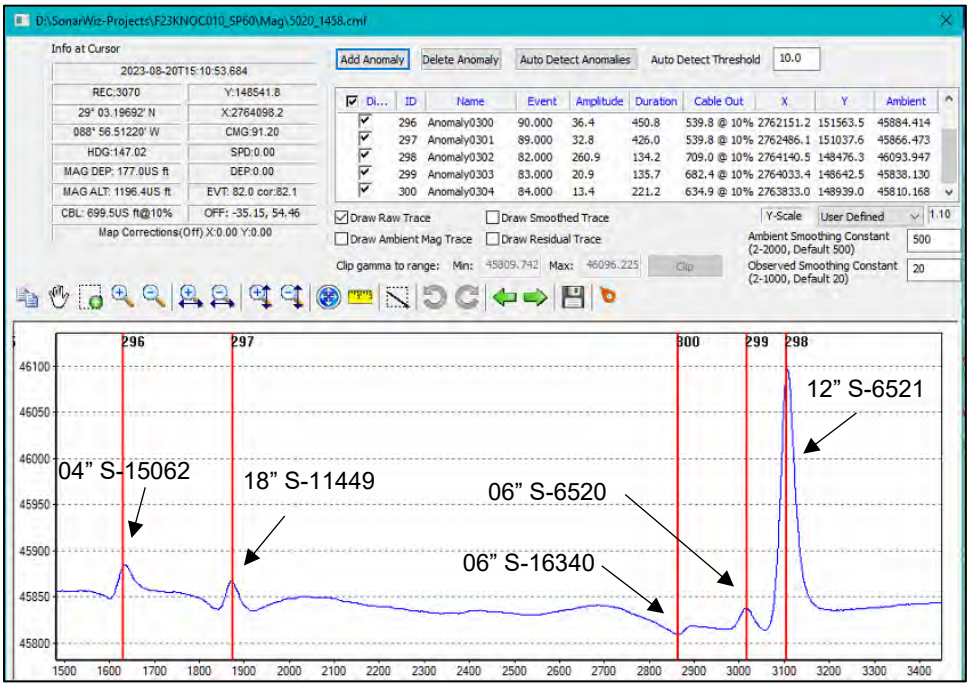

Fig. 10. Magnetometer data of pipelines along survey line 5020.

Multibeam Bathymetry & Subbottom Profiler Analysis

The MBES was used to record water depths throughout the survey area (Figure 11), which ranged from 84 ft (25.6 m) at the federal/state line to 270 ft (82.3 m) at the southern end of the survey corridor. The data was gridded at 3 ft (0.9 m) bin size during processing and compared with the side scan sonar data to ensure positional accuracy and to provide additional ground truthing of potential archaeological resources. All bathymetry data were corrected for velocity with sound velocity profiles taken during survey operations. Data were then adjusted for tides to Mean-Lower Low Water (MLLW) datum.

DoC reviewed the SBP data for features buried below the seafloor, including geologic faults and other features. The data indicate an average penetration depth of 5 to 50 ft (1.5 to 15 m) beneath the seafloor throughout the survey area. In areas of active mudflow movement, there is little to no penetration, whereas in the older mudflow lobes sediment layers are observed much deeper. The sediment in the survey area displays uneven layers of sediment due to mudflows and other seafloor movements (Figure 12). Archaeological review of the SBP did not identify any preserved buried landforms (paleolandforms) suitable for human occupation.

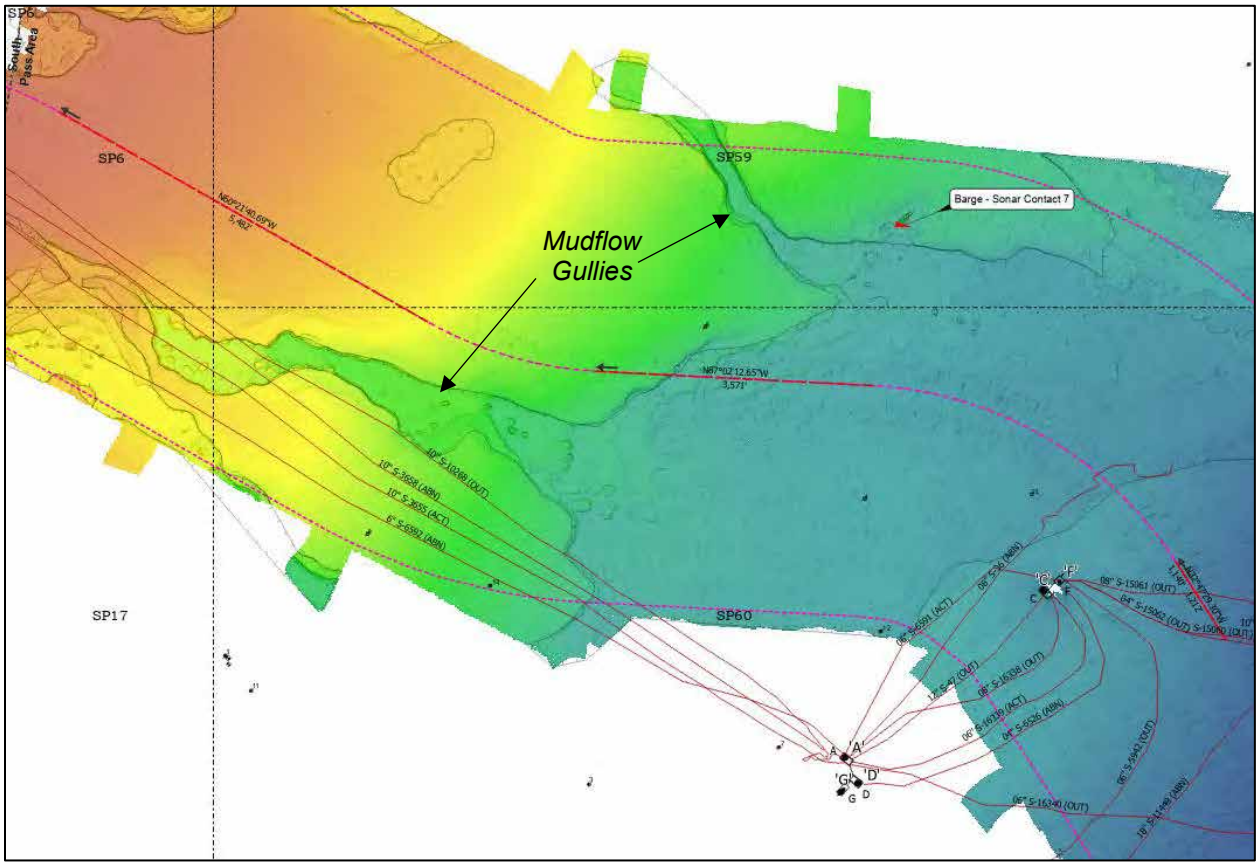

Fig. 11. Multibeam bathymetry along route.

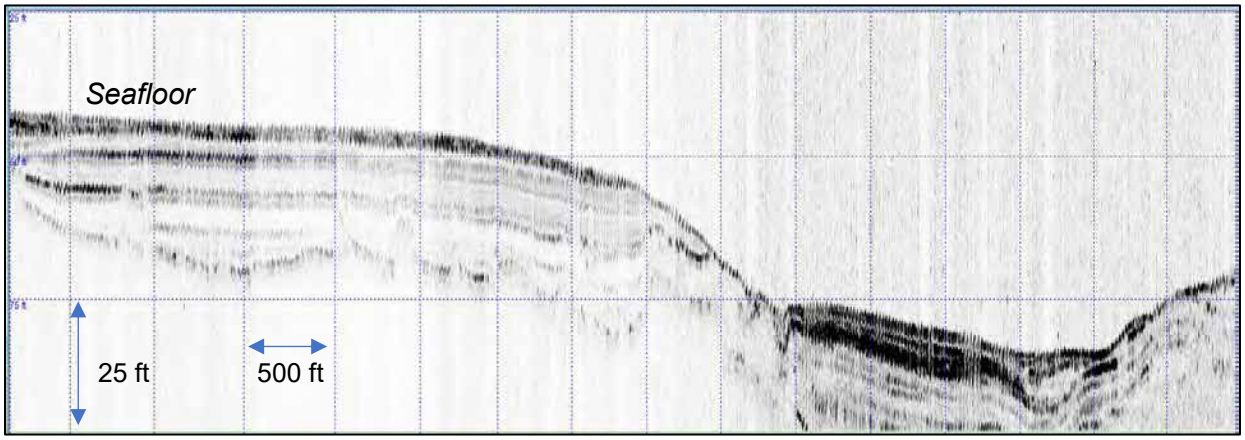

Fig. 12. Subbottom data along tie line 8015.

ARCHAEOLOGICAL ASSESSMENT & FINAL RECOMMENDATIONS

A marine archaeologist reviewed the HRG survey data to identify potential cultural resources within the APE in accordance with BOEM issued NTL No. 2005-G07 (2020). As part of the Section 106 review process in compliance with the National Historic Preservation Act, discovered cultural resources such as shipwrecks that are 50 years or older are evaluated for their potential to meet the definition of a historic property, which includes any prehistoric or historic district, site, building, structure, or object included in, or eligible for inclusion in, the National Register of Historic Places (NRHP). To be eligible for inclusion in the National Register, properties must already be determined as such or all other properties that meet one of the four National Register criteria ([36 CFR 60.4 [A-D]; Delgado 1992):

A. The historic property is associated with events that have made a significant contribution to the broad patterns of history; or
B. The historic property is associated with the lives of persons significant to our past; or
C. The historic property embodies the distinctive characteristics of a type, period, or method of construction, or that represent the work of a master, or that possess high artistic values, or that represent a significant and distinguishable entity whose components may lack individual distinction; or
D. The historic property has yielded, or may be likely to yield, information important in prehistory or history.

Careful review of the HRG data identified one shipwreck, labeled as sonar contact 7, within the APE of the survey corridor. The wreck lies upside down north of the centerline on a northeast by southwest axis, with the stern facing southwest and the bow buried under sediment facing northeast. The visible extent of the wreck measures 314.1 ft (95.7 m) in length, 60.7 ft (18.5 m) wide, and 33.7 ft (10 m) in height off the seafloor at the stern (Figure 13). No other identifying features are visible in the imagery except the hull, which may be due to the surrounding seafloor being susceptible to heavy mudflows and sediment shift; sections of the wreck or additional debris may be further buried. Magnetometer data collected over the wreck displays a dipolar anomaly on survey line 4032 with magnetic contours exceeding 1,250 ft (381 m) across (Figure 14). The anomaly (321) measured 10,578 nT with a duration of 586 ft (178.6 m); this is indicative of a large, metal object (Figure 15). The magnetometer also detected the wreck on other survey lines parallel to 4032, with the amplitudes of additional associated anomalies (422, 423, 424, 425, 426, 427, 428, 431, 432, 434, and 435) gradually decreasing away from the wreck.

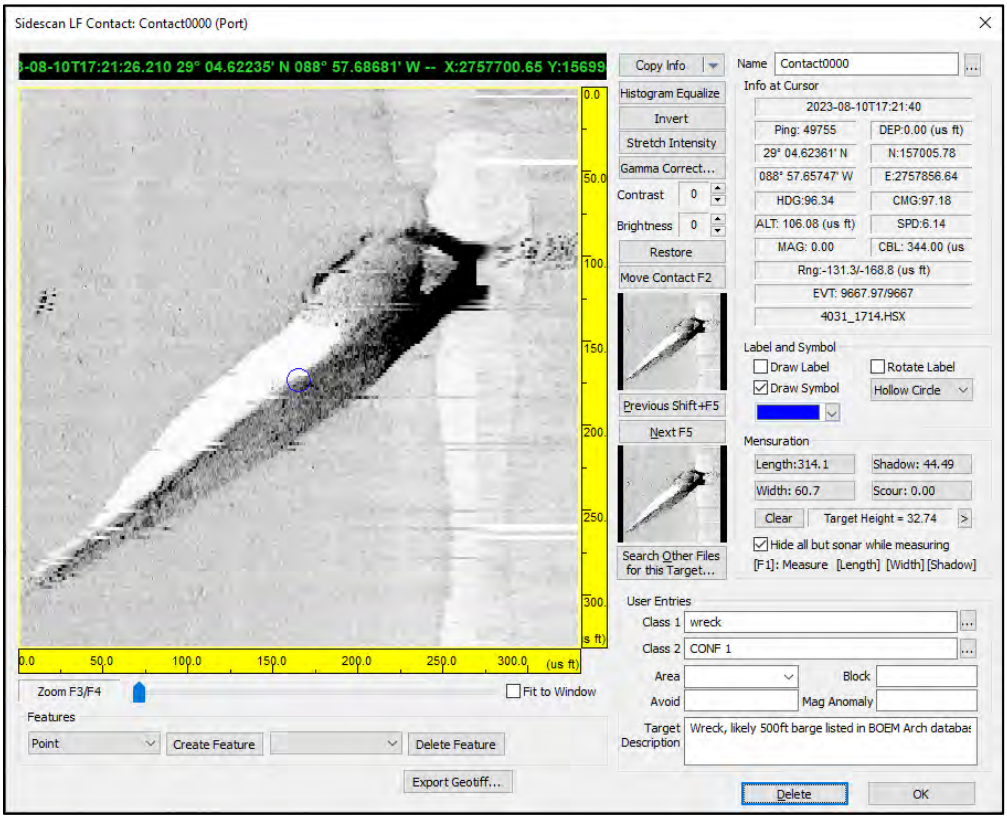

Fig. 13. Sonar contact image of the wreck.

The wreck is located approximately 1,500 ft (457.2 m) southwest of BOEM's confidential database charted position of wreck ID 1095, listed as *Mary Ann Noland*, a 500 ft (152.4 m) barge sunk in 1994 in 145 ft (44.2 m) of water. Both the sonar imagery and magnetometer data indicate a large metal object partially buried with dimensions similar to the barge, with the remaining 185.9 ft (56.6 m) of the wreck buried in sediment. However, the identification of the wreck as *Mary Ann Noland* is speculation based on available data; further ground truthing is required for a positive identification. The wreck is likely modern as regional mudflows are likely to completely cover any visible features of historical (>50 years) wrecks. If the wreck is confirmed as *Mary Ann Noland* or another modern barge, it is unlikely to meet the criteria for the NRHP and therefore not eligible. Nevertheless, an avoidance area of 500 ft (152.4 m) is recommended from the visible extent of the wreck. The avoidance best facilitates potential anchor drag from pull-ahead vessels and encompasses many of the magnetic anomalies noted as hazards (Figure 16). Anomalies 423 and 434 are outside of the avoidance area and are over 50 nT; however, these are directly associated with the wreck based on their decreasing amplitude and longer durations. As such, these anomalies are unlikely discrete hazards to be avoided.

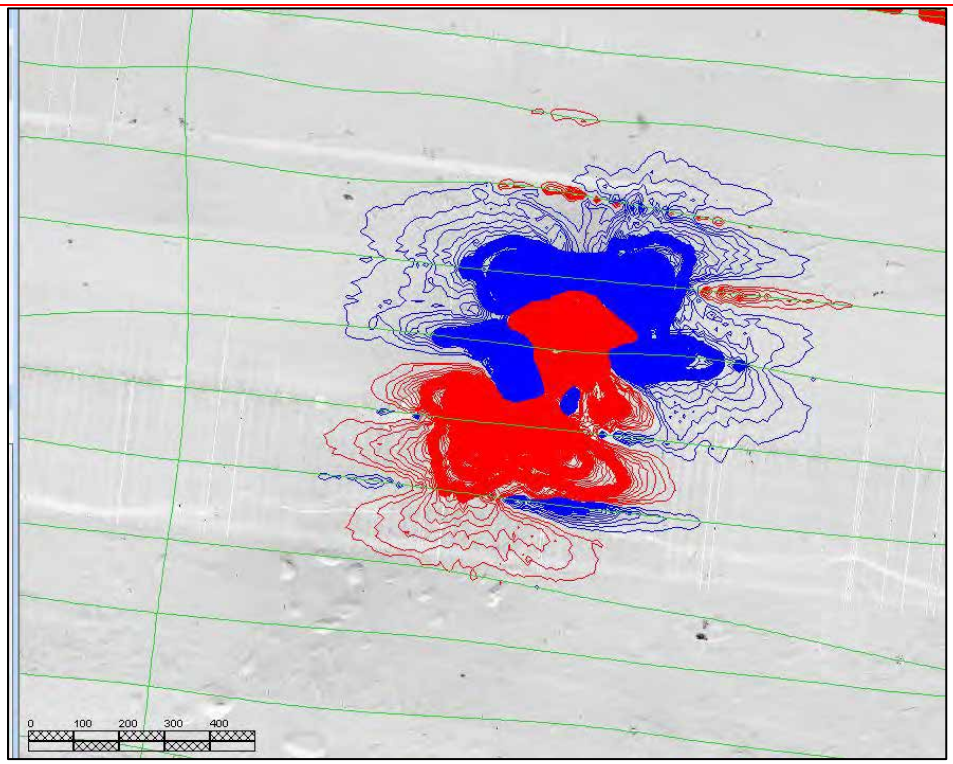

Fig. 14. Magnetic contours around the wreck.

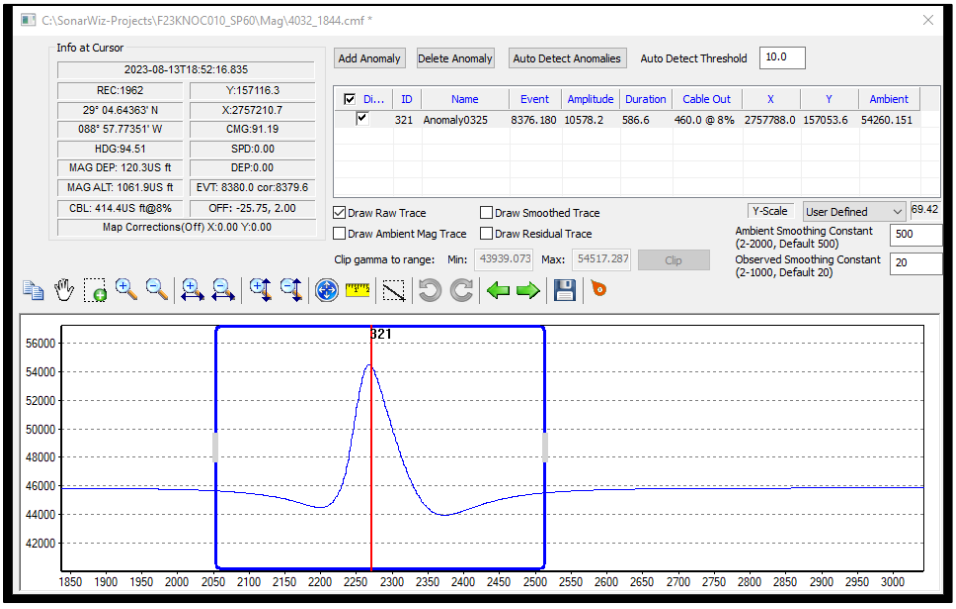

Fig. 15. >10,000 nT Magnetic anomaly located over the wreck.

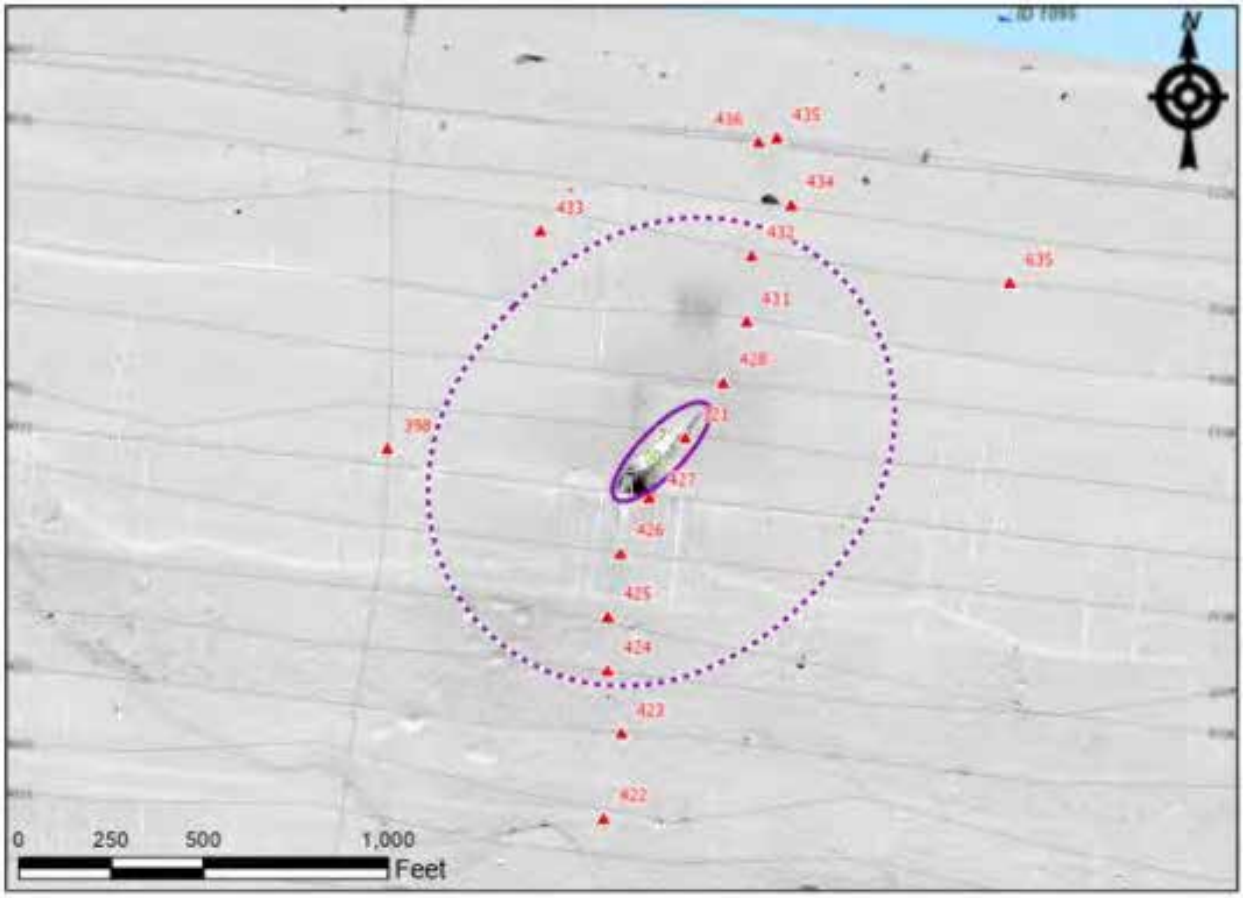

Fig. 16. 500 ft (152.4 m) Avoidance area around visible extent of the wreck.

Unanticipated Discoveries Plan

BOEM understands that, despite extensive HRG survey and data review, historic and cultural materials may not be detected. Should any possible cultural material (i.e., wooden structure, anchors, etc.) be discovered by pipeline remediation, KNOC EF will halt further bottom disturbance and immediately contact BOEM's Regional Director. Disturbance will not resume until the Director confirms that the discovery is not a potential culturally significant feature; if it is, the Director will determine the appropriate steps on how to proceed.

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APPENDIX A: GEOPHYSICAL DATA AND REPORT

Korean National Oil Corporation, Eagle Ford, South Pass 60, Magnetic Anomaly Table

Anomaly No	Area/ Block	Line Number	Shot Point	Tow Height (ft)	Signature	Intensity (nT)	Duration (ft)	NAD27 Latitude	NAD27 Longitude	NAD27 X	NAD27 Y	Avoidance Distance
231	SP67	5037	7494.7	72.4	DIPOLE	19.4	182.9	29.060686	-88.936966	2765840	150959	None
232	SP67	5037	7488.2	67.0	MONOPOLE	112.0	774.8	29.063652	-88.938982	2765186	152025	98.4 ft*
259	SP60	8015	46.0	54.1	MONOPOLE	12.8	555.0	29.052223	-88.948115	2762108	148128	None
309	SP67	5035	236.9	74.7	MONOPOLE	27.0	533.0	29.067779	-88.943051	2763611	153872	None
321	SP59	4032	8376.3	42.5	DIPOLE	10578.2	889.1	29.076958	-88.961015	2757788	157054	500 ft**
330	SP60	3000	9409.4	48.5	MONOPOLE	38.8	328.9	29.064403	-88.980258	2751810	152338	None
331	SP17	3001	9429.0	45.9	MONOPOLE	6.6	272.6	29.071349	-88.993261	2747549	154810	None
332	SP17	3002	8861.8	58.0	MONOPOLE	39.2	554.2	29.071876	-88.993326	2747627	154951	None
353	SP60	3011	8842.9	69.8	MONOPOLE	14.2	879.6	29.072901	-88.985857	2749857	155448	None
354	SP59	3020	8967.2	28.8	MONOPOLE	10.8	213.6	29.077953	-88.986669	2749735	157176	None
355	SP59	3027	9146.5	26.3	MONOPOLE	5.5	285.9	29.078361	-88.980256	2751542	157502	None
356	SP59	3029	9031.2	31.6	MONOPOLE	23.1	219.3	29.080901	-88.983321	2750576	158391	None
357	SP67	5028	112.1	55.0	MONOPOLE	14.7	120.6	29.062060	-88.943515	2763514	151796	None
358	SP6	3037	9705.9	53.5	DIPOLE	14.0	286.6	29.088091	-88.989269	2748704	160920	None
398	SP59	8012	7560.5	50.4	DIPOLE	62.8	2130.2	29.076841	-88.963663	2756981	157025	98.4 ft*
399	SP60	4000	8967.9	45.7	MONOPOLE	5.5	290.0	29.063277	-88.964285	2756842	152058	None
408	SP60	4009	7704.1	68.8	MONOPOLE	16.1	427.9	29.066655	-88.962880	2757260	153294	None
409	SP60	4010	9234.1	62.4	MONOPOLE	7.2	342.4	29.067259	-88.963800	2757044	153502	None
417	SP60	4022	9471.6	64.8	MONOPOLE	5.9	235.0	29.072368	-88.960757	2757978	155379	None
422	SP59	4026	8505.4	68.2	MONOPOLE	38.3	1959.5	29.074142	-88.961791	2757566	156023	None
423	SP59	4027	8073.3	57.6	MONOPOLE	74.8	1934.2	29.074775	-88.961606	2757615	156254	None
424	SP59	4028	9597.6	64.1	DIPOLE	139.3	2734.7	29.075262	-88.961933	2757577	156424	500 ft**
425	SP59	4029	8436.4	56.3	DIPOLE	326.3	2038.8	29.075673	-88.961956	2757578	156569	500 ft**

Anomaly No	Area/ Block	Line Number	Shot Point	Tow Height (ft)	Signature	Intensity (nT)	Duration (ft)	NAD27 Latitude	NAD27 Longitude	NAD27 X	NAD27 Y	Avoidance Distance
426	SP59	4030	8133.3	49.1	DIPOLE	1246.8	1557.0	29.076136	-88.961829	2757612	156740	500 ft**
427	SP59	4031	9666.6	3.0	DIPOLE	6016.3	1117.3	29.076519	-88.961352	2757690	156891	500 ft**
428	SP59	4033	8196.9	57.3	DIPOLE	4360.4	1615.5	29.077387	-88.960919	2757891	157203	500 ft**
431	SP59	4034	9729.4	74.0	MONOPOLE	851.0	2139.4	29.077839	-88.960662	2757954	157369	500 ft**
432	SP59	4035	8319.0	51.0	DIPOLE	66.8	776.8	29.078322	-88.960662	2757967	157546	500 ft**
433	SP59	4035	8313.9	49.3	DIPOLE	84.5	2606.2	29.078540	-88.962443	2757396	157614	98.4 ft*
434	SP59	4036	8253.8	44.2	DIPOLE	70.9	2526.3	29.078678	-88.960086	2758075	157684	None
435	SP59	4037	9770.1	70.2	DIPOLE	31.4	2294.0	29.079181	-88.960216	2758036	157866	None
436	SP59	4037	9682.2	95.2	MONOPOLE	23.9	1579.7	29.079174	-88.960560	2757986	157854	None
512	SP60	5019	104.2	67.7	MONOPOLE	6.9	101.1	29.065972	-88.951536	2760972	153078	None
546	SP67	5026	311.7	57.5	DIPOLE	36.3	290.0	29.055817	-88.940099	2764620	149568	None
557	SP60	5008	9986.0	68.6	MONOPOLE	10.0	237.9	29.052379	-88.948660	2761986	148150	None
608	SP67	5034	107.9	70.5	DIPOLE	9.3	478.1	29.067451	-88.943370	2763511	153742	None
625	SP60	5031	102.2	59.6	MONOPOLE	9.7	385.4	29.068807	-88.946335	2762602	154138	None
631	SP60	5032	268.7	61.9	MONOPOLE	12.4	250.6	29.068947	-88.945972	2762716	154204	None
635	SP59	4035	8322.5	47.1	MONOPOLE	9.3	221.5	29.078082	-88.958482	2758666	157474	None
638	SP60	4010	9246.5	65.7	MONOPOLE	32.5	379.5	29.066502	-88.957103	2759190	153270	None

*Anomalies over 50 nT receive a hazard avoidance of 98.4 ft (30 m) based on BOEM NTL 2022-G01

**Anomalies covered by avoidance area around shipwreck (contact 7)

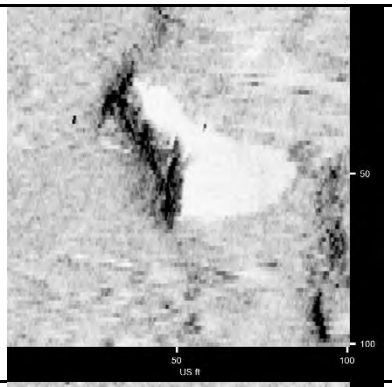
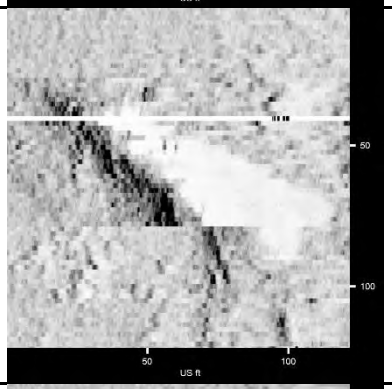
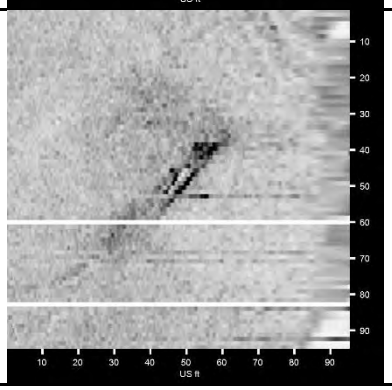
Korean National Oil Corporation, Eagle Ford, South Pass 60, Sonar Contact Table

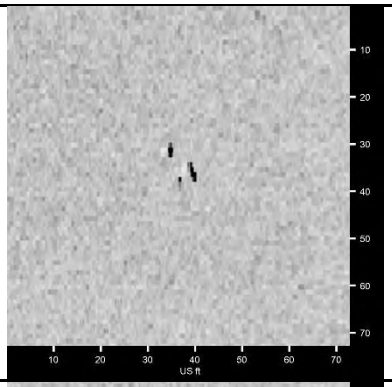
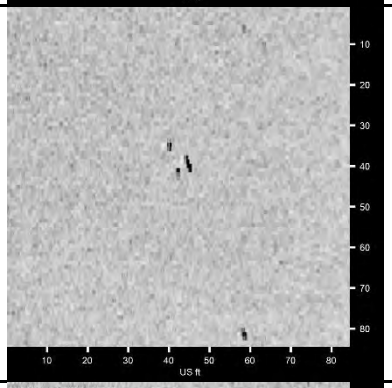
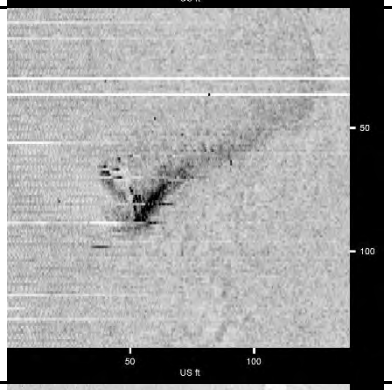
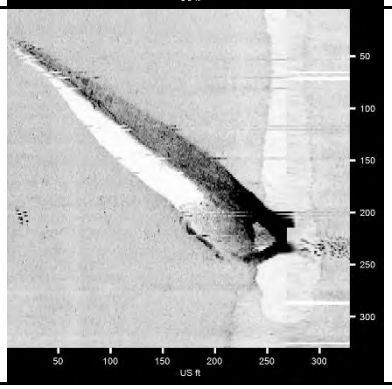
Contact No	Area/ Block	Mag Anomaly	Length (ft)	Width (ft)	Height (ft)	Shape	Latitude (NAD27)	Longitude (NAD27)	X (NAD27)	Y (NAD27)	Avoidance Distance
1	SP6	None	51.2	12.7	9.1	Possible Geology	29.085352	-88.991172	2748130	159904	None
2	SP6	None	90.7	10.7	16.4	Possible Geology	29.084693	-88.989594	2748639	159674	None
3	SP59	None	23.0	7.4	0.7	Unknown Contact	29.080248	-88.979487	2751900	158124	None
4	SP59	None	3.4	1.1	0.6	Unknown Contact	29.078590	-88.980139	2751704	157517	None
5	SP59	None	4.4	1.2	0.8	Unknown Contact	29.078589	-88.980109	2751714	157517	None
6	SP59	355	22.0	8.3	0.5	Unknown Contact	29.078518	-88.980822	2751486	157487	None
7	SP59	321, 422, 423, 424, 425, 426, 427, 428, 431, 432, 434, 435	314.1	60.7	32.7	Shipwreck	29.076813	-88.961406	2757701	156995	500 ft from visible extent
8	SP6	None	19.4	14.6	5.5	Possible Geology	29.074632	-88.994698	2747083	155983	None
9	SP60	None	23.0	27.2	5.6	Unknown Contact Cluster	29.073221	-88.947759	2762087	155779	None
10	SP60	None	16.1	1.5	1.0	Unknown Contact	29.072279	-88.988623	2749041	155167	None
11	SP60	347	9.8	0.9	1.8	Unknown Contact	29.072103	-88.985928	2749903	155121	None
12	SP60	None	7.3	1.8	1.6	Unknown Contact	29.071811	-88.988350	2749132	154999	None
13	SP60	None	11.8	2.3	2.6	Unknown Contact	29.070090	-88.944465	2763163	154663	None
14	SP60	None	4.0	1.1	3.1	Unknown Contact	29.070076	-88.944517	2763146	154657	None
15	SP60	None	5.5	3.7	0.9	Unknown Contact	29.064112	-88.954742	2759925	152421	None
16	SP60	None	5.6	2.5	0.6	Unknown Contact	29.064094	-88.954786	2759911	152414	None
17	SP60	None	41.1	12.9	1.5	Unknown Debris	29.064050	-88.956250	2759444	152389	None
18	SP60	None	25.2	11.1	2.1	Unknown Contact	29.064027	-88.954768	2759917	152390	None
19	SP60	None	16.1	7.1	3.3	Unknown Debris`	29.063932	-88.955000	2759844	152354	None
20	SP60	None	15.2	3.1	1.0	Unknown Debris	29.063848	-88.956218	2759455	152315	None
21	SP60	None	8.7	2.9	1.8	Unknown Debris	29.063828	-88.956282	2759435	152308	None

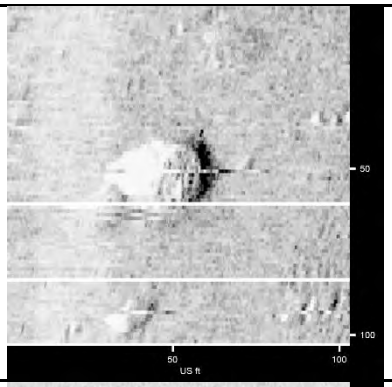
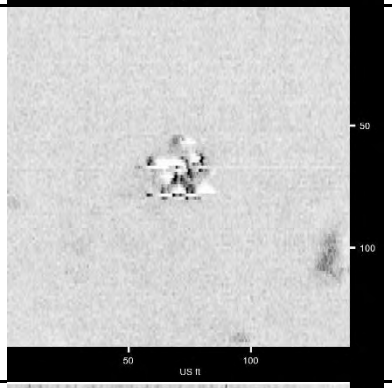
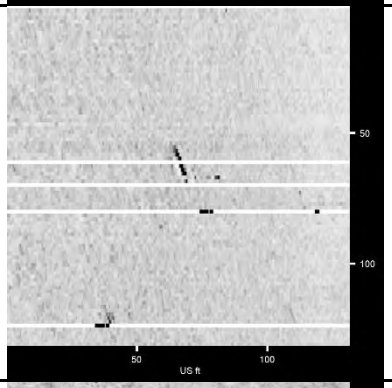
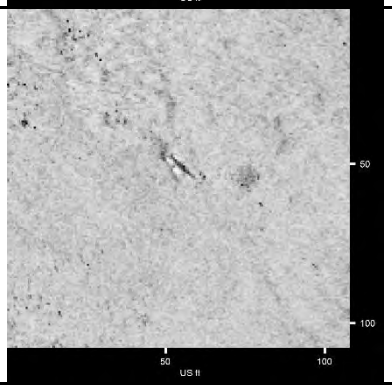
Contact No	Area/ Block	Mag Anomaly	Length (ft)	Width (ft)	Height (ft)	Shape	Latitude (NAD27)	Longitude (NAD27)	X (NAD27)	Y (NAD27)	Avoidance Distance
22	SP60	None	19.1	4.6	0.6	Unknown Contact	29.063731	-88.954649	2759958	152283	None
23	SP60	None	15.1	1.1	0.9	Possible Exposed Pipeline	29.063461	-88.956183	2759470	152175	None
24	SP60	None	2.8	1.5	2.5	Unknown Debris	29.063355	-88.956052	2759512	152137	None
25	SP60	None	6.6	5.5	1.0	Unknown Contact	29.063181	-88.955641	2759645	152077	None
26	SP60	None	35.0	14.0	2.6	Unknown Contact	29.063177	-88.955773	2759603	152074	None
27	SP60	None	46.7	4.6	0.5	Unknown Contact	29.063116	-88.955726	2759618	152053	None
28	SP60	None	4.5	2.2	2.6	Unknown Contact	29.063049	-88.955696	2759628	152029	None
29	SP60	None	2.7	0.7	0.7	Unknown Contact	29.062840	-88.955961	2759545	151951	None
30	SP60	None	6.7	3.7	1.7	Unknown Contact	29.062815	-88.956304	2759436	151939	None
31	SP60	None	7.5	1.9	0.6	Unknown Contact	29.062609	-88.957248	2759136	151858	None
32	SP60	None	6.2	7.4	1.4	Unknown Contact	29.062199	-88.955463	2759709	151721	None
33	SP60	None	34.6	7.0	1.2	Probable Geology	29.061560	-88.944556	2763198	151561	None
34	SP60	None	11.5	5.3	0.7	Probable Geology	29.061539	-88.944613	2763180	151553	None
35	SP60	None	15.1	4.8	0.9	Probable Geology	29.061492	-88.944654	2763167	151536	None
36	SP60	None	9.9	5.1	0.8	Probable Geology	29.061471	-88.944660	2763166	151528	None
37	SP60	None	115.6	8.8	0.6	Possible Pipeline	29.055601	-88.954004	2760225	149332	None
38	SP67	None	10.9	6.7	0.6	Unknown Contact	29.050276	-88.944967	2763153	147456	None
39	SP60	None	17.6	5.1	4.5	Unknown Contact	29.050058	-88.944492	2763306	147380	None
40	SP67	None	15.2	6.7	0.3	Unknown Contact	29.049685	-88.944623	2763267	147243	None
41	SP67	None	38.3	15.0	4.1	Probable Geology	29.049630	-88.947095	2762477	147207	None
42	SP67	None	22.9	3.1	0.9	Probable Geology	29.049414	-88.946918	2762536	147130	None
43	SP67	None	25.4	0.7	0.5	Exposed Pipeline	29.047566	-88.944860	2763207	146471	None
44	SP67	None	5.0	2.0	0.2	Unknown Contact	29.056557	-88.943057	2763715	149752	None
45	SP67	None	15.2	2.8	0.7	Unknown Contact	29.055245	-88.938711	2765113	149304	None

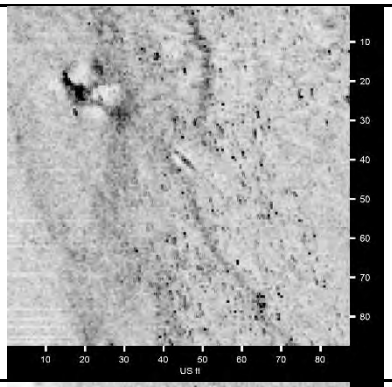
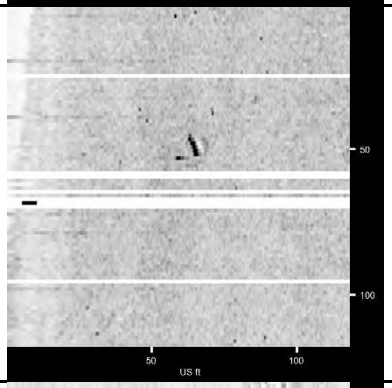
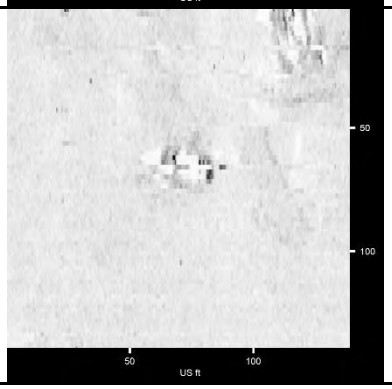
Contact No	Area/ Block	Mag Anomaly	Length (ft)	Width (ft)	Height (ft)	Shape	Latitude (NAD27)	Longitude (NAD27)	X (NAD27)	Y (NAD27)	Avoidance Distance
46	SP67	None	11.1	0.7	0.1	Unknown Contact	29.055047	-88.936686	2765762	149246	None
47	SP67	None	17.7	6.6	0.7	Unknown Contact	29.054912	-88.941109	2764350	149167	None
48	SP67	None	5.3	3.7	1.5	Unknown Contact	29.054747	-88.940851	2764433	149109	None
49	SP67	None	1.5	1.0	1.2	Unknown Contact	29.054609	-88.937429	2765528	149082	None
50	SP67	None	16.6	2.0	0.4	Unknown Contact	29.054573	-88.936345	2765874	149076	None
51	SP67	None	13.4	10.5	0.2	Unknown Contact	29.054526	-88.937296	2765571	149052	None
52	SP60	None	7.9	2.0	0.4	Unknown Contact	29.054246	-88.936989	2765671	148952	None
53	SP60	None	17.2	3.6	0.3	Unknown Contact	29.053952	-88.936805	2765732	148847	None
54	SP60	None	4.8	4.6	1.3	Unknown Contact	29.053758	-88.937351	2765559	148773	None
55	SP60	None	26.0	2.8	0.3	Unknown Contact	29.053249	-88.933979	2766640	148610	None
56	SP60	None	11.4	3.0	0.2	Unknown Contact	29.053220	-88.937390	2765551	148577	None
57	SP60	None	25.8	15.3	5.9	Probable Geology	29.046670	-88.942368	2764010	146162	None
58	SP67	None	19.4	14.6	5.5	Possible Geology	29.074632	-88.994698	2747083	155983	None

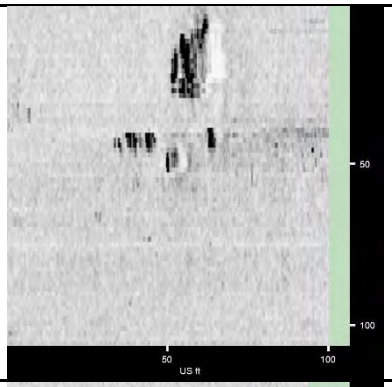
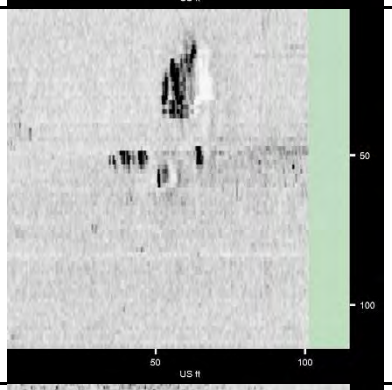
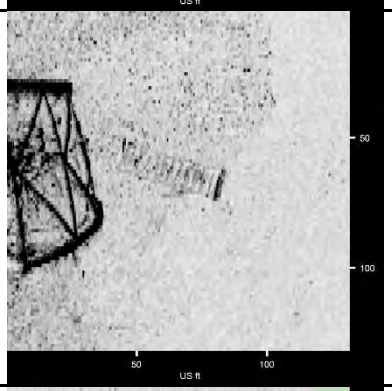
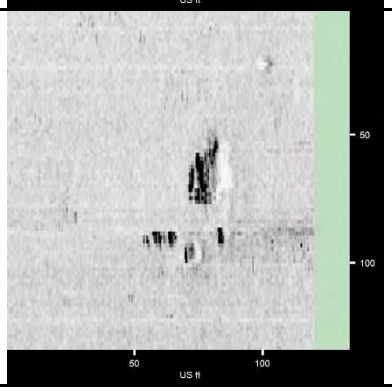
Korean National Oil Corporation, Eagle Ford, South Pass 60, Sonar Contact Report

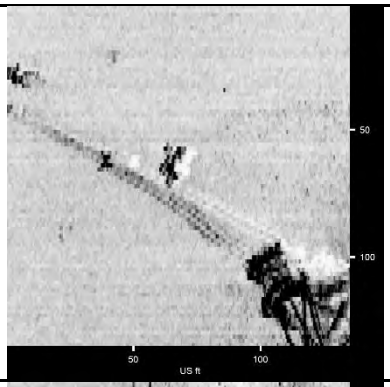
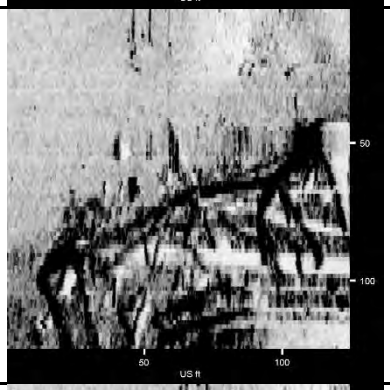
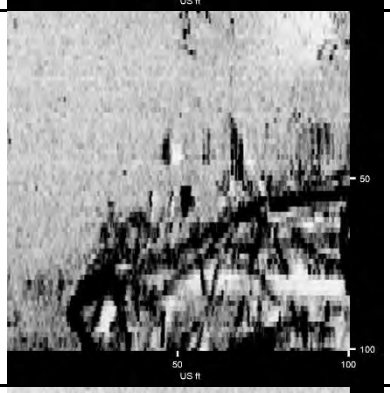
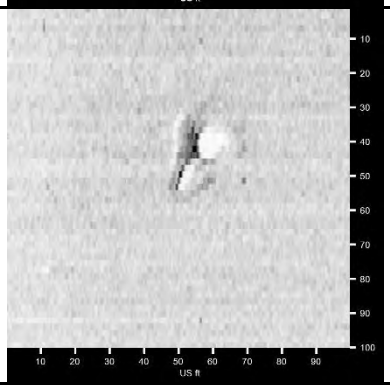
Target Image	Target Info	User Entered Info
	**1** ● Sonar Time at Target: 7/16/2023 14:27:49 ● Click Position 29.0853519758 -88.9911719858 (NAD27LL) (X) 2748129.92 (Y) 159903.67 (Projected Coordinates) ● Map Projection: LA-S-MOD ● Acoustic Source File: C:¥Users¥Eric Fischer PC¥DOC Mapping Dropbox¥Field Data Sync COPY ONLY¥Launch 1¥Hypack Projects¥Projects¥F23KNOC010_SP60¥Raw¥3031_1424.HSX ● Line Name: 3031_1424	**Dimensions and attributes** ● Target Width: 12.73 US ft ● Target Height: 9.11 US ft ● Target Length: 51.15 US ft ● Mag Anomaly: None ● Avoidance Area: None ● Classification1: Irregular Contact ● Classification2: Possible Geology ● Area: South Pass ● Block: 6 ● Description:
	**2** ● Sonar Time at Target: 7/16/2023 14:29:03 ● Click Position 29.0846926955 -88.9895937278 (NAD27LL) (X) 2748638.88 (Y) 159674.28 (Projected Coordinates) ● Map Projection: LA-S-MOD ● Acoustic Source File: C:¥Users¥Eric Fischer PC¥DOC Mapping Dropbox¥Field Data Sync COPY ONLY¥Launch 1¥Hypack Projects¥Projects¥F23KNOC010_SP60¥Raw¥3031_1424.HSX ● Line Name: 3031_1424	**Dimensions and attributes** ● Target Width: 10.67 US ft ● Target Height: 16.39 US ft ● Target Length: 90.68 US ft ● Mag Anomaly: None ● Avoidance Area: None ● Classification1: Irregular Contact ● Classification2: Possible Geology ● Area: South Pass ● Block: 6 ● Description:
	**3** ● Sonar Time at Target: 7/16/2023 14:37:18 ● Click Position 29.0802478097 -88.9794872895 (NAD27LL) (X) 2751899.83 (Y) 158124.44 (Projected Coordinates) ● Map Projection: LA-S-MOD ● Acoustic Source File: C:¥Users¥Eric Fischer PC¥DOC Mapping Dropbox¥Field Data Sync COPY ONLY¥Launch 1¥Hypack Projects¥Projects¥F23KNOC010_SP60¥Raw¥3031_1424.HSX ● Line Name: 3031_1424	**Dimensions and attributes** ● Target Width: 7.35 US ft ● Target Height: 0.74 US ft ● Target Length: 23.01 US ft ● Mag Anomaly: None ● Avoidance Area: None ● Classification1: Linear Contact ● Classification2: Unknown Contact ● Area: South Pass ● Block: 59 ● Description:

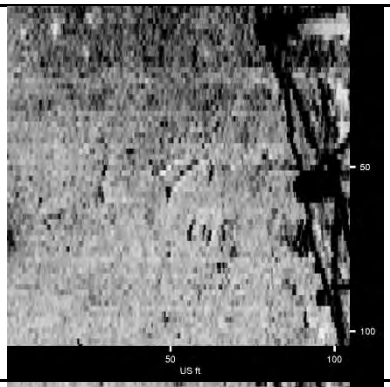
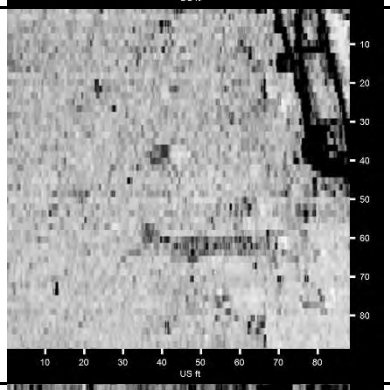
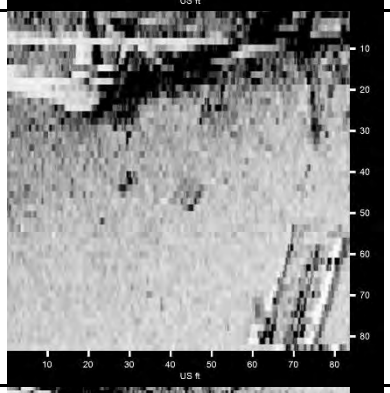
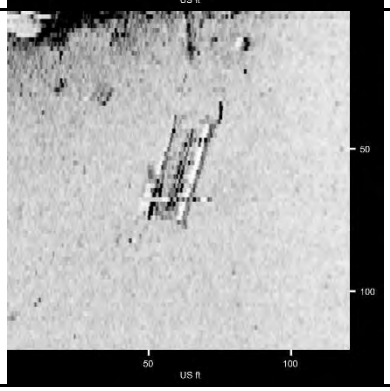
	**4** ● Sonar Time at Target: 7/16/2023 15:01:38 ● Click Position 29.0785895815 -88.9801393182 (NAD27LL) (X) 2751703.97 (Y) 157517.29 (Projected Coordinates) ● Map Projection: LA-S-MOD ● Acoustic Source File: C:¥Users¥Eric Fischer PC¥DOC Mapping Dropbox¥Field Data Sync COPY ONLY¥Launch 1¥Hypack Projects¥Projects¥F23KNOC010_SP60¥Raw¥3028_1451.HSX ● Line Name: 3028_1451	**Dimensions and attributes** ● Target Width: 1.12 US ft ● Target Height: 0.55 US ft ● Target Length: 3.41 US ft ● Mag Anomaly: None ● Avoidance Area: None ● Classification1: Irregular Contact ● Classification2: Unknown Contact ● Area: South Pass ● Block: 59 ● Description:
	**5** ● Sonar Time at Target: 7/16/2023 15:01:37 ● Click Position 29.0785892085 -88.9801092617 (NAD27LL) (X) 2751713.57 (Y) 157517.35 (Projected Coordinates) ● Map Projection: LA-S-MOD ● Acoustic Source File: C:¥Users¥Eric Fischer PC¥DOC Mapping Dropbox¥Field Data Sync COPY ONLY¥Launch 1¥Hypack Projects¥Projects¥F23KNOC010_SP60¥Raw¥3028_1451.HSX ● Line Name: 3028_1451	**Dimensions and attributes** ● Target Width: 1.19 US ft ● Target Height: 0.81 US ft ● Target Length: 4.40 US ft ● Mag Anomaly: None ● Avoidance Area: None ● Classification1: Irregular Contact ● Classification2: Unknown Contact ● Area: South Pass ● Block: 59 ● Description:
	**6** ● Sonar Time at Target: 7/16/2023 15:02:05 ● Click Position 29.0785180454 -88.9808221639 (NAD27LL) (X) 2751486.40 (Y) 157486.80 (Projected Coordinates) ● Map Projection: LA-S-MOD ● Acoustic Source File: C:¥Users¥Eric Fischer PC¥DOC Mapping Dropbox¥Field Data Sync COPY ONLY¥Launch 1¥Hypack Projects¥Projects¥F23KNOC010_SP60¥Raw¥3028_1451.HSX ● Line Name: 3028_1451	**Dimensions and attributes** ● Target Width: 8.25 US ft ● Target Height: 0.48 US ft ● Target Length: 21.97 US ft ● Mag Anomaly: 355 ● Avoidance Area: None ● Classification1: Irregular Contact ● Classification2: Unknown Contact ● Area: South Pass ● Block: 59 ● Description:
	**7** ● Sonar Time at Target: 8/10/2023 17:21:26 ● Click Position 29.0768133006 -88.9614059942 (NAD27LL) (X) 2757700.65 (Y) 156994.87 (Projected Coordinates) ● Map Projection: LA-S-MOD ● Acoustic Source File: C:¥Users¥Eric Fischer PC¥DOC Mapping Dropbox¥Field Data Sync COPY ONLY¥Launch 1¥Hypack Projects¥Projects¥F23KNOC010_SP60¥Raw¥4031_1714.HSX ● Line Name: 4031_1714	**Dimensions and attributes** ● Target Width: 60.73 US ft ● Target Height: 32.74 US ft ● Target Length: 314.08 US ft ● Mag Anomaly: 321, 422, 423, 424, 425, 426, 427, 428, 431, 432, 434, 435 ● Avoidance Area: 1000 ft around visible extent ● Classification1: Linear Contact ● Classification2: Shipwreck ● Area: South Pass ● Block: 59 ● Description: Wreck, likely 500ft barge listed in BOEM Arch database as ID1095

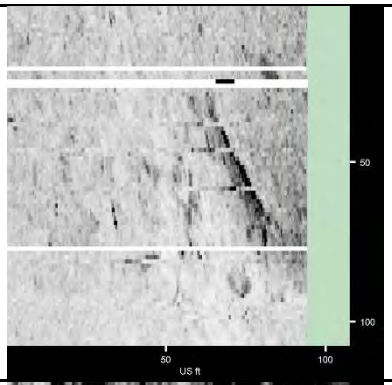
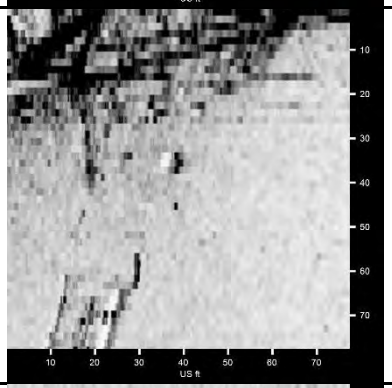
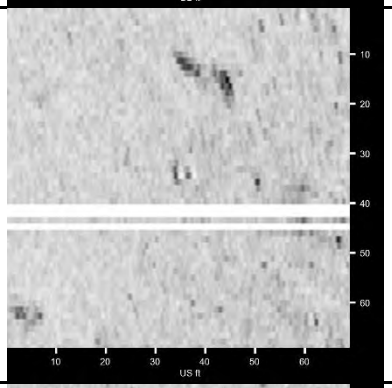
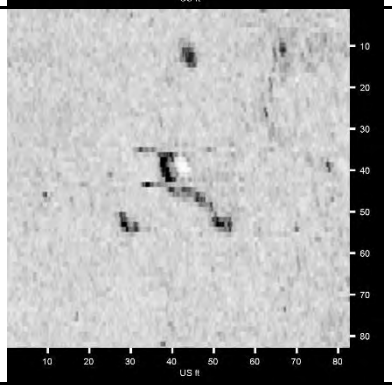
	**8** ● Sonar Time at Target: 7/22/2023 15:10:52 ● Click Position 29.0746322223 -88.9946976444 (NAD27LL) (X) 2747083.47 (Y) 155983.31 (Projected Coordinates) ● Map Projection: LA-S-MOD ● Acoustic Source File: F:¥DOC Mapping Dropbox¥Field Data Sync COPY ONLY¥Launch 1¥Hypack Projects¥Projects¥F23KNOC010_SP60¥Raw¥3005_1505.HSX ● Line Name: 3005_1505	**Dimensions and attributes** ● Target Width: 14.56 US ft ● Target Height: 5.48 US ft ● Target Length: 19.37 US ft ● Mag Anomaly: None ● Avoidance Area: None ● Classification1: Irregular Contact ● Classification2: Possible Geology ● Area: South Pass ● Block: ● Description:
	**9** ● Sonar Time at Target: 8/17/2023 17:47:15 ● Click Position 29.0732212246 -88.9477592873 (NAD27LL) (X) 2762086.59 (Y) 155779.41 (Projected Coordinates) ● Map Projection: LA-S-MOD ● Acoustic Source File: C:¥Users¥Eric Fischer PC¥DOC Mapping Dropbox¥Field Data Sync COPY ONLY¥Launch 1¥Hypack Projects¥Projects¥F23KNOC010_SP60¥Raw¥5034_1745.HSX ● Line Name: 5034_1745	**Dimensions and attributes** ● Target Width: 27.23 US ft ● Target Height: 5.57 US ft ● Target Length: 22.95 US ft ● Mag Anomaly: None ● Avoidance Area: None ● Classification1: Irregular Contact ● Classification2: Unknown Contact Cluster ● Area: South Pass ● Block: 60 ● Description:
	**10** ● Sonar Time at Target: 7/22/2023 17:04:26 ● Click Position 29.0722787105 -88.9886226413 (NAD27LL) (X) 2749041.39 (Y) 155167.30 (Projected Coordinates) ● Map Projection: LA-S-MOD ● Acoustic Source File: F:¥DOC Mapping Dropbox¥Field Data Sync COPY ONLY¥Launch 1¥Hypack Projects¥Projects¥F23KNOC010_SP60¥Raw¥3008_1645.HSX ● Line Name: 3008_1645	**Dimensions and attributes** ● Target Width: 1.47 US ft ● Target Height: 1.04 US ft ● Target Length: 16.13 US ft ● Mag Anomaly: None ● Avoidance Area: None ● Classification1: Linear Contact ● Classification2: Unknown Contact ● Area: South Pass ● Block: 60 ● Description:
	**11** ● Sonar Time at Target: 7/16/2023 18:07:22 ● Click Position 29.0721026464 -88.9859280200 (NAD27LL) (X) 2749903.40 (Y) 155120.92 (Projected Coordinates) ● Map Projection: LA-S-MOD ● Acoustic Source File: C:¥Users¥Eric Fischer PC¥DOC Mapping Dropbox¥Field Data Sync COPY ONLY¥Launch 1¥Hypack Projects¥Projects¥F23KNOC010_SP60¥Raw¥3010_1749.HSX ● Line Name: 3010_1749	**Dimensions and attributes** ● Target Width: 0.94 US ft ● Target Height: 1.80 US ft ● Target Length: 9.79 US ft ● Mag Anomaly: 347 ● Avoidance Area: None ● Classification1: Linear Contact ● Classification2: Unknown Contact ● Area: South Pass ● Block: 60 ● Description:

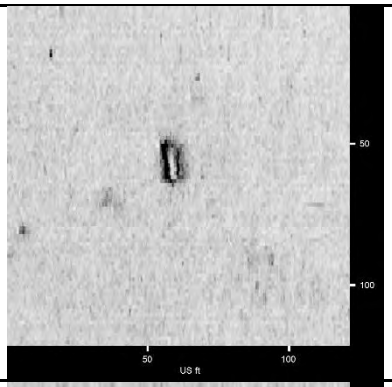
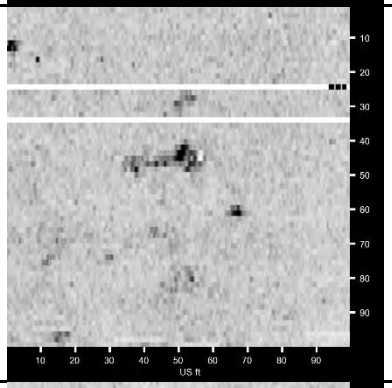
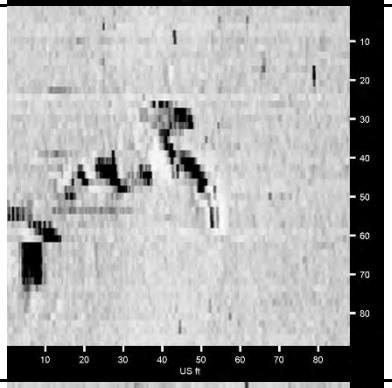
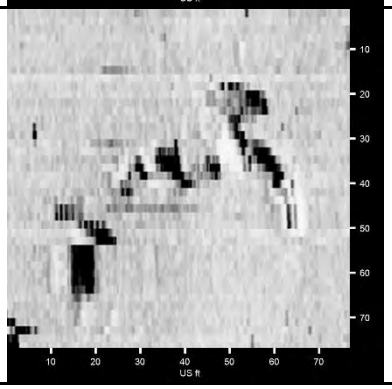
	**12** ● Sonar Time at Target: 7/16/2023 18:07:21 ● Click Position 29.0718811457 -88.9860639351 (NAD27LL) (X) 2749861.64 (Y) 155039.50 (Projected Coordinates) ● Map Projection: LA-S-MOD ● Acoustic Source File: C:¥Users¥Eric Fischer PC¥DOC Mapping Dropbox¥Field Data Sync COPY ONLY¥Launch 1¥Hypack Projects¥Projects¥F23KNOC010_SP60¥Raw¥3010_1749.HSX ● Line Name: 3010_1749	**Dimensions and attributes** ● Target Width: 0.99 US ft ● Target Height: 0.74 US ft ● Target Length: 7.70 US ft ● Mag Anomaly: None ● Avoidance Area: None ● Classification1: Linear Contact ● Classification2: Unknown Contact ● Area: South Pass ● Block: 60 ● Description:
	**13** ● Sonar Time at Target: 7/16/2023 18:41:35 ● Click Position 29.0718113175 -88.9883503589 (NAD27LL) (X) 2749131.84 (Y) 154999.15 (Projected Coordinates) ● Map Projection: LA-S-MOD ● Acoustic Source File: C:¥Users¥Eric Fischer PC¥DOC Mapping Dropbox¥Field Data Sync COPY ONLY¥Launch 1¥Hypack Projects¥Projects¥F23KNOC010_SP60¥Raw¥3007_1830.HSX ● Line Name: 3007_1830	**Dimensions and attributes** ● Target Width: 1.79 US ft ● Target Height: 1.61 US ft ● Target Length: 7.26 US ft ● Mag Anomaly: None ● Avoidance Area: None ● Classification1: Irregular Contact ● Classification2: Unknown Contact ● Area: South Pass ● Block: 60 ● Description:
	**14** ● Sonar Time at Target: 8/15/2023 14:47:38 ● Click Position 29.0700904427 -88.9444649934 (NAD27LL) (X) 2763162.56 (Y) 154663.09 (Projected Coordinates) ● Map Projection: LA-S-MOD ● Acoustic Source File: C:¥Users¥Eric Fischer PC¥DOC Mapping Dropbox¥Field Data Sync COPY ONLY¥Launch 1¥Hypack Projects¥Projects¥F23KNOC010_SP60¥Raw¥5037_1433.HSX ● Line Name: 5037_1433	**Dimensions and attributes** ● Target Width: 2.34 US ft ● Target Height: 2.60 US ft ● Target Length: 11.84 US ft ● Mag Anomaly: None ● Avoidance Area: None ● Classification1: Irregular Contact ● Classification2: Unknown Contact ● Area: South Pass ● Block: 60 ● Description:
	**15** ● Sonar Time at Target: 8/15/2023 14:47:38 ● Click Position 29.0700756807 -88.9445173625 (NAD27LL) (X) 2763145.94 (Y) 154657.38 (Projected Coordinates) ● Map Projection: LA-S-MOD ● Acoustic Source File: C:¥Users¥Eric Fischer PC¥DOC Mapping Dropbox¥Field Data Sync COPY ONLY¥Launch 1¥Hypack Projects¥Projects¥F23KNOC010_SP60¥Raw¥5037_1433.HSX ● Line Name: 5037_1433	**Dimensions and attributes** ● Target Width: 1.09 US ft ● Target Height: 3.08 US ft ● Target Length: 3.97 US ft ● Mag Anomaly: None ● Avoidance Area: None ● Classification1: Irregular Contact ● Classification2: Unknown Contact ● Area: South Pass ● Block: 60 ● Description:

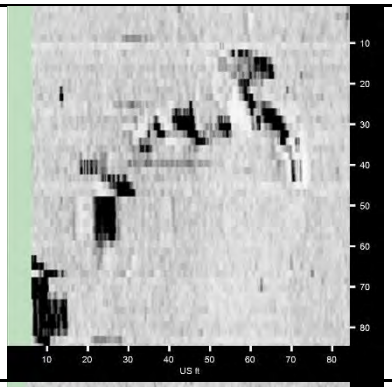
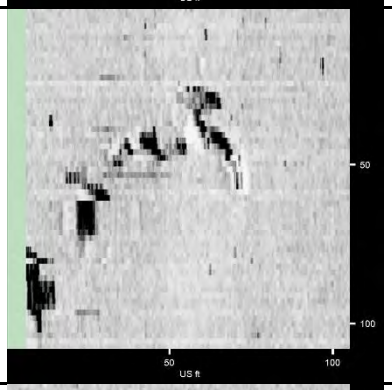
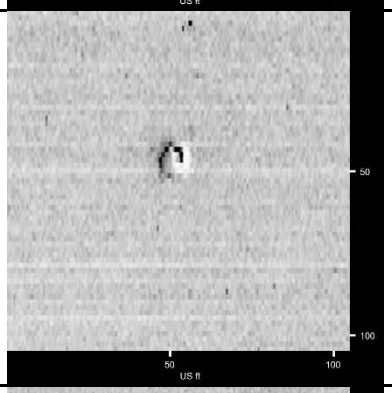
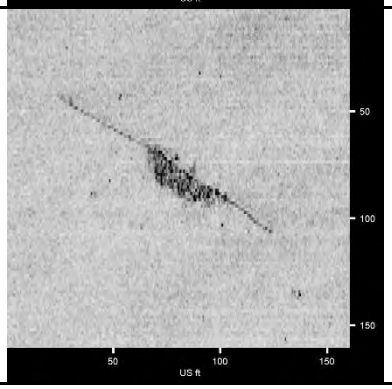
	**16** ● Sonar Time at Target: 8/19/2023 14:24:52 ● Click Position 29.0641119681 -88.9547420143 (NAD27LL) (X) 2759924.99 (Y) 152421.22 (Projected Coordinates) ● Map Projection: LA-S-MOD ● Acoustic Source File: C:¥Users¥Eric Fischer PC¥DOC Mapping Dropbox¥Field Data Sync COPY ONLY¥Launch 1¥Hypack Projects¥Projects¥F23KNOC010_SP60¥Raw¥5010_1421.HSX ● Line Name: 5010_1421	**Dimensions and attributes** ● Target Width: 3.68 US ft ● Target Height: 0.93 US ft ● Target Length: 5.47 US ft ● Mag Anomaly: None ● Avoidance Area: None ● Classification1: Irregular Contact ● Classification2: Unknown Contact ● Area: South Pass ● Block: 60 ● Description:
	**17** ● Sonar Time at Target: 8/19/2023 14:24:53 ● Click Position 29.0640939817 -88.9547863286 (NAD27LL) (X) 2759910.97 (Y) 152414.39 (Projected Coordinates) ● Map Projection: LA-S-MOD ● Acoustic Source File: C:¥Users¥Eric Fischer PC¥DOC Mapping Dropbox¥Field Data Sync COPY ONLY¥Launch 1¥Hypack Projects¥Projects¥F23KNOC010_SP60¥Raw¥5010_1421.HSX ● Line Name: 5010_1421	**Dimensions and attributes** ● Target Width: 2.45 US ft ● Target Height: 0.58 US ft ● Target Length: 5.58 US ft ● Mag Anomaly: None ● Avoidance Area: None ● Classification1: Irregular Contact ● Classification2: Unknown Contact ● Area: South Pass ● Block: 60 ● Description:
	**18** ● Sonar Time at Target: 8/12/2023 17:00:55 ● Click Position 29.0640497165 -88.9562495751 (NAD27LL) (X) 2759443.89 (Y) 152388.60 (Projected Coordinates) ● Map Projection: LA-S-MOD ● Acoustic Source File: C:¥Users¥Eric Fischer PC¥DOC Mapping Dropbox¥Field Data Sync COPY ONLY¥Launch 1¥Hypack Projects¥Projects¥F23KNOC010_SP60¥Raw¥4005_1658.HSX ● Line Name: 4005_1658	**Dimensions and attributes** ● Target Width: 12.94 US ft ● Target Height: 1.45 US ft ● Target Length: 41.09 US ft ● Mag Anomaly: None ● Avoidance Area: None ● Classification1: Rectangular Contact ● Classification2: Unknown Debris ● Area: South Pass ● Block: 60 ● Description:
	**19** ● Sonar Time at Target: 8/19/2023 14:24:56 ● Click Position 29.0640268308 -88.9547675740 (NAD27LL) (X) 2759917.47 (Y) 152390.10 (Projected Coordinates) ● Map Projection: LA-S-MOD ● Acoustic Source File: C:¥Users¥Eric Fischer PC¥DOC Mapping Dropbox¥Field Data Sync COPY ONLY¥Launch 1¥Hypack Projects¥Projects¥F23KNOC010_SP60¥Raw¥5010_1421.HSX ● Line Name: 5010_1421	**Dimensions and attributes** ● Target Width: 11.14 US ft ● Target Height: 2.11 US ft ● Target Length: 25.15 US ft ● Mag Anomaly: None ● Avoidance Area: None ● Classification1: Irregular Contact ● Classification2: Unknown Contact ● Area: South Pass ● Block: 60 ● Description:

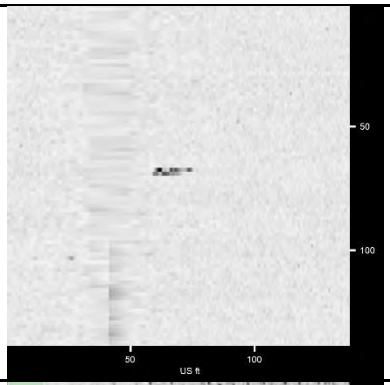
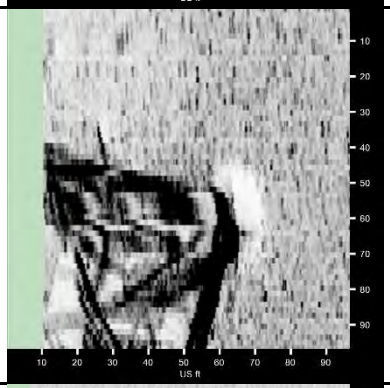
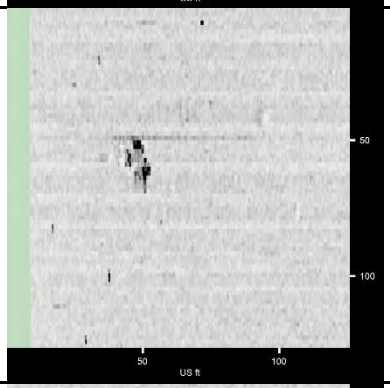
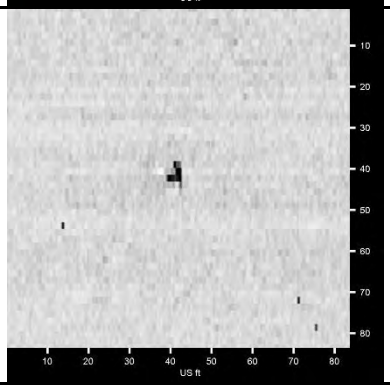
	**20** ● Sonar Time at Target: 8/20/2023 16:32:38 ● Click Position 29.0639320890 -88.9550004649 (NAD27LL) (X) 2759843.79 (Y) 152354.11 (Projected Coordinates) ● Map Projection: LA-S-MOD ● Acoustic Source File: C:¥Users¥Eric Fischer PC¥DOC Mapping Dropbox¥Field Data Sync COPY ONLY¥Launch 1¥Hypack Projects¥Projects¥F23KNOC010_SP60¥Raw¥5011_1629.HSX ● Line Name: 5011_1629	**Dimensions and attributes** ● Target Width: 7.12 US ft ● Target Height: 3.25 US ft ● Target Length: 16.08 US ft ● Mag Anomaly: None ● Avoidance Area: None ● Classification1: Irregular Contact ● Classification2: Unknown Debris` ● Area: South Pass ● Block: SP60 ● Description:
	**21** ● Sonar Time at Target: 8/20/2023 17:06:12 ● Click Position 29.0638477161 -88.9562182721 (NAD27LL) (X) 2759455.41 (Y) 152315.36 (Projected Coordinates) ● Map Projection: LA-S-MOD ● Acoustic Source File: C:¥Users¥Eric Fischer PC¥DOC Mapping Dropbox¥Field Data Sync COPY ONLY¥Launch 1¥Hypack Projects¥Projects¥F23KNOC010_SP60¥Raw¥5008_1651.HSX ● Line Name: 5008_1651	**Dimensions and attributes** ● Target Width: 3.12 US ft ● Target Height: 1.02 US ft ● Target Length: 15.23 US ft ● Mag Anomaly: None ● Avoidance Area: None ● Classification1: Irregular Contact ● Classification2: Unknown Debris ● Area: South Pass ● Block: 60 ● Description:
	**22** ● Sonar Time at Target: 8/20/2023 17:06:12 ● Click Position 29.0638283283 -88.9562819871 (NAD27LL) (X) 2759435.20 (Y) 152307.89 (Projected Coordinates) ● Map Projection: LA-S-MOD ● Acoustic Source File: C:¥Users¥Eric Fischer PC¥DOC Mapping Dropbox¥Field Data Sync COPY ONLY¥Launch 1¥Hypack Projects¥Projects¥F23KNOC010_SP60¥Raw¥5008_1651.HSX ● Line Name: 5008_1651	**Dimensions and attributes** ● Target Width: 2.90 US ft ● Target Height: 1.78 US ft ● Target Length: 8.70 US ft ● Mag Anomaly: None ● Avoidance Area: None ● Classification1: Irregular Contact ● Classification2: Unknown Debris ● Area: South Pass ● Block: 60 ● Description:
	**23** ● Sonar Time at Target: 8/20/2023 16:20:16 ● Click Position 29.0637310123 -88.9546486476 (NAD27LL) (X) 2759957.69 (Y) 152283.34 (Projected Coordinates) ● Map Projection: LA-S-MOD ● Acoustic Source File: C:¥Users¥Eric Fischer PC¥DOC Mapping Dropbox¥Field Data Sync COPY ONLY¥Launch 1¥Hypack Projects¥Projects¥F23KNOC010_SP60¥Raw¥5012_1606.HSX ● Line Name: 5012_1606	**Dimensions and attributes** ● Target Width: 4.59 US ft ● Target Height: 0.61 US ft ● Target Length: 19.10 US ft ● Mag Anomaly: None ● Avoidance Area: None ● Classification1: Linear Contact ● Classification2: Unknown Contact ● Area: South Pass ● Block: 60 ● Description:

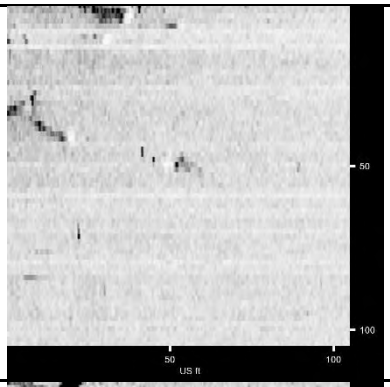
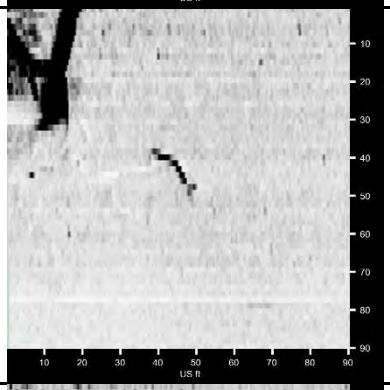
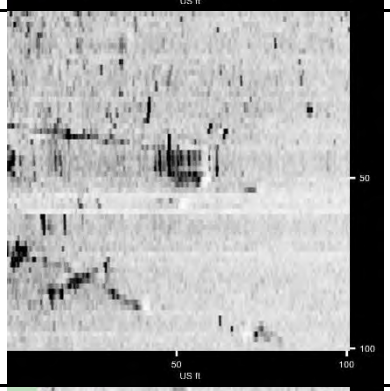
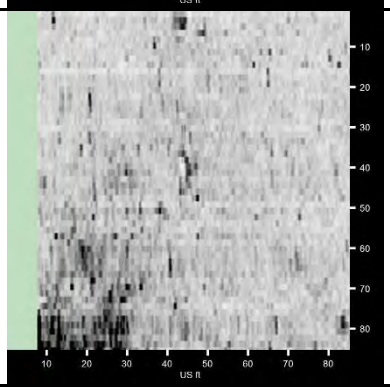
	**24** ● Sonar Time at Target: 8/20/2023 17:05:56 ● Click Position 29.0634610977 -88.9561825023 (NAD27LL) (X) 2759469.75 (Y) 152175.04 (Projected Coordinates) ● Map Projection: LA-S-MOD ● Acoustic Source File: C:¥Users¥Eric Fischer PC¥DOC Mapping Dropbox¥Field Data Sync COPY ONLY¥Launch 1¥Hypack Projects¥Projects¥F23KNOC010_SP60¥Raw¥5008_1651.HSX ● Line Name: 5008_1651	**Dimensions and attributes** ● Target Width: 1.14 US ft ● Target Height: 0.86 US ft ● Target Length: 15.09 US ft ● Mag Anomaly: None ● Avoidance Area: None ● Classification1: Linear Contact ● Classification2: Possible Exposed Pipeline ● Area: South Pass ● Block: 60 ● Description:
	**25** ● Sonar Time at Target: 8/20/2023 17:05:50 ● Click Position 29.0633554221 -88.9560521419 (NAD27LL) (X) 2759512.19 (Y) 152137.48 (Projected Coordinates) ● Map Projection: LA-S-MOD ● Acoustic Source File: C:¥Users¥Eric Fischer PC¥DOC Mapping Dropbox¥Field Data Sync COPY ONLY¥Launch 1¥Hypack Projects¥Projects¥F23KNOC010_SP60¥Raw¥5008_1651.HSX ● Line Name: 5008_1651	**Dimensions and attributes** ● Target Width: 1.45 US ft ● Target Height: 2.45 US ft ● Target Length: 2.76 US ft ● Mag Anomaly: None ● Avoidance Area: None ● Classification1: Irregular Contact ● Classification2: Unknown Debris ● Area: South Pass ● Block: 60 ● Description:
	**26** ● Sonar Time at Target: 8/12/2023 19:01:15 ● Click Position 29.0631810558 -88.9556406463 (NAD27LL) (X) 2759644.96 (Y) 152076.82 (Projected Coordinates) ● Map Projection: LA-S-MOD ● Acoustic Source File: C:¥Users¥Eric Fischer PC¥DOC Mapping Dropbox¥Field Data Sync COPY ONLY¥Launch 1¥Hypack Projects¥Projects¥F23KNOC010_SP60¥Raw¥4006_1848.HSX ● Line Name: 4006_1848	**Dimensions and attributes** ● Target Width: 5.52 US ft ● Target Height: 1.04 US ft ● Target Length: 6.55 US ft ● Mag Anomaly: None ● Avoidance Area: None ● Classification1: Irregular Contact ● Classification2: Unknown Contact ● Area: South Pass ● Block: 60 ● Description:
	**27** ● Sonar Time at Target: 8/12/2023 19:01:11 ● Click Position 29.0631770246 -88.9557725876 (NAD27LL) (X) 2759602.84 (Y) 152074.48 (Projected Coordinates) ● Map Projection: LA-S-MOD ● Acoustic Source File: C:¥Users¥Eric Fischer PC¥DOC Mapping Dropbox¥Field Data Sync COPY ONLY¥Launch 1¥Hypack Projects¥Projects¥F23KNOC010_SP60¥Raw¥4006_1848.HSX ● Line Name: 4006_1848	**Dimensions and attributes** ● Target Width: 13.95 US ft ● Target Height: 2.63 US ft ● Target Length: 34.98 US ft ● Mag Anomaly: None ● Avoidance Area: None ● Classification1: Rectanular Contact ● Classification2: Unknown Contact ● Area: South Pass ● Block: 60 ● Description:

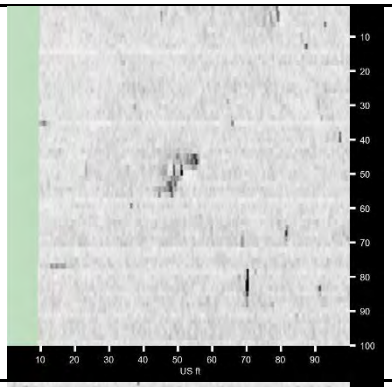
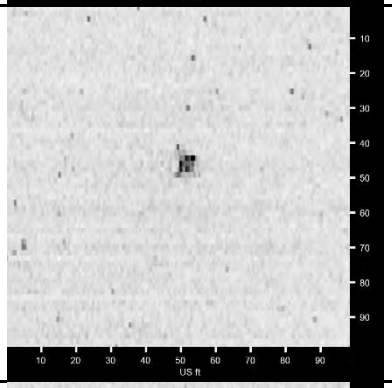
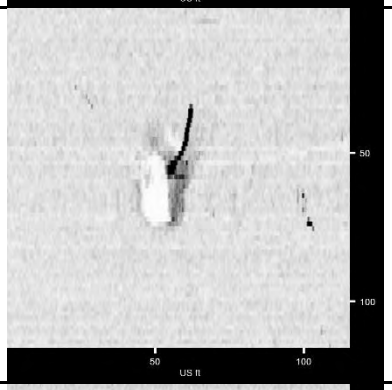
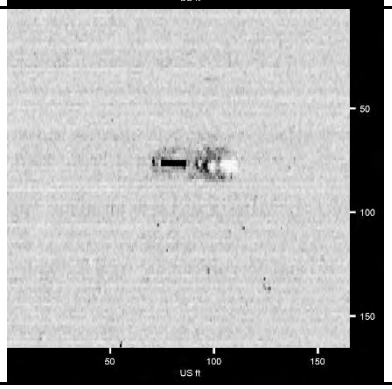
	**28** ● Sonar Time at Target: 8/12/2023 17:41:16 ● Click Position 29.0631162025 -88.9557261534 (NAD27LL) (X) 2759618.13 (Y) 152052.67 (Projected Coordinates) ● Map Projection: LA-S-MOD ● Acoustic Source File: C:¥Users¥Eric Fischer PC¥DOC Mapping Dropbox¥Field Data Sync COPY ONLY¥Launch 1¥Hypack Projects¥Projects¥F23KNOC010_SP60¥Raw¥4001_1739.HSX ● Line Name: 4001_1739	**Dimensions and attributes** ● Target Width: 4.55 US ft ● Target Height: 0.52 US ft ● Target Length: 46.66 US ft ● Mag Anomaly: None ● Avoidance Area: None ● Classification1: Linear Contact ● Classification2: Unknown Contact ● Area: South Pass ● Block: 60 ● Description:
	**29** ● Sonar Time at Target: 8/12/2023 19:01:16 ● Click Position 29.0630492290 -88.9556962549 (NAD27LL) (X) 2759628.19 (Y) 152028.52 (Projected Coordinates) ● Map Projection: LA-S-MOD ● Acoustic Source File: C:¥Users¥Eric Fischer PC¥DOC Mapping Dropbox¥Field Data Sync COPY ONLY¥Launch 1¥Hypack Projects¥Projects¥F23KNOC010_SP60¥Raw¥4006_1848.HSX ● Line Name: 4006_1848	**Dimensions and attributes** ● Target Width: 2.23 US ft ● Target Height: 2.64 US ft ● Target Length: 4.49 US ft ● Mag Anomaly: None ● Avoidance Area: None ● Classification1: Irregular Contact ● Classification2: Unknown Contact ● Area: South Pass ● Block: 60 ● Description:
	**30** ● Sonar Time at Target: 8/12/2023 17:41:25 ● Click Position 29.0628396648 -88.9559608129 (NAD27LL) (X) 2759545.26 (Y) 151950.58 (Projected Coordinates) ● Map Projection: LA-S-MOD ● Acoustic Source File: C:¥Users¥Eric Fischer PC¥DOC Mapping Dropbox¥Field Data Sync COPY ONLY¥Launch 1¥Hypack Projects¥Projects¥F23KNOC010_SP60¥Raw¥4001_1739.HSX ● Line Name: 4001_1739	**Dimensions and attributes** ● Target Width: 0.73 US ft ● Target Height: 0.72 US ft ● Target Length: 2.70 US ft ● Mag Anomaly: None ● Avoidance Area: None ● Classification1: Irregular Contact ● Classification2: Unknown Contact ● Area: South Pass ● Block: 60 ● Description:
	**31** ● Sonar Time at Target: 8/12/2023 17:41:40 ● Click Position 29.0628154395 -88.9563044936 (NAD27LL) (X) 2759435.65 (Y) 151939.49 (Projected Coordinates) ● Map Projection: LA-S-MOD ● Acoustic Source File: C:¥Users¥Eric Fischer PC¥DOC Mapping Dropbox¥Field Data Sync COPY ONLY¥Launch 1¥Hypack Projects¥Projects¥F23KNOC010_SP60¥Raw¥4001_1739.HSX ● Line Name: 4001_1739	**Dimensions and attributes** ● Target Width: 3.66 US ft ● Target Height: 1.72 US ft ● Target Length: 6.67 US ft ● Mag Anomaly: None ● Avoidance Area: None ● Classification1: Irregular Contact ● Classification2: Unknown Contact ● Area: South Pass ● Block: 60 ● Description:

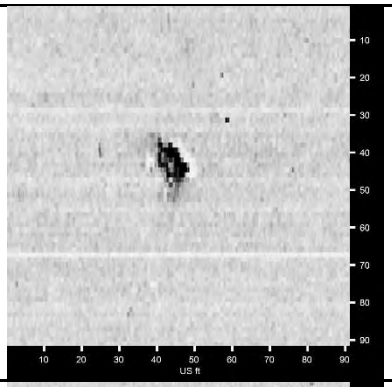
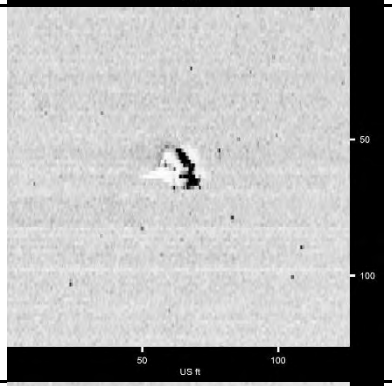
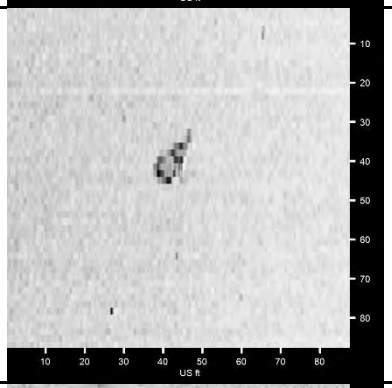
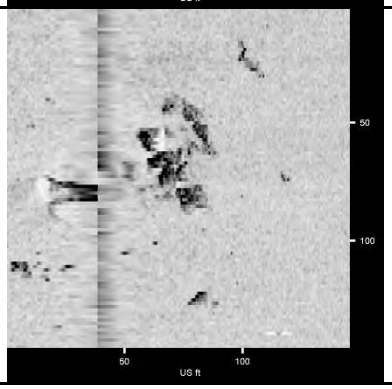
	**32** ● Sonar Time at Target: 8/19/2023 15:01:25 ● Click Position 29.0626090225 -88.9572479679 (NAD27LL) (X) 2759135.82 (Y) 151858.19 (Projected Coordinates) ● Map Projection: LA-S-MOD ● Acoustic Source File: C:¥Users¥Eric Fischer PC¥DOC Mapping Dropbox¥Field Data Sync COPY ONLY¥Launch 1¥Hypack Projects¥Projects¥F23KNOC010_SP60¥Raw¥5007_1446.HSX ● Line Name: 5007_1446	**Dimensions and attributes** ● Target Width: 1.89 US ft ● Target Height: 0.61 US ft ● Target Length: 7.51 US ft ● Mag Anomaly: None ● Avoidance Area: None ● Classification1: Linear Contact ● Classification2: Unknown Contact ● Area: South Pass ● Block: 60 ● Description:
	**33** ● Sonar Time at Target: 8/12/2023 19:01:40 ● Click Position 29.0621990128 -88.9554627606 (NAD27LL) (X) 2759709.19 (Y) 151720.96 (Projected Coordinates) ● Map Projection: LA-S-MOD ● Acoustic Source File: C:¥Users¥Eric Fischer PC¥DOC Mapping Dropbox¥Field Data Sync COPY ONLY¥Launch 1¥Hypack Projects¥Projects¥F23KNOC010_SP60¥Raw¥4006_1848.HSX ● Line Name: 4006_1848	**Dimensions and attributes** ● Target Width: 7.42 US ft ● Target Height: 1.42 US ft ● Target Length: 6.15 US ft ● Mag Anomaly: None ● Avoidance Area: None ● Classification1: Irregular Contact ● Classification2: Unknown Contact ● Area: South Pass ● Block: 60 ● Description:
	**34** ● Sonar Time at Target: 8/17/2023 19:17:47 ● Click Position 29.0615604279 -88.9445556467 (NAD27LL) (X) 2763198.26 (Y) 151561.27 (Projected Coordinates) ● Map Projection: LA-S-MOD ● Acoustic Source File: C:¥Users¥Eric Fischer PC¥DOC Mapping Dropbox¥Field Data Sync COPY ONLY¥Launch 1¥Hypack Projects¥Projects¥F23KNOC010_SP60¥Raw¥5025_1908.HSX ● Line Name: 5025_1908	**Dimensions and attributes** ● Target Width: 6.97 US ft ● Target Height: 1.24 US ft ● Target Length: 34.58 US ft ● Mag Anomaly: None ● Avoidance Area: None ● Classification1: Irregular Contact ● Classification2: Probable Geology ● Area: South Pass ● Block: 60 ● Description:
	**35** ● Sonar Time at Target: 8/17/2023 19:17:47 ● Click Position 29.0615389715 -88.9446129570 (NAD27LL) (X) 2763180.11 (Y) 151553.09 (Projected Coordinates) ● Map Projection: LA-S-MOD ● Acoustic Source File: C:¥Users¥Eric Fischer PC¥DOC Mapping Dropbox¥Field Data Sync COPY ONLY¥Launch 1¥Hypack Projects¥Projects¥F23KNOC010_SP60¥Raw¥5025_1908.HSX ● Line Name: 5025_1908	**Dimensions and attributes** ● Target Width: 5.30 US ft ● Target Height: 0.68 US ft ● Target Length: 11.52 US ft ● Mag Anomaly: None ● Avoidance Area: None ● Classification1: Irregular Contact ● Classification2: Probable Geology ● Area: South Pass ● Block: 60 ● Description:

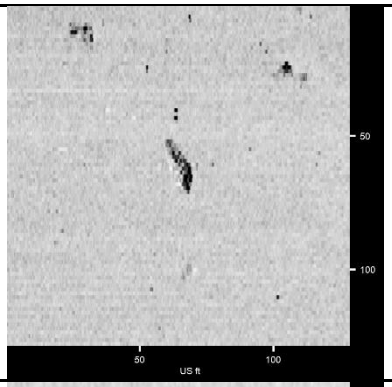
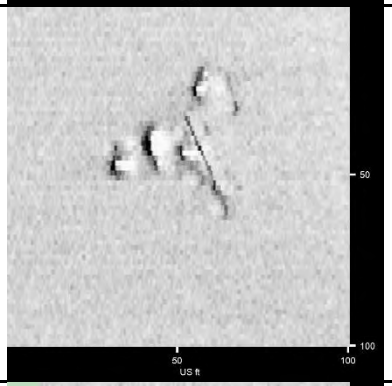
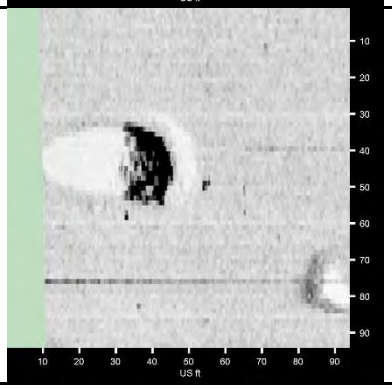
	**36** ● Sonar Time at Target: 8/17/2023 19:17:46 ● Click Position 29.0614923371 -88.9446543455 (NAD27LL) (X) 2763167.25 (Y) 151535.86 (Projected Coordinates) ● Map Projection: LA-S-MOD ● Acoustic Source File: C:¥Users¥Eric Fischer PC¥DOC Mapping Dropbox¥Field Data Sync COPY ONLY¥Launch 1¥Hypack Projects¥Projects¥F23KNOC010_SP60¥Raw¥5025_1908.HSX ● Line Name: 5025_1908	**Dimensions and attributes** ● Target Width: 4.81 US ft ● Target Height: 0.88 US ft ● Target Length: 15.07 US ft ● Mag Anomaly: None ● Avoidance Area: None ● Classification1: Irregular Contact ● Classification2: Probable Geology ● Area: South Pass ● Block: 60 ● Description:
	**37** ● Sonar Time at Target: 8/17/2023 19:17:45 ● Click Position 29.0614709397 -88.9446598225 (NAD27LL) (X) 2763165.66 (Y) 151528.04 (Projected Coordinates) ● Map Projection: LA-S-MOD ● Acoustic Source File: C:¥Users¥Eric Fischer PC¥DOC Mapping Dropbox¥Field Data Sync COPY ONLY¥Launch 1¥Hypack Projects¥Projects¥F23KNOC010_SP60¥Raw¥5025_1908.HSX ● Line Name: 5025_1908	**Dimensions and attributes** ● Target Width: 5.06 US ft ● Target Height: 0.79 US ft ● Target Length: 9.87 US ft ● Mag Anomaly: None ● Avoidance Area: None ● Classification1: Irregular Contact ● Classification2: Probable Geology ● Area: South Pass ● Block: 60 ● Description:
	**38** ● Sonar Time at Target: 8/20/2023 14:42:41 ● Click Position 29.0565567523 -88.9430573488 (NAD27LL) (X) 2763714.84 (Y) 149752.09 (Projected Coordinates) ● Map Projection: LA-S-MOD ● Acoustic Source File: C:¥Users¥Eric Fischer PC¥DOC Mapping Dropbox¥Field Data Sync COPY ONLY¥Launch 1¥Hypack Projects¥Projects¥F23KNOC010_SP60¥Raw¥5023_1435.HSX ● Line Name: 5023_1435	**Dimensions and attributes** ● Target Width: 2.03 US ft ● Target Height: 0.24 US ft ● Target Length: 5.04 US ft ● Mag Anomaly: None ● Avoidance Area: None ● Classification1: Irregular Contact ● Classification2: Unknown Contact ● Area: South Pass ● Block: 67 ● Description:
	**39** ● Sonar Time at Target: 8/20/2023 17:42:05 ● Click Position 29.0556014834 -88.9540035775 (NAD27LL) (X) 2760225.13 (Y) 149331.99 (Projected Coordinates) ● Map Projection: LA-S-MOD ● Acoustic Source File: C:¥Users¥Eric Fischer PC¥DOC Mapping Dropbox¥Field Data Sync COPY ONLY¥Launch 1¥Hypack Projects¥Projects¥F23KNOC010_SP60¥Raw¥5002_1732.HSX ● Line Name: 5002_1732	**Dimensions and attributes** ● Target Width: 8.77 US ft ● Target Height: 0.63 US ft ● Target Length: 115.58 US ft ● Mag Anomaly: None ● Avoidance Area: None ● Classification1: Linear Contact ● Classification2: Possible Pipeline ● Area: South Pass ● Block: 60 ● Description:

	**40** ● Sonar Time at Target: 8/17/2023 18:53:18 ● Click Position 29.0552452429 -88.9387109162 (NAD27LL) (X) 2765113.33 (Y) 149304.26 (Projected Coordinates) ● Map Projection: LA-S-MOD ● Acoustic Source File: C:¥Users¥Eric Fischer PC¥DOC Mapping Dropbox¥Field Data Sync COPY ONLY¥Launch 1¥Hypack Projects¥Projects¥F23KNOC010_SP60¥Raw¥5028_1839.HSX ● Line Name: 5028_1839	**Dimensions and attributes** ● Target Width: 2.77 US ft ● Target Height: 0.68 US ft ● Target Length: 15.17 US ft ● Mag Anomaly: None ● Avoidance Area: None ● Classification1: Linear Contact ● Classification2: Unknown Contact ● Area: South Pass ● Block: 67 ● Description:
	**41** ● Sonar Time at Target: 8/17/2023 18:14:31 ● Click Position 29.0550469934 -88.9366863433 (NAD27LL) (X) 2765761.62 (Y) 149245.71 (Projected Coordinates) ● Map Projection: LA-S-MOD ● Acoustic Source File: C:¥Users¥Eric Fischer PC¥DOC Mapping Dropbox¥Field Data Sync COPY ONLY¥Launch 1¥Hypack Projects¥Projects¥F23KNOC010_SP60¥Raw¥5031_1810.HSX ● Line Name: 5031_1810	**Dimensions and attributes** ● Target Width: 0.71 US ft ● Target Height: 0.08 US ft ● Target Length: 11.07 US ft ● Mag Anomaly: None ● Avoidance Area: None ● Classification1: Linear Contact ● Classification2: Unknown Contact ● Area: South Pass ● Block: 67 ● Description:
	**42** ● Sonar Time at Target: 8/17/2023 19:13:19 ● Click Position 29.0549121788 -88.9411089235 (NAD27LL) (X) 2764349.77 (Y) 149167.17 (Projected Coordinates) ● Map Projection: LA-S-MOD ● Acoustic Source File: C:¥Users¥Eric Fischer PC¥DOC Mapping Dropbox¥Field Data Sync COPY ONLY¥Launch 1¥Hypack Projects¥Projects¥F23KNOC010_SP60¥Raw¥5025_1908.HSX ● Line Name: 5025_1908	**Dimensions and attributes** ● Target Width: 6.58 US ft ● Target Height: 0.65 US ft ● Target Length: 17.69 US ft ● Mag Anomaly: None ● Avoidance Area: None ● Classification1: Irregular Contact ● Classification2: Unknown Contact ● Area: South Pass ● Block: 67 ● Description:
	**43** ● Sonar Time at Target: 8/17/2023 19:13:10 ● Click Position 29.0547467638 -88.9408510647 (NAD27LL) (X) 2764433.40 (Y) 149108.75 (Projected Coordinates) ● Map Projection: LA-S-MOD ● Acoustic Source File: C:¥Users¥Eric Fischer PC¥DOC Mapping Dropbox¥Field Data Sync COPY ONLY¥Launch 1¥Hypack Projects¥Projects¥F23KNOC010_SP60¥Raw¥5025_1908.HSX ● Line Name: 5025_1908	**Dimensions and attributes** ● Target Width: 3.67 US ft ● Target Height: 1.53 US ft ● Target Length: 5.25 US ft ● Mag Anomaly: None ● Avoidance Area: None ● Classification1: Irregular Contact ● Classification2: Unknown Contact ● Area: South Pass ● Block: 67 ● Description:

	**44** ● Sonar Time at Target: 8/17/2023 18:53:59 ● Click Position 29.0546092686 -88.9374292011 (NAD27LL) (X) 2765527.63 (Y) 149081.60 (Projected Coordinates) ● Map Projection: LA-S-MOD ● Acoustic Source File: C:¥Users¥Eric Fischer PC¥DOC Mapping Dropbox¥Field Data Sync COPY ONLY¥Launch 1¥Hypack Projects¥Projects¥F23KNOC010_SP60¥Raw¥5028_1839.HSX ● Line Name: 5028_1839	**Dimensions and attributes** ● Target Width: 1.00 US ft ● Target Height: 1.20 US ft ● Target Length: 1.46 US ft ● Mag Anomaly: None ● Avoidance Area: None ● Classification1: Irregular Contact ● Classification2: Unknown Contact ● Area: South Pass ● Block: 67 ● Description:
	**45** ● Sonar Time at Target: 8/17/2023 18:14:08 ● Click Position 29.0545727989 -88.9363449709 (NAD27LL) (X) 2765874.28 (Y) 149075.59 (Projected Coordinates) ● Map Projection: LA-S-MOD ● Acoustic Source File: C:¥Users¥Eric Fischer PC¥DOC Mapping Dropbox¥Field Data Sync COPY ONLY¥Launch 1¥Hypack Projects¥Projects¥F23KNOC010_SP60¥Raw¥5031_1810.HSX ● Line Name: 5031_1810	**Dimensions and attributes** ● Target Width: 1.99 US ft ● Target Height: 0.36 US ft ● Target Length: 16.64 US ft ● Mag Anomaly: None ● Avoidance Area: None ● Classification1: Linear Contact ● Classification2: Unknown Contact ● Area: South Pass ● Block: 67 ● Description:
	**46** ● Sonar Time at Target: 8/17/2023 18:54:04 ● Click Position 29.0545260883 -88.9372958618 (NAD27LL) (X) 2765570.86 (Y) 149052.25 (Projected Coordinates) ● Map Projection: LA-S-MOD ● Acoustic Source File: C:¥Users¥Eric Fischer PC¥DOC Mapping Dropbox¥Field Data Sync COPY ONLY¥Launch 1¥Hypack Projects¥Projects¥F23KNOC010_SP60¥Raw¥5028_1839.HSX ● Line Name: 5028_1839	**Dimensions and attributes** ● Target Width: 10.54 US ft ● Target Height: 0.23 US ft ● Target Length: 13.39 US ft ● Mag Anomaly: None ● Avoidance Area: None ● Classification1: Irregular Contact ● Classification2: Unknown Contact ● Area: South Pass ● Block: 67 ● Description:
	**47** ● Sonar Time at Target: 8/17/2023 18:54:19 ● Click Position 29.0542457163 -88.9369893231 (NAD27LL) (X) 2765670.92 (Y) 148952.37 (Projected Coordinates) ● Map Projection: LA-S-MOD ● Acoustic Source File: C:¥Users¥Eric Fischer PC¥DOC Mapping Dropbox¥Field Data Sync COPY ONLY¥Launch 1¥Hypack Projects¥Projects¥F23KNOC010_SP60¥Raw¥5028_1839.HSX ● Line Name: 5028_1839	**Dimensions and attributes** ● Target Width: 2.01 US ft ● Target Height: 0.39 US ft ● Target Length: 7.92 US ft ● Mag Anomaly: None ● Avoidance Area: None ● Classification1: Irregular Contact ● Classification2: Unknown Contact ● Area: South Pass ● Block: 67 ● Description:

	**48** ● Sonar Time at Target: 8/17/2023 18:54:32 ● Click Position 29.0539520113 -88.9368053155 (NAD27LL) (X) 2765731.94 (Y) 148846.81 (Projected Coordinates) ● Map Projection: LA-S-MOD ● Acoustic Source File: C:¥Users¥Eric Fischer PC¥DOC Mapping Dropbox¥Field Data Sync COPY ONLY¥Launch 1¥Hypack Projects¥Projects¥F23KNOC010_SP60¥Raw¥5028_1839.HSX ● Line Name: 5028_1839	**Dimensions and attributes** ● Target Width: 3.62 US ft ● Target Height: 0.32 US ft ● Target Length: 17.23 US ft ● Mag Anomaly: None ● Avoidance Area: None ● Classification1: Irregular Contact ● Classification2: Unknown Contact ● Area: South Pass ● Block: 67 ● Description:
	**49** ● Sonar Time at Target: 8/17/2023 18:54:29 ● Click Position 29.0537584400 -88.9373505181 (NAD27LL) (X) 2765559.23 (Y) 148772.80 (Projected Coordinates) ● Map Projection: LA-S-MOD ● Acoustic Source File: C:¥Users¥Eric Fischer PC¥DOC Mapping Dropbox¥Field Data Sync COPY ONLY¥Launch 1¥Hypack Projects¥Projects¥F23KNOC010_SP60¥Raw¥5028_1839.HSX ● Line Name: 5028_1839	**Dimensions and attributes** ● Target Width: 4.60 US ft ● Target Height: 1.30 US ft ● Target Length: 4.78 US ft ● Mag Anomaly: None ● Avoidance Area: None ● Classification1: Rectangular Contact ● Classification2: Unknown Contact ● Area: South Pass ● Block: 67 ● Description:
	**50** ● Sonar Time at Target: 8/17/2023 18:12:52 ● Click Position 29.0532489246 -88.9339787511 (NAD27LL) (X) 2766640.29 (Y) 148610.10 (Projected Coordinates) ● Map Projection: LA-S-MOD ● Acoustic Source File: C:¥Users¥Eric Fischer PC¥DOC Mapping Dropbox¥Field Data Sync COPY ONLY¥Launch 1¥Hypack Projects¥Projects¥F23KNOC010_SP60¥Raw¥5031_1810.HSX ● Line Name: 5031_1810	**Dimensions and attributes** ● Target Width: 2.76 US ft ● Target Height: 0.30 US ft ● Target Length: 25.97 US ft ● Mag Anomaly: None ● Avoidance Area: None ● Classification1: Linear Contact ● Classification2: Unknown Contact ● Area: South Pass ● Block: 67 ● Description:
	**51** ● Sonar Time at Target: 8/20/2023 14:27:11 ● Click Position 29.0532200394 -88.9373900744 (NAD27LL) (X) 2765550.69 (Y) 148576.79 (Projected Coordinates) ● Map Projection: LA-S-MOD ● Acoustic Source File: C:¥Users¥Eric Fischer PC¥DOC Mapping Dropbox¥Field Data Sync COPY ONLY¥Launch 1¥Hypack Projects¥Projects¥F23KNOC010_SP60¥Raw¥5026_1411.HSX ● Line Name: 5026_1411	**Dimensions and attributes** ● Target Width: 2.96 US ft ● Target Height: 0.21 US ft ● Target Length: 11.35 US ft ● Mag Anomaly: None ● Avoidance Area: None ● Classification1: Rectangular Contact ● Classification2: Unknown Contact ● Area: South Pass ● Block: 67 ● Description:

	**52** ● Sonar Time at Target: 8/19/2023 14:03:24 ● Click Position 29.0502760327 -88.9449665709 (NAD27LL) (X) 2763152.51 (Y) 147455.91 (Projected Coordinates) ● Map Projection: LA-S-MOD ● Acoustic Source File: C:¥Users¥Eric Fischer PC¥DOC Mapping Dropbox¥Field Data Sync COPY ONLY¥Launch 1¥Hypack Projects¥Projects¥F23KNOC010_SP60¥Raw¥5013_1359.HSX ● Line Name: 5013_1359	**Dimensions and attributes** ● Target Width: 6.72 US ft ● Target Height: 0.59 US ft ● Target Length: 10.91 US ft ● Mag Anomaly: None ● Avoidance Area: None ● Classification1: Irregular Contact ● Classification2: Unknown Contact ● Area: South Pass ● Block: 60 ● Description:
	**53** ● Sonar Time at Target: 8/19/2023 14:03:06 ● Click Position 29.0500578437 -88.9444918463 (NAD27LL) (X) 2763305.83 (Y) 147379.74 (Projected Coordinates) ● Map Projection: LA-S-MOD ● Acoustic Source File: C:¥Users¥Eric Fischer PC¥DOC Mapping Dropbox¥Field Data Sync COPY ONLY¥Launch 1¥Hypack Projects¥Projects¥F23KNOC010_SP60¥Raw¥5013_1359.HSX ● Line Name: 5013_1359	**Dimensions and attributes** ● Target Width: 5.09 US ft ● Target Height: 4.49 US ft ● Target Length: 17.64 US ft ● Mag Anomaly: None ● Avoidance Area: None ● Classification1: Irregular Contact ● Classification2: Unknown Contact ● Area: South Pass ● Block: 60 ● Description:
	**54** ● Sonar Time at Target: 8/20/2023 19:10:17 ● Click Position 29.0496854089 -88.9446227431 (NAD27LL) (X) 2763266.84 (Y) 147243.47 (Projected Coordinates) ● Map Projection: LA-S-MOD ● Acoustic Source File: C:¥Users¥Eric Fischer PC¥DOC Mapping Dropbox¥Field Data Sync COPY ONLY¥Launch 1¥Hypack Projects¥Projects¥F23KNOC010_SP60¥Raw¥8016_1900.HSX ● Line Name: 8016_1900	**Dimensions and attributes** ● Target Width: 6.68 US ft ● Target Height: 0.31 US ft ● Target Length: 15.20 US ft ● Mag Anomaly: None ● Avoidance Area: None ● Classification1: Irregular Contact ● Classification2: Unknown Contact ● Area: South Pass ● Block: 60 ● Description:
	**55** ● Sonar Time at Target: 8/19/2023 14:50:29 ● Click Position 29.0496304270 -88.9470954737 (NAD27LL) (X) 2762477.25 (Y) 147207.02 (Projected Coordinates) ● Map Projection: LA-S-MOD ● Acoustic Source File: C:¥Users¥Eric Fischer PC¥DOC Mapping Dropbox¥Field Data Sync COPY ONLY¥Launch 1¥Hypack Projects¥Projects¥F23KNOC010_SP60¥Raw¥5007_1446.HSX ● Line Name: 5007_1446	**Dimensions and attributes** ● Target Width: 15.04 US ft ● Target Height: 4.09 US ft ● Target Length: 38.34 US ft ● Mag Anomaly: None ● Avoidance Area: None ● Classification1: Irregular Contact ● Classification2: Probable Geology ● Area: South Pass ● Block: 60 ● Description:

	**56** ● Sonar Time at Target: 8/20/2023 16:55:35 ● Click Position 29.0494144526 -88.9469178101 (NAD27LL) (X) 2762535.65 (Y) 147129.68 (Projected Coordinates) ● Map Projection: LA-S-MOD ● Acoustic Source File: C:¥Users¥Eric Fischer PC¥DOC Mapping Dropbox¥Field Data Sync COPY ONLY¥Launch 1¥Hypack Projects¥Projects¥F23KNOC010_SP60¥Raw¥5008_1651.HSX ● Line Name: 5008_1651	**Dimensions and attributes** ● Target Width: 3.14 US ft ● Target Height: 0.91 US ft ● Target Length: 22.92 US ft ● Mag Anomaly: None ● Avoidance Area: None ● Classification1: Irregular Contact ● Classification2: Probable Geology ● Area: South Pass ● Block: 60 ● Description:
	**57** ● Sonar Time at Target: 8/19/2023 16:53:00 ● Click Position 29.0475663003 -88.9448597073 (NAD27LL) (X) 2763207.19 (Y) 146471.45 (Projected Coordinates) ● Map Projection: LA-S-MOD ● Acoustic Source File: C:¥Users¥Eric Fischer PC¥DOC Mapping Dropbox¥Field Data Sync COPY ONLY¥Launch 1¥Hypack Projects¥Projects¥F23KNOC010_SP60¥Raw¥5009_1650.HSX ● Line Name: 5009_1650	**Dimensions and attributes** ● Target Width: 0.72 US ft ● Target Height: 0.45 US ft ● Target Length: 25.41 US ft ● Mag Anomaly: None ● Avoidance Area: None ● Classification1: Linear Contact ● Classification2: Exposed Pipeline ● Area: South Pass ● Block: 60 ● Description:
	**58** ● Sonar Time at Target: 8/19/2023 14:00:32 ● Click Position 29.0466704336 -88.9423684790 (NAD27LL) (X) 2764009.91 (Y) 146162.35 (Projected Coordinates) ● Map Projection: LA-S-MOD ● Acoustic Source File: C:¥Users¥Eric Fischer PC¥DOC Mapping Dropbox¥Field Data Sync COPY ONLY¥Launch 1¥Hypack Projects¥Projects¥F23KNOC010_SP60¥Raw¥5013_1359.HSX ● Line Name: 5013_1359	**Dimensions and attributes** ● Target Width: 15.25 US ft ● Target Height: 5.92 US ft ● Target Length: 25.83 US ft ● Mag Anomaly: None ● Avoidance Area: None ● Classification1: Irregular Contact ● Classification2: Probable Geology ● Area: South Pass ● Block: 67 ● Description:

APPENDIX B: SURVEY LINE LOGS AND BOAT DIAGRAMS

Survey Project Log

Project ID: F23KNOC010	**Vessel:** M/V *DoC Launch*	**Start Date:** 07/15/23
Client: KNOC	**Geodesy:** NAD27 Louisiana South Feet	**Survey Type:** Pipeline Installation
Site: Survey Area	**Survey Crew:** R. Lauve, T. Veiner, T. Yost	**Equipment:** Klein 4000 SSS, R2 Sonic MBES, SES2000 SBP, G-882 Magnetometer

Time:	Line#:	Line Azimuth:	Comments:
			7/15/2023
0800			Arrive at DoC Launch
1004			Leave dock, depart for offshore survey
1202			Arrive at site, begin recon
1222			AML cast
1309			SSS deployed
1313	2062	W	SOL
1332			EOL
1333	2060	E	SOL
1345			EOL
1351	3037	SW	SOL
1407			EOL
1451			Switch to other SSS, redeploy
1458	4037	W	SOL Subottom not transmitting to Hypack
1530			EOL
			WR: Seas less than 1 ft, 5-10 knt wind SW
1535	3034	W	SOL
1551			EOL
1608			Raise pole and return to Cypress cove
1830			Dock at Cypress cove
			7/16/2023
0606			Arrive at Launch
0700			Transit to KNOC site
0827			Arrive at site

Survey Project Log

Project ID: F23KNOC010	**Vessel:** M/V *DoC Launch*	**Start Date:** 07/15/23
Client: KNOC	**Geodesy:** NAD27 Louisiana South Feet	**Survey Type:** Pipeline Installation
Site: Survey Area	**Survey Crew:** R. Lauve, T. Veiner, T. Yost	**Equipment:** Klein 4000 SSS, R2 Sonic MBES, SES2000 SBP, G-882 Magnetometer

Time:	Line#:	Line Azimuth:	Comments:
0859			Deploy pole/SVP cast
0916			Deploy SSS and Mag
0924	3031	E	SOL
0925			Seeas 1-2 ft, wind 5-10 knots
0943			Gate issue in multibeam
0945	3031	E	EOL
0951	3028	W	SOL
1016			EOL
1019	3025	E	SOL
1039			EOL
1044	3022	W	SOL
1113			EOL
1115	3019	E	SOL
1135			EOL
1143	3016	W	SOL
1209			EOL
1212	3013	E	SOL
1214			EOL Vessel traffic
1225	3013	E	SOL
1245			EOL
1249	3010	W	SOL
1251			WR: 1-2 ft seas, wind 10-15 knots
1326	3010	W	EOL

Survey Project Log

Project ID: F23KNOC010	**Vessel:** M/V *DoC Launch*	**Start Date:** 07/15/23
Client: KNOC	**Geodesy:** NAD27 Louisiana South Feet	**Survey Type:** Pipeline Installation
Site: Survey Area	**Survey Crew:** R. Lauve, T. Veiner, T. Yost	**Equipment:** Klein 4000 SSS, R2 Sonic MBES, SES2000 SBP, G-882 Magnetometer

Time:	Line#:	Line Azimuth:	Comments:
1330	3007	E	SOL
1333			Current keeping vessel offline in shallow area
1352	3007	E	EOL
1356	3004	W	SOL
1431			EOL
1435	3001	E	SOL
1457			EOL
1510	3000	W	SOL
1545			EOL
1559			Pull SSS/ Raise pole
1600			Begin transit to Cypress cove
1751			Arrive at Cypress cove
			7/17/2023
0605			Arrive at DoC Launch/mob Prodrive
0615			Maintenance, set up
0715			Depart dock
0830			On location, continue on to shallow water survey
1545			Recover survey equipment
1730			Return to dock for refuel
			7/18/2023
0610			Arrive at DoC Launch
0730			Leave to transit to site
0800			Launch blew a bolt in engine

Survey Project Log

Project ID: F23KNOC010	**Vessel:** M/V *DoC Launch*	**Start Date:** 07/15/23
Client: KNOC	**Geodesy:** NAD27 Louisiana South Feet	**Survey Type:** Pipeline Installation
Site: Survey Area	**Survey Crew:** R. Lauve, T. Veiner, T. Yost	**Equipment:** Klein 4000 SSS, R2 Sonic MBES, SES2000 SBP, G-882 Magnetometer

Time:	Line#:	Line Azimuth:	Comments:
0940			Return to Cypress cove for repairs
1125			Arrive at Cypress cove
			7/20/2023
0610			Arrive at DoC Launch
0643			Depart Cypress cove for site
0815			Arrive at site, deploy survey pole/SVP cast
0844			SSS/Mag deployed
0858	2055	W	SOL
0911			EOL too shallow
0912	2052	E	SOL
0922			EOL too shallow
0929	2049	W	SOL
0940			EOL too shallow
0951	8007	S	SOL
1010			EOL
1018	3003	E	SOL dolphins
1041			EOL
1050	3006	W	SOL dolphins
1117			EOL
1120	3009	E	SOL
1142			EOL
1148	3012	W	SOL
1212			EOL

Survey Project Log

Project ID: F23KNOC010	**Vessel:** M/V *DoC Launch*	**Start Date:** 07/15/23
Client: KNOC	**Geodesy:** NAD27 Louisiana South Feet	**Survey Type:** Pipeline Installation
Site: Survey Area	**Survey Crew:** R. Lauve, T. Veiner, T. Yost	**Equipment:** Klein 4000 SSS, R2 Sonic MBES, SES2000 SBP, G-882 Magnetometer

Time:	Line#:	Line Azimuth:	Comments:
1216	3015	E	SOL
1230			EOL
1242	3015	E	SOL shrimping boat
1249			EOL
1253	3018	W	SOL
1320			EOL
1325	3021	E	SOL
1348			EOL
1354			Cable counter reset, 0 ft out before gear hit surface
			80 to 100 ft extra out
1404	3024	W	SOL
1428			EOL
1434	3027	E	SOL dolphins
1458			EOL
1506			Cable counter reset, 30-60 ft out after SSS hit surface
1516	3030	W	SOL
1539			EOL
1540			Pull towed gear and pole
1747			Dock at Cypress cove
			7/21/2023
0610			Arrive at DoC Launch
0645			Depart Cypress cove for site
0818			Arrive at site

Survey Project Log

Project ID: F23KNOC010	**Vessel:** M/V *DoC Launch*	**Start Date:** 07/15/23
Client: KNOC	**Geodesy:** NAD27 Louisiana South Feet	**Survey Type:** Pipeline Installation
Site: Survey Area	**Survey Crew:** R. Lauve, T. Veiner, T. Yost	**Equipment:** Klein 4000 SSS, R2 Sonic MBES, SES2000 SBP, G-882 Magnetometer

Time:	Line#:	Line Azimuth:	Comments:
0839			Deploy pole/SVP cast
0842			Deploy SSS
0912	3033	E	SOL
0930			EOL
0934	3036	W	SOL Cable counter issues, reset after line
0955			EOL
			Cable counter reset, 41 ft out at reset
1005	3035	E	SOL
1024			EOL
1032	3032	W	SOL
1059			EOL
1105	3029	E	SOL
1127			EOL
1136	3026	W	SOL
1206			EOL
1211	3023	E	SOL
1234			EOL
1243	3020	W	SOL
1312			EOL
			Cable counter reset, 56 ft out at reset
1319	3017	E	SOL
1342			EOL
1348	3014	W	SOL

Survey Project Log

Project ID: F23KNOC010	**Vessel:** M/V *DoC Launch*	**Start Date:** 07/15/23
Client: KNOC	**Geodesy:** NAD27 Louisiana South Feet	**Survey Type:** Pipeline Installation
Site: Survey Area	**Survey Crew:** R. Lauve, T. Veiner, T. Yost	**Equipment:** Klein 4000 SSS, R2 Sonic MBES, SES2000 SBP, G-882 Magnetometer

Time:	Line#:	Line Azimuth:	Comments:
1416			EOL
1432			Pull gear, return to cypress cove
1621			Fuel dock, crew change, put Prodrive on trailer

Survey Project Log

Project ID: F23KNOC010	**Vessel:** M/V *DoC Launch*	**Start Date:** 07/15/23
Client: KNOC	**Geodesy:** NAD27 Louisiana South Feet	**Survey Type:** Pipeline Installation
Site: Survey Area	**Survey Crew:** T. Veiner, K. Heier, K. Tauzier, T. Yost	**Equipment:** Klein 4000 SSS, R2 Sonic MBES, SES2000 SBP, G-882 Magnetometer

Time:	Line#:	Line Azimuth:	Comments:
			7/22/2023
0604			Arrive at DoC Launch
0705			Depart dock for site
0904			Deploy AML cast
0932	8008	S	SOL
0955			EOL
1005	3005	E	SOL
1025			EOL
1036	3002	W	SOL
1104			EOL
1111	3011	E	SOL
1140			EOL
			Cable counter reset, 0 ft at surface
1145	3008	W	SOL
1203			Reel towed gear in, vessel traffic
1215	3008	W	EOL
1231	8009	N	SOL
1246			EOL
1409			Trouble shoot winch
1419	8010	S	SOL
1437			EOL
1447	8011	N	SOL
1503			EOL

Survey Project Log

Project ID: F23KNOC010	**Vessel:** M/V *DoC Launch*	**Start Date:** 07/15/23
Client: KNOC	**Geodesy:** NAD27 Louisiana South Feet	**Survey Type:** Pipeline Installation
Site: Survey Area	**Survey Crew:** T. Veiner, K. Heier, K. Tauzier, T. Yost	**Equipment:** Klein 4000 SSS, R2 Sonic MBES, SES2000 SBP, G-882 Magnetometer

Time:	Line#:	Line Azimuth:	Comments:
1519			Pull gear, depart for Cypress cove
1725			Dock at Cypress cove
			8/10/2023
0750			Transit to site SP60
0920			Arrive at site, deploy gear
1041	2061	W	SOL
1055			EOL
1057	2062	E	SOL
1106			EOL Hypack crash
1114	4037	W	SOL
1119			EOL
1119	4037	E	SOL
1130			EOL
1136	4034	W	SOL
1157			EOL
1214	4031	E	SOL
1229			EOL
1233	4028	W	SOL
1252			EOL
1256	4025	E	SOL
1314			EOL
1321	4022	W	SOL
1341			EOL

Survey Project Log

Project ID: F23KNOC010	**Vessel:** M/V *DoC Launch*	**Start Date:** 07/15/23
Client: KNOC	**Geodesy:** NAD27 Louisiana South Feet	**Survey Type:** Pipeline Installation
Site: Survey Area	**Survey Crew:** T. Veiner, K. Heier, K. Tauzier, T. Yost	**Equipment:** Klein 4000 SSS, R2 Sonic MBES, SES2000 SBP, G-882 Magnetometer

Time:	Line#:	Line Azimuth:	Comments:
1344	4019	E	SOL
1400			EOL
1406	4016	W	SOL
1426			EOL
1429	4013	E	SOL
1442			EOL
1449	4010	W	SOL
1505			EOL
1507	4007	E	SOL
1521			EOL
1541			Pull gear, begin transit to dock

Survey Project Log

Project ID: F23KNOC010	**Vessel:** M/V *DoC Launch*	**Start Date:** 07/15/23
Client: KNOC	**Geodesy:** NAD27 Louisiana South Feet	**Survey Type:** Pipeline Installation
Site: Survey Area	**Survey Crew:** T. Veiner, K. Heier, K. Tauzier	**Equipment:** Klein 4000 SSS, R2 Sonic MBES, SES2000 SBP, G-882 Magnetometer

Time:	Line#:	Line Azimuth:	Comments:
			8/12/2023
0748			Depart dock
0930			Trouble shoot, deploy gear
1158	4005	E	SOL rerun
1213			EOL
1221	4004	W	SOL
1233			EOL
1239	4001	E	SOL cable counter reset to 0
1254			EOL
1304	4000	W	SOL
1317			EOL
1328	4003	E	SOL
1345			EOL
1348	4006	W	SOL
1402			EOL cable counter reset to 0
1416	4008	E	SOL cable counter reset to 0
1431			EOL
1445			Rewind winch
1530			Pull gear, return to dock
			8/13/2023
0752			Depart dock
0917			Arrive at site/deploy gear
1007			Unspool and repool winch

Survey Project Log

Project ID: F23KNOC010	**Vessel:** M/V *DoC Launch*	**Start Date:** 07/15/23
Client: KNOC	**Geodesy:** NAD27 Louisiana South Feet	**Survey Type:** Pipeline Installation
Site: Survey Area	**Survey Crew:** T. Veiner, K. Heier, K. Tauzier	**Equipment:** Klein 4000 SSS, R2 Sonic MBES, SES2000 SBP, G-882 Magnetometer

Time:	Line#:	Line Azimuth:	Comments:
1040	4011	W	SOL
1055			EOL
1102	4014	E	SOL QC needed
1109			Hypack hisweep crash
1114			Hypack crash, EOL 4014 E
1121	4017	W	SOL
1137			EOL
1142	4020	E	SOL Possible rerun
1158			EOL
1206	4023	W	SOL
1230			EOL
1236	4026	E	SOL Possible rerun
1252			EOL
1316	4029	W	SOL
1336			EOL
1344	4032	E	SOL
1402			EOL
1414	4035	W	SOL
1432			EOL
1440	4036	E	SOL
1457			EOL
1503	4033	W	SOL
1521			EOL

Survey Project Log

Project ID: F23KNOC010	**Vessel:** M/V *DoC Launch*	**Start Date:** 07/15/23
Client: KNOC	**Geodesy:** NAD27 Louisiana South Feet	**Survey Type:** Pipeline Installation
Site: Survey Area	**Survey Crew:** T. Veiner, K. Heier, K. Tauzier	**Equipment:** Klein 4000 SSS, R2 Sonic MBES, SES2000 SBP, G-882 Magnetometer

Time:	Line#:	Line Azimuth:	Comments:
1535			Depart for dock
			8/14/2023
0730			Depart dock
0905			Deploy MBES pole
0931			Respool cable
1018	4030	W	SOL
1036			EOL
1043	4027	E	SOL
1100			EOL
1106	4024	W	SOL
1125			EOL
1129	4021	E	SOL
1146			EOL
1157	4018	W	SOL
1218			EOL
1223	4015	E	SOL
1240			EOL
1250			Troubleshoot mag out of limits
1347	4012	W	SOL
1405			EOL
1408	4009	E	SOL
1419			EOL
1426	4002	W	SOL

Survey Project Log

Project ID: F23KNOC010	**Vessel:** M/V *DoC Launch*	**Start Date:** 07/15/23
Client: KNOC	**Geodesy:** NAD27 Louisiana South Feet	**Survey Type:** Pipeline Installation
Site: Survey Area	**Survey Crew:** T. Veiner, K. Heier, K. Tauzier	**Equipment:** Klein 4000 SSS, R2 Sonic MBES, SES2000 SBP, G-882 Magnetometer

Time:	Line#:	Line Azimuth:	Comments:
1440			EOL
1449	8011	N	SOL
1505			EOL
1521	8012	S	SOL
1536			EOL
1553			Back to dock
			8/15/2023
0610			Arrive at Launch
0700			Depart dock for site
0856			Deploy gear troubleshoot multibeam
0917			Deploy towed gear
0933	5037	N	SOL 828 ft of cable out, cable will not exceed 850 ft for safety
0950			EOL
1000			Engine failure
1005			Pull gear
1015			Return to dock/maintanace
1600			Mechanic showed
1640			Mechanic left
			8/17/2023
0845			Depart dock
1018			Deploy gear/trouble shoot cable counter sensor
1131	4006	W	SOL
1144			EOL

Survey Project Log

Project ID: F23KNOC010	**Vessel:** M/V *DoC Launch*	**Start Date:** 07/15/23
Client: KNOC	**Geodesy:** NAD27 Louisiana South Feet	**Survey Type:** Pipeline Installation
Site: Survey Area	**Survey Crew:** T. Veiner, K. Heier, K. Tauzier	**Equipment:** Klein 4000 SSS, R2 Sonic MBES, SES2000 SBP, G-882 Magnetometer

Time:	Line#:	Line Azimuth:	Comments:
1149	4015	E	SOL
1202			EOL
1212	4018	W	SOL 437 ft
1226			EOL 250 ft
1245	5034	S	SOL 250 ft
1303			EOL 672 ft
1310	5031	N	SOL 750 ft
1327			EOL 492 ft
1339	5028	S	SOL 345 ft
1356			EOL 682 ft
1408	5025	N	SOL 722 ft
1417			Fisherman blocked line rerun
1425	5025	N	EOL 405 ft
1439	5022	S	SOL 262 ft
1449			Mag drop out
1455	5022	S	EOL 623 ft
1506	5019	N	SOL 623 ft
1521			EOL 422 ft
1525	5016	S	SOL 422 ft
1541			EOL 582 ft
1557			Pull gear
			8/19/2023
0602			Arrive at DoC Launch

Survey Project Log

Project ID: F23KNOC010	**Vessel:** M/V *DoC Launch*	**Start Date:** 07/15/23
Client: KNOC	**Geodesy:** NAD27 Louisiana South Feet	**Survey Type:** Pipeline Installation
Site: Survey Area	**Survey Crew:** T. Veiner, K. Heier, K. Tauzier	**Equipment:** Klein 4000 SSS, R2 Sonic MBES, SES2000 SBP, G-882 Magnetometer

Time:	Line#:	Line Azimuth:	Comments:
0635			Depart dock
0830			Arrive at site/deploy gear
0859	5013	N	SOL Rerun
0911			Vessel traffic and platform on line
0917	5013	N	EOL
0921	5010	S	SOL Came off line, vessel and platform
0937		S	EOL
0946	5007	N	SOL
1000			Vessel and platform traffic on line
1003	5007	N	EOL
1009	5004	S	SOL
1023			EOL
1028	5001	N	SOL
1044			EOL
1049	5000	S	SOL
1102			EOL
1108	5003	N	SOL
1124			EOL
1128	5006	S	SOL Avoid vessel traffic
1142			EOL
1150	5009	N	SOL
1203			Avoid vessel traffic
1209	5009	N	EOL

Survey Project Log

Project ID: F23KNOC010	**Vessel:** M/V *DoC Launch*	**Start Date:** 07/15/23
Client: KNOC	**Geodesy:** NAD27 Louisiana South Feet	**Survey Type:** Pipeline Installation
Site: Survey Area	**Survey Crew:** T. Veiner, K. Heier, K. Tauzier	**Equipment:** Klein 4000 SSS, R2 Sonic MBES, SES2000 SBP, G-882 Magnetometer

Time:	Line#:	Line Azimuth:	Comments:
1211	5015	S	SOL
1217			Hypack crash, EOL 4014 E
1226	5015	S	EOL
1236	5018	N	SOL
1241			Operator error, restart line
1252	5018	N	SOL
1309			EOL
1318	5021	S	SOL
1334			EOL
1340	5024	N	SOL
1356			EOL
1404	5027	S	SOL
1421			EOL Bring in cable/reset counter
1440	5030	N	SOL
1457			EOL
1502	5033	S	SOL
1517			EOL
1523	5036	N	SOL
1540			EOL
1546	5035	S	SOL
1603			EOL
1609	5032	N	SOL
1625			EOL

Survey Project Log

Project ID: F23KNOC010	**Vessel:** M/V *DoC Launch*	**Start Date:** 07/15/23
Client: KNOC	**Geodesy:** NAD27 Louisiana South Feet	**Survey Type:** Pipeline Installation
Site: Survey Area	**Survey Crew:** T. Veiner, K. Heier, K. Tauzier	**Equipment:** Klein 4000 SSS, R2 Sonic MBES, SES2000 SBP, G-882 Magnetometer

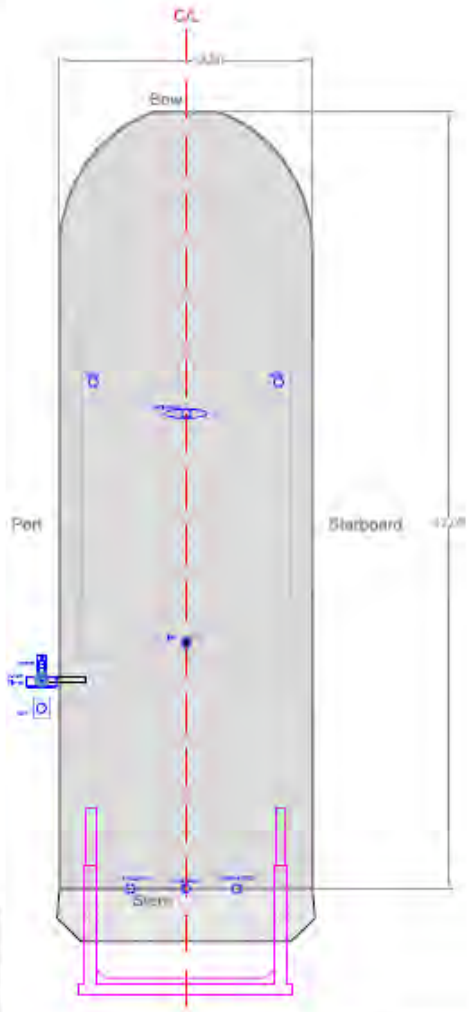
Time:	Line#:	Line Azimuth:	Comments:
1630	5029	S	SOL
1646			EOL
1705			Pickup gear/head back to dock
			8/20/2023
0600			Arrive at DoC Launch
0620			Fuel up
0650			Depart dock/transit to site
0901			Deployed gear
0911	5026	S	SOL
0928			EOL
0935	5023	N	SOL
0953			EOL
0958	5020	S	SOL
1013			EOL
1021	5017	N	SOL
1038			EOL
1043	5014	S	SOL
1059			EOL
1106	5012	N	SOL
1123			EOL
1129	5011	S	SOL
1145			EOL
1151	5008	N	SOL

Survey Project Log

Project ID: F23KNOC010	**Vessel:** M/V *DoC Launch*	**Start Date:** 07/15/23
Client: KNOC	**Geodesy:** NAD27 Louisiana South Feet	**Survey Type:** Pipeline Installation
Site: Survey Area	**Survey Crew:** T. Veiner, K. Heier, K. Tauzier	**Equipment:** Klein 4000 SSS, R2 Sonic MBES, SES2000 SBP, G-882 Magnetometer

Time:	Line#:	Line Azimuth:	Comments:
1208			EOL
1212	5005	S	SOL
1227			EOL
1232	5002	N	SOL
1248			EOL
1256	8013	E	SOL
1309			EOL
1320	8014	W	SOL
1334			EOL
1340	8015	E	SOL
1355			EOL
1400	8016	W	SOL
1414			EOL
1432			Pickup gear, head to dock

Vessel Layout
06-15-23



Survey Offsets

POS MV	X	Y	Z
	FWD (m)	STBD (m)	UP (m)
Ref to IMU	0.000	0.000	0.000
Ref to Primary GPS	3.285	-1.524	3.310
Baseline to Sec. GPS	0.000	3.000	0.000

Hypack	X	Y	Z
	STBD (ft)	FWD (ft)	down (ft)
Applanix POS MV	0.000	0.000	0.000
Hemisphere	0.000	12.360	11.380
R2Sonic	-7.800	-1.400	5.580
Innomar SBP	-7.500	-3.550	-4.030
IMU	0.000	0.000	0.000

Survey Equipment	
Position/Motion/Heading	Applanix POS MV
Position/Heading	Hemisphere
Multibeam Bathymetry	R2Sonic 2024
Subbottom	Innomar SES 2000
Side Scan Sonar	Klein 4000
Magnetometer	Geometrics G-882

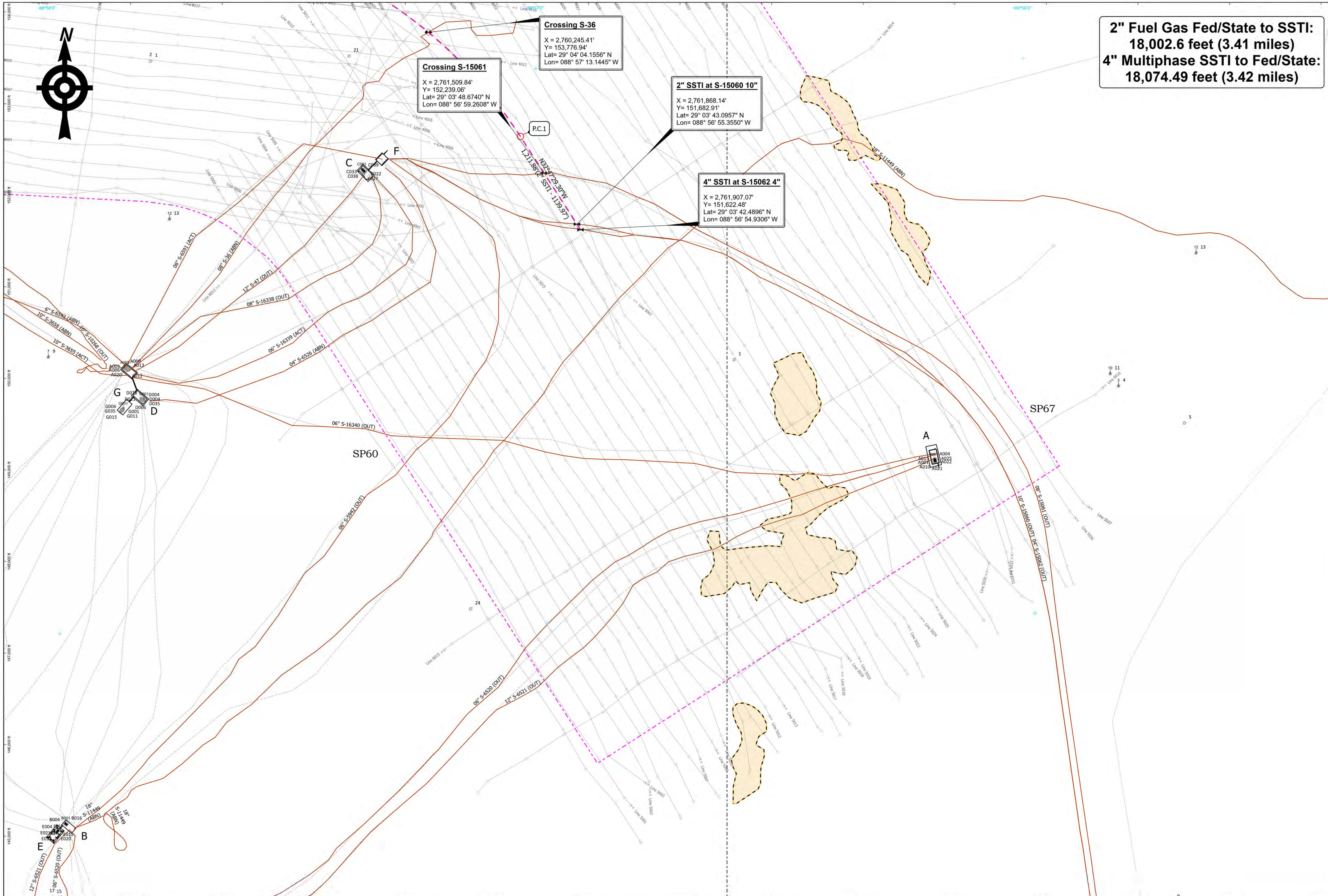
DoC Launch
12.8m (42ft) Survey Vessel

DRW: EMF
APP:
DATE: 06/07/23

MAPPING

DoC Mapping, LLC
805 Distributors Row
New Orleans, LA 70123
LA Registration VH858

Sheet 1 of 1



LEGEND

Shipwreck Avoidance	BSEE Wells
Outcrops	APD
SSTI	COM, DRL, ST
DOC - Pipelines	TA; PA
Proposed Pipeline Route (Federal)	BSEE Pipelines Status
Appurtenances	ABN; A/C; OUT
Shipwreck	ACT
Tracklines	PABN
Survey Area (Federal)	PREM; PROP
Survey Area (State)	Federal/State Line
DoC Platforms	Coastline 2023
	Block Boundaries
	BOEM Active Leases

Curve Data

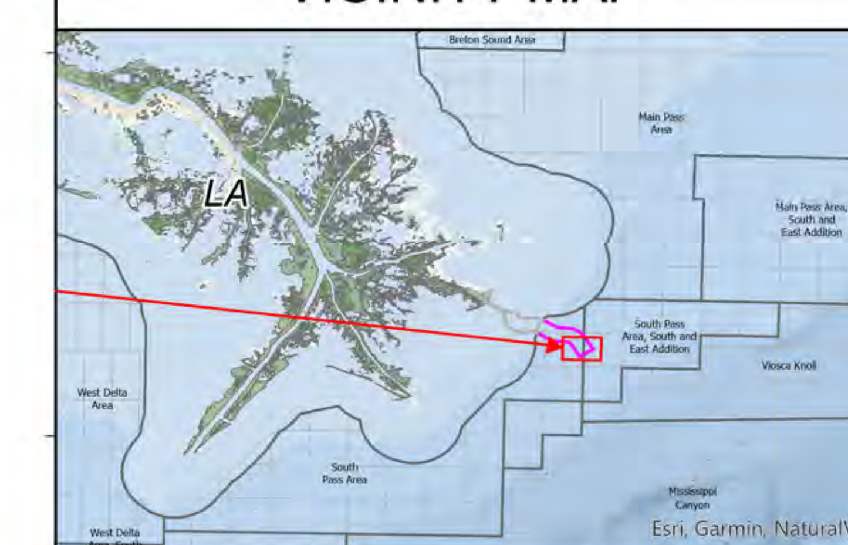
CURVE 1 DATA	
P.C. 12+12 X= 2,761,250.74' Y= 152,641.24' LAT.= 29° 3' 52.71" LONG= 88° 57' 2.09"	P.I. CURVE 1 X= 2,759,863.67' Y= 154,794.25' LAT.= 29° 4' 14.30" LONG= 88° 57' 17.21"
P.T. 59+46 X= 2,757,305.97' Y= 154,926.64' LAT.= 29° 4' 16.14" LONG=88° 57' 45.99"	R= 5,000.00' L= 4,733.80' Δ= 54° 14' 43.32" T= 2,561.13'

CURVE 2 DATA	
P.C. 95+17 X= 2,753,739.71' Y= 155,111.24' LAT.= 29° 4' 18.69" LONG=88° 58' 26.12"	P.I. CURVE 2 X= 2,752,555.86' Y= 155,172.52' LAT.= 29° 4' 19.54" LONG= 88° 58' 39.45"
P.T. 118+45 X= 2,751,525.53' Y= 155,758.75' LAT.= 29° 4' 25.55" LONG=88° 58' 50.92"	R= 5,000.00' L= 2,327.88' Δ= 26° 40' 31.96" T= 1185.43'

CURVE 3 DATA	
P.C. 173+27 X= 2,746,760.83' Y= 158,469.74' LAT.= 29° 4' 53.35" LONG=88° 59' 43.97"	P.I. CURVE 3 X= 2,745,409.33' Y= 159,238.70' LAT.= 29° 5' 1.23" LONG= 88° 59' 59.03"
P.T. 203+42 X= 2,743,860.10' Y= 159,105.57' LAT.= 29° 5' 0.23" LONG= 89° 0' 16.51"	R= 5,000.00' L= 3,015.07' Δ= 34° 33' 0.45" T= 1,554.94'

DISCLAIMER

VICINITY MAP



ARCHAEOLOGICAL & HAZARD SURVEY

POST-PLOT MAP
PROPOSED BUNDLED 4" MULTIPHASE & 2" FUEL GAS PIPELINE ROUTE
4" SSTI ON 4" S-15062 & 2" SSTI ON 10" S-15060
BLOCK 60 TO BLOCK 6 FED/STATE LINE
SOUTH PASS AREA
GULF OF MEXICO

DoC Mapping
805 Distributors Row
New Orleans, LA 70123

LAPELS License No. VF859

PREPARED FOR:

DRAFT

KNOC

GEODETIC SETTINGS

Geodetic Datum: NAD 1927 StatePlane Louisiana South FIPS 1702
Central Meridian: -91.3333
Units: Foot US

SCALE: 1 inch = 500 feet

0 500 1,000 2,000 3,000 Feet

NOTES

Geophysical survey data was collected onboard the *M/V DoC Launch* on July 15-22 and August 10-20, 2023.
Water depths were tide corrected to MLLW.
Magnetic anomalies avoidances are based on Shallow Hazards NTL 2008-G05

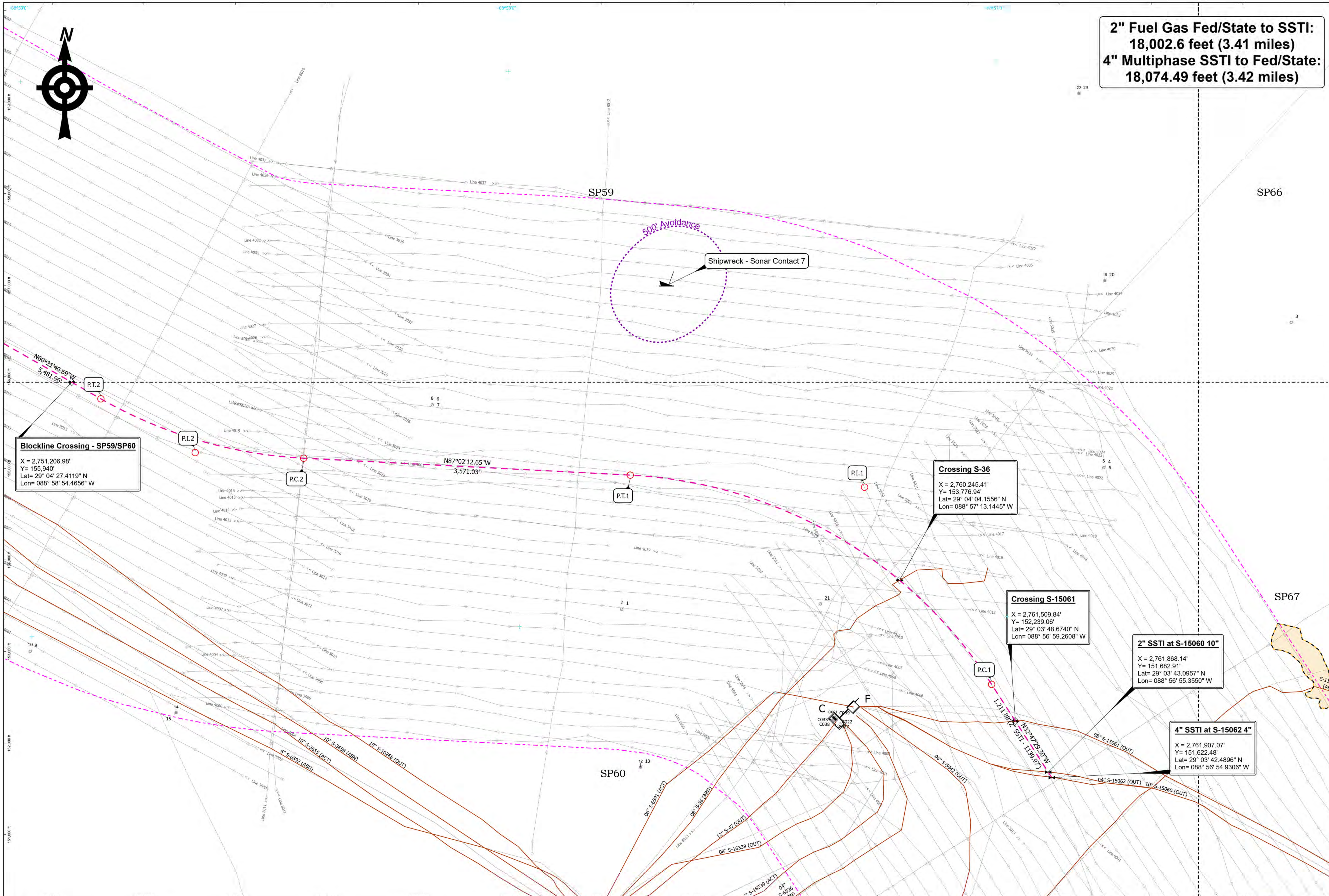
Revision	Date	Description	Created	Checked	Approved
0	10/19/2023	Preliminary	SB	TM	EF
1	10/25/2023	Updated per client comments	SB	TM	EF

Job No.:	F23KNOC010
Client.:	KNOC
File Name:	KNOC_SP60_Federal

SHEET

1 of 12

Date Exported: 10/25/2023



LEGEND

- Shipwreck Avoidance
- Outcrops
- SSTI
- DOC - Pipelines
- Proposed Pipeline Route (Federal)
- Appurtenances
- Shipwreck
- Tracklines
- Survey Area (Federal)
- Survey Area (State)
- DoC Platforms

BSEE Wells

- APD
- COM, DRL, ST
- TA; PA

BSEE Pipelines Status

- ABN; A/C; OUT
- ACT
- PABN
- PREM; PROP
- Federal/State Line
- Coastline 2023
- Block Boundaries
- BOEM Active Leases

Curve Data

CURVE 1 DATA	
P.C. 12+12 X= 2,761,250.74' Y= 152,641.24' LAT.= 29° 3' 52.71" LONG= 88° 57' 2.09"	P.I. CURVE 1 X= 2,759,863.67' Y= 154,794.25' LAT.= 29° 4' 14.30" LONG= 88° 57' 17.21"
P.T. 59+46 X= 2,757,305.97' Y= 154,926.64' LAT.= 29° 4' 16.14" LONG=88° 57' 45.99"	R= 5,000.00' L= 4,733.80' Δ= 54° 14' 43.32" T= 2,561.13'

CURVE 2 DATA	
P.C. 95+17 X= 2,753,739.71' Y= 155,111.24' LAT.= 29° 4' 18.69" LONG=88° 58' 26.12"	P.I. CURVE 2 X= 2,752,555.86' Y= 155,172.52' LAT.= 29° 4' 19.54" LONG= 88° 58' 39.45"
P.T. 118+45 X= 2,751,525.53' Y= 155,758.75' LAT.= 29° 4' 25.55" LONG=88° 58' 50.92"	R= 5,000.00' L= 2,327.88' Δ= 26° 40' 31.96" T= 1185.43'

CURVE 3 DATA	
P.C. 173+27 X= 2,746,760.83' Y= 158,469.74' LAT.= 29° 4' 53.35" LONG=88° 59' 43.97"	P.I. CURVE 3 X= 2,745,409.33' Y= 159,238.70' LAT.= 29° 5' 1.23" LONG= 88° 59' 59.03"
P.T. 203+42 X= 2,743,860.10' Y= 159,105.57' LAT.= 29° 5' 0.23" LONG= 89° 0' 16.51"	R= 5,000.00' L= 3,015.07' Δ= 34° 33' 0.45" T= 1,554.94'

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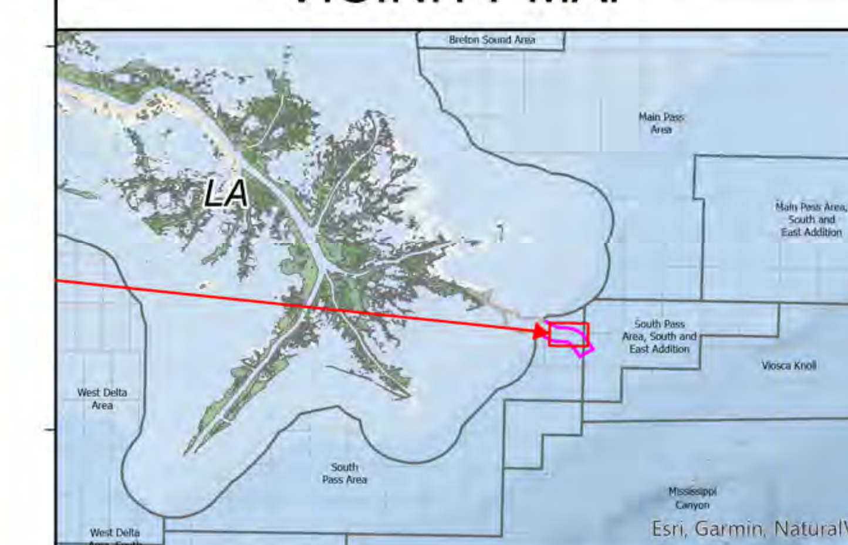
VICINITY MAP



ARCHAEOLOGICAL & HAZARD SURVEY

POST-PLOT MAP
PROPOSED BUNDLED 4" MULTIPHASE &
2" FUEL GAS PIPELINE ROUTE
4" SSTI ON 4" S-15062 &
2" SSTI ON 10" S-15060
BLOCK 60 TO BLOCK 6 FED/STATE LINE
SOUTH PASS AREA
GULF OF MEXICO

DoC Mapping
805 Distributors Row
New Orleans, LA 70123

LAPELS License No. VF859

PREPARED FOR:

DRAFT

KNOC

GEODETIC SETTINGS

Geodetic Datum: NAD 1927 StatePlane Louisiana South FIPS 1702
Central Meridian: -91.3333
Units: Foot US

SCALE: 1 inch = 500 feet

0 500 1,000 2,000 3,000 Feet

NOTES

Geophysical survey data was collected onboard the M/V DoC Launch on July 15-22 and August 10-20, 2023.
Water depths were tide corrected to MLLW.
Magnetic anomalies avoidances are based on Shallow Hazards NTL 2008-G05.

Revision	Date	Description	Created	Checked	Approved
0	10/19/2023	Preliminary	SB	TM	EF
1	10/25/2023	Updated per client comments	SB	TM	EF

Job No.:	F23KNOC010	SHEET
Client.:	KNOC	
File Name:	KNOC_SP60_Federal	2 of 12

Date Exported: 10/25/2023

2" Fuel Gas Fed/State to SSTI: 18,002.6 feet (3.41 miles)
4" Multiphase SSTI to Fed/State: 18,074.49 feet (3.42 miles)

SP6

STATE WATERS
FEDERAL WATERS

Fed/State Line

X = 2,746,107.54'
Y= 158,788.74'
Lat= 29° 04' 56.6404" N
Lon= 088° 59' 51.2621" W

P.I.3

P.T.3

P.C.3

Blockline Crossing - SP59/SP6

X = 2,748,750'
Y= 157,337.95'
Lat= 29° 04' 41.7468" N
Lon= 088° 59' 21.8239" W

N60°21'40.69"W
5,481.96'

Blockline Crossing - SP59/SP60

X = 2,751,206.98'
Y= 155,940'
Lat= 29° 04' 27.4119" N
Lon= 088° 58' 54.4656" W

P.T.2

P.I.2

P.C.2

N87°02'12.65"W
3,571.03'

500' Avoidance

10" S-10268 (OUT)
10" S-3658 (ABN)
10" S-3655 (ACT)
6" S-6592 (ABN)

SP59
SP17
SP17
SP60

10.9

2,743,000 ft | 2,744,000 ft | 2,745,000 ft | 2,746,000 ft | 2,747,000 ft | 2,748,000 ft | 2,749,000 ft | 2,750,000 ft | 2,751,000 ft | 2,752,000 ft | 2,753,000 ft | 2,754,000 ft | 2,755,000 ft | 2,756,000 ft | 2,757,000 ft

157,000 ft | 156,000 ft | 155,000 ft | 154,000 ft | 153,000 ft

LEGEND

- Shipwreck Avoidance
- Outcrops
- SSTI
- DOC - Pipelines
- Proposed Pipeline Route (Federal)
- Proposed Pipeline Route (State)
- Appurtenances
- Shipwreck
- Tracklines
- Survey Area (Federal)
- Survey Area (State)
- DoC Platforms
- BSEE Wells
- APD
- COM, DRL, ST
- TA; PA
- BSEE Pipelines
- Status
- ABN; A/C; OUT
- ACT
- PABN
- PREM; PROP
- Federal/State Line
- Coastline 2023
- Block Boundaries
- BOEM Active Leases

Curve Data

CURVE 1 DATA	
P.C. 12+12	P.I. CURVE 1
X= 2,761,250.74'	X= 2,759,863.67'
Y= 152,641.34'	Y= 154,794.26'
LAT= 29° 3' 52.71"	LAT= 29° 4' 14.30"
LONG= 88° 57' 2.09"	LONG= 88° 57' 17.21"
P.T. 59+46	R= 5,000.00'
X= 2,757,305.97'	L= 4,733.80'
Y= 154,926.64'	Δ= 54° 14' 43.32"
LAT= 29° 4' 16.14"	T= 2,561.13'
LONG= 88° 57' 45.99"	

CURVE 2 DATA	
P.C. 95+17	P.I. CURVE 2
X= 2,753,739.71'	X= 2,752,555.86'
Y= 155,111.24'	Y= 155,172.65'
LAT= 29° 4' 16.69"	LAT= 29° 4' 19.54"
LONG= 88° 58' 26.12"	LONG= 88° 58' 39.45"
P.T. 118+45	R= 5,000.00'
X= 2,751,525.53'	L= 2,327.88'
Y= 155,754.75'	Δ= 26° 40' 31.96"
LAT= 29° 4' 25.55"	T= 1185.43'
LONG= 88° 58' 50.92"	

CURVE 3 DATA	
P.C. 173+27	P.I. CURVE 3
X= 2,746,760.83'	X= 2,745,409.33'
Y= 158,469.74'	Y= 159,238.70'
LAT= 29° 4' 53.35"	LAT= 29° 5' 1.23"
LONG= 88° 59' 43.97"	LONG= 88° 59' 59.03"
P.T. 203+42	R= 5,000.00'
X= 2,743,860.10'	L= 3,015.07'
Y= 159,105.57'	Δ= 34° 33' 0.45"
LAT= 29° 5' 0.23"	T= 1,554.94'
LONG= 89° 0' 16.51"	

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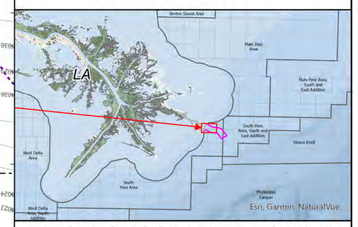
VICINITY MAP



ARCHAEOLOGICAL & HAZARD SURVEY

POST-PLOT MAP
PROPOSED BUNDLED 4" MULTIPHASE & 2" FUEL GAS PIPELINE ROUTE
4" SSTI ON 4" S-15062 &
2" SSTI ON 10" S-15060
BLOCK 60 TO BLOCK 6 FED/STATE LINE
SOUTH PASS AREA
GULF OF MEXICO

DoC Mapping
805 Distributors Row
New Orleans, LA 70123

LAPELS License No. VF859

PREPARED FOR:

DRAFT KNOC

GEODETIC SETTINGS

Geodetic Datum: NAD 1927 StatePlane Louisiana South FIPS 1702
Central Meridian: -91.3333
Units: Foot US

SCALE: 1 inch = 500 feet

0 | 500 | 1,000 | 2,000 | 3,000 Feet

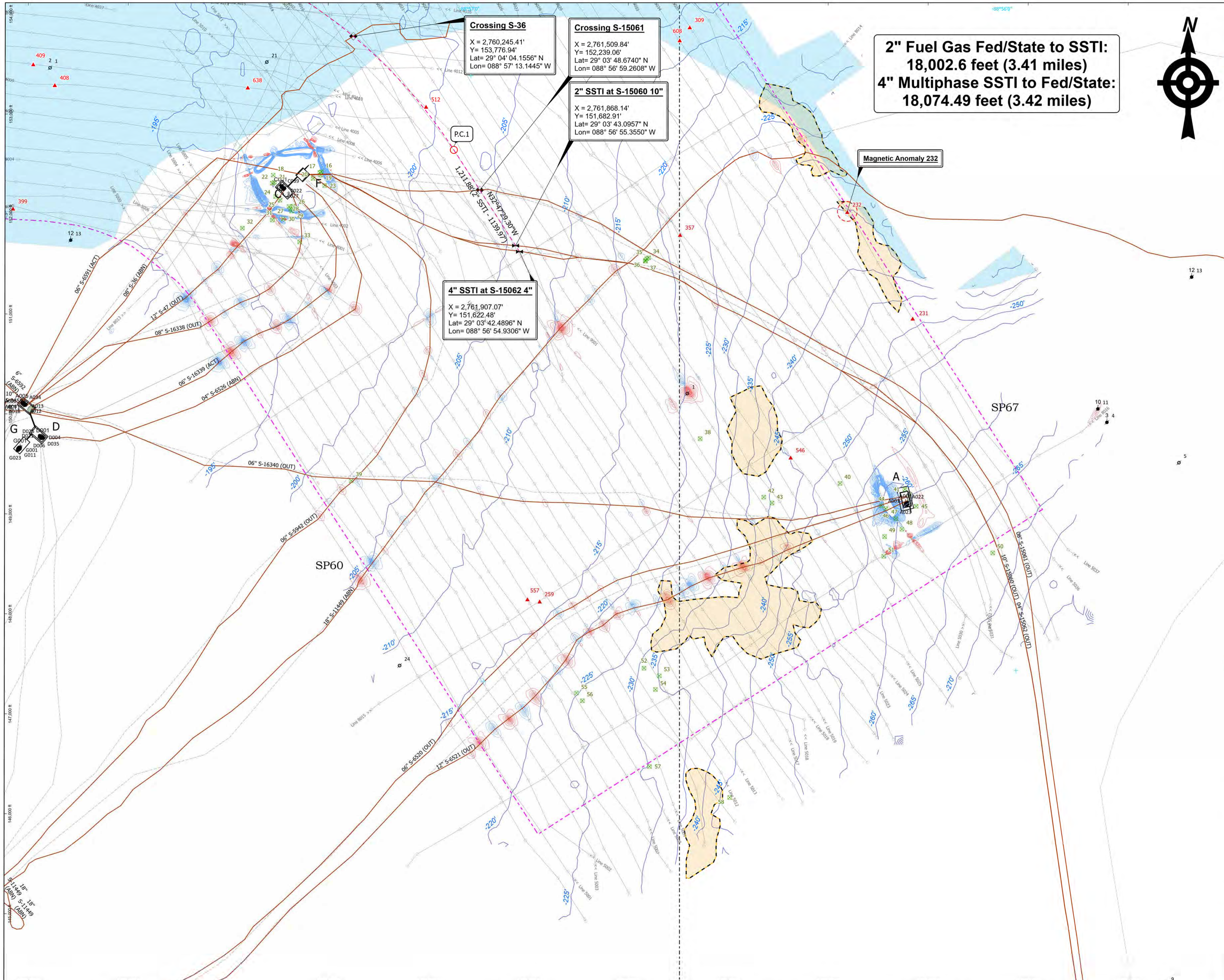
NOTES

Geophysical survey data was collected onboard the *M/V DoC Launch* on July 15-22 and August 10-20, 2023.
Water depths were tide corrected to MLLW.
Magnetic anomalies avoidances are based on Shallow Hazards NTL 2008-G05.

Revision	Date	Description	Created	Checked	Approved
0	10/19/2023	Preliminary	SB	TM	EF
1	10/25/2023	Updated per client comments	SB	TM	EF

Job No.:	F23KNOC010	SHEET	
Client.:	KNOC		
File Name:	KNOC_SP60_Federal	3 of 12	

Date Exported: 10/25/2023



LEGEND

- Shipwreck Avoidance
- Shipwreck
- SSTI
- DOC - Pipelines
- Proposed Pipeline Route (Federal)
- Appurtenances
- Unknown Magnetic Anomalies
- Sonar Contacts
- Mudflow Outlines
- Magnetic Anomaly Avoidance (30m)
- Shipwreck Extents
- Outcrops
- Tracklines
- Bathymetric Contour (5 ft)
- Survey Area (Federal)
- Survey Area (State)
- DoC Platforms
- BSEE Wells: APD; COM, DRL, ST; TA; PA
- BSEE Pipelines Status: ABN; A/C; OUT; ACT; PABN; PREM; PROP
- Federal/State Line
- Coastline 2023
- Block Boundaries
- BOEM Active Leases
- Magnetic Contours: +10nT; -10nT

Curve Data

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VICINITY MAP

ARCHAEOLOGICAL & HAZARD SURVEY

SEAFLOOR FEATURES MAP
PROPOSED BUNDLED 4" MULTIPHASE & 2" FUEL GAS PIPELINE ROUTE
4" SSTI ON 4" S-15062 & 2" SSTI ON 10" S-15060
BLOCK 60 TO BLOCK 6 FED/STATE LINE
SOUTH PASS AREA
GULF OF MEXICO

DoC Mapping
805 Distributors Row
New Orleans, LA 70123
LAPELS License No. VF859

PREPARED FOR:

DRAFT KNOC

Unknown Magnetic Anomalies

Anomaly No.	Signature	Intensity (nT)	Duration (ft.)	NAD27 X	NAD27 Y
231	DIPOLE	19	183	2,765,840	150,959
232	MONOPOLE	112	775	2,765,186	152,025
259	MONOPOLE	13	555	2,762,108	148,128
309	MONOPOLE	27	533	2,763,611	153,872
399	MONOPOLE	6	290	2,756,842	152,058
408	MONOPOLE	16	428	2,757,260	153,294
409	MONOPOLE	7	342	2,757,044	153,502
512	MONOPOLE	7	101	2,760,972	153,078
546	DIPOLE	36	290	2,764,620	149,568
557	MONOPOLE	10	238	2,761,986	148,150
608	DIPOLE	9	478	2,763,511	153,742
625	MONOPOLE	10	385	2,762,602	154,138
638	MONOPOLE	33	380	2,759,190	153,270
357	MONOPOLE	15	121	2,763,514	151,796

Sonar Contacts

Contact No.	Length (ft.)	Width (ft.)	Height (ft.)	NAD27 X	NAD27 Y
16	5.5	3.7	0.9	2,759,925	152,421
17	5.6	2.5	0.6	2,759,911	152,414
18	41.1	12.9	1.4	2,759,444	152,389
19	25.1	11.1	2.1	2,759,917	152,390
20	16.1	7.1	3.3	2,759,844	152,354
21	15.2	3.1	1.0	2,759,455	152,315
22	8.7	2.9	1.8	2,759,435	152,308
23	19.1	4.6	0.6	2,759,958	152,283
24	15.1	1.1	0.9	2,759,470	152,175
25	2.8	1.4	2.5	2,759,512	152,137
26	6.5	5.5	1.0	2,759,645	152,077
27	35.0	13.9	2.6	2,759,603	152,074
28	46.7	4.5	0.5	2,759,618	152,053
29	4.5	2.2	2.6	2,759,628	152,029
30	2.7	0.7	0.7	2,759,545	151,951
31	6.7	3.7	1.7	2,759,436	151,939
32	7.5	1.9	0.6	2,759,136	151,858
33	6.2	7.4	1.4	2,759,709	151,721
34	34.6	7.0	1.2	2,763,198	151,561
35	11.5	5.3	0.7	2,763,180	151,553
36	15.1	4.8	0.9	2,763,167	151,536
37	9.9	5.1	0.8	2,763,166	151,528
38	5.0	2.0	0.2	2,763,715	149,752
39	115.6	8.8	0.6	2,760,225	149,332
40	15.2	2.8	0.7	2,765,113	149,304
41	11.1	0.7	0.1	2,765,762	149,246
42	17.7	6.6	0.7	2,764,350	149,167
43	5.3	3.7	1.5	2,764,433	149,109
44	1.5	1.0	1.2	2,765,528	149,082
45	16.6	2.0	0.4	2,765,874	149,076
46	13.4	10.5	0.2	2,765,571	149,052
47	7.9	2.0	0.4	2,765,671	148,952
48	17.2	3.6	0.3	2,765,732	148,847
49	4.8	4.6	1.3	2,765,559	148,773
50	26.0	2.8	0.3	2,766,640	148,610
51	11.3	3.0	0.2	2,765,551	148,577
52	10.9	6.7	0.6	2,763,153	147,456
53	17.6	5.1	4.5	2,763,306	147,380
54	15.2	6.7	0.3	2,763,267	147,243
55	38.3	15.0	4.1	2,762,477	147,207
56	22.9	3.1	0.9	2,762,536	147,130
57	25.4	0.7	0.5	2,763,207	146,471
58	25.8	15.3	5.9	2,764,010	146,162

GEODETIC SETTINGS

Geodetic Datum: NAD 1927 StatePlane Louisiana South FIPS 1702
Central Meridian: -91.3333
Units: Foot US

SCALE: 1 inch = 500 feet

0 500 1,000 2,000 3,000 Feet

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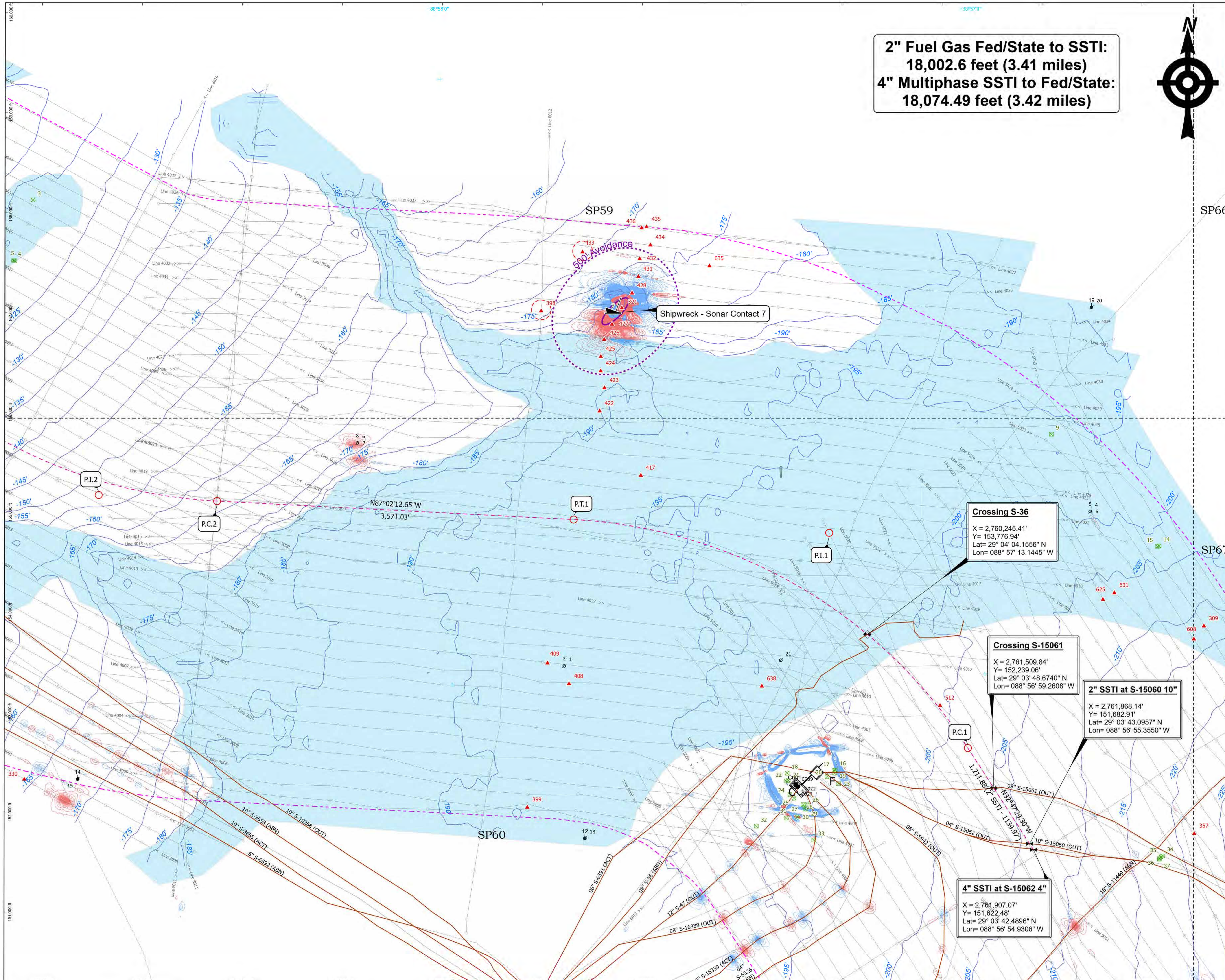

LEGEND

Shipwreck Avoidance	DoC Platforms
Shipwreck	BSEE Wells
SSTI	APD
DOC - Pipelines	COM, DRL, ST
Proposed Pipeline Route (Federal)	TA; PA
Appurtenances	BSEE Pipelines Status
Unknown Magnetic Anomalies	ABN; A/C; OUT
Sonar Contacts	ACT
Mudflow Outlines	PABN
Magnetic Anomaly Avoidance (30m)	PREM; PROP
Shipwreck Extents	Federal/State Line
Outcrops	Coastline 2023
Tracklines	Block Boundaries
Bathymetric Contour (5 ft)	BOEM Active Leases
Survey Area (Federal)	Magnetic Contours
Survey Area (State)	+10nT
	-10nT

Curve Data

CURVE 1 DATA	
P.C. 12+12 X= 2,761,250.74' Y= 152,641.24' LAT.= 29° 3' 52.71" LONG= 88° 57' 2.09"	P.I. CURVE 1 X= 2,759,863.67' Y= 154,794.25' LAT.= 29° 4' 14.30" LONG= 88° 57' 17.21"
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PROPOSED BUNDLED 4" MULTIPHASE & 2" FUEL GAS PIPELINE ROUTE
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LAPELS License No. VF859

PREPARED FOR:

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Unknown Magnetic Anomalies

Anomaly No.	Signature	Intensity (nT)	Duration (ft.)	NAD27 X	NAD27 Y
309	MONOPOLE	27	533	2,763,611	153,872
321	DIPOLE	10578	889	2,757,788	157,054
330	MONOPOLE	39	329	2,751,810	152,338
398	DIPOLE	63	2130	2,756,981	157,025
399	MONOPOLE	6	290	2,756,842	152,058
408	MONOPOLE	16	428	2,757,260	153,294
409	MONOPOLE	7	342	2,757,044	153,502
417	MONOPOLE	6	235	2,757,978	155,379
422	MONOPOLE	38	1960	2,757,566	156,023
423	MONOPOLE	75	1934	2,757,615	156,254
424	DIPOLE	139	2735	2,757,577	156,424
425	DIPOLE	326	2039	2,757,578	156,569
426	DIPOLE	1247	1557	2,757,612	156,740
427	DIPOLE	6016	1117	2,757,690	156,891
428	DIPOLE	4360	1616	2,757,891	157,203
431	MONOPOLE	851	2139	2,757,954	157,369
432	DIPOLE	67	777	2,757,967	157,546
433	DIPOLE	85	2606	2,757,396	157,614
434	DIPOLE	71	2526	2,758,075	157,684
435	DIPOLE	31	2294	2,758,036	157,866
436	MONOPOLE	24	1580	2,757,986	157,854
512	MONOPOLE	7	101	2,760,972	153,078
608	DIPOLE	9	478	2,763,511	153,742
625	MONOPOLE	10	385	2,762,602	154,138
631	MONOPOLE	12	251	2,762,716	154,204
635	MONOPOLE	9	222	2,758,666	157,474
638	MONOPOLE	33	380	2,759,190	153,270
357	MONOPOLE	15	121	2,763,514	151,796

Sonar Contacts

Contact No.	Length (ft.)	Width (ft.)	Height (ft.)	NAD27 X	NAD27 Y
3	23.0	7.3	0.7	2,751,900	158,124
4	3.4	1.1	0.6	2,751,704	157,517
5	4.4	1.2	0.8	2,751,714	157,517
7	314.1	60.7	32.7	2,757,701	156,995
9	22.9	27.2	5.6	2,762,087	155,779
14	11.8	2.3	2.6	2,763,163	154,663
15	4.0	1.1	3.1	2,763,146	154,657
16	5.5	3.7	0.9	2,759,925	152,421
17	5.6	2.5	0.6	2,759,911	152,414
18	41.1	12.9	1.4	2,759,444	152,389
19	25.1	11.1	2.1	2,759,917	152,390
20	16.1	7.1	3.3	2,759,844	152,354
21	15.2	3.1	1.0	2,759,455	152,315
22	8.7	2.9	1.8	2,759,435	152,308
23	19.1	4.6	0.6	2,759,958	152,283
24	15.1	1.1	0.9	2,759,470	152,175
25	2.8	1.4	2.5	2,759,512	152,137
26	6.5	5.5	1.0	2,759,645	152,077
27	35.0	13.9	2.6	2,759,603	152,074
28	46.7	4.5	0.5	2,759,618	152,053
29	4.5	2.2	2.6	2,759,628	152,029
30	2.7	0.7	0.7	2,759,545	151,951
31	6.7	3.7	1.7	2,759,436	151,939
32	7.5	1.9	0.6	2,759,136	151,858
33	6.2	7.4	1.4	2,759,709	151,721
34	34.6	7.0	1.2	2,763,198	151,561
35	11.5	5.3	0.7	2,763,180	151,553
36	15.1	4.8	0.9	2,763,167	151,536
37	9.9	5.1	0.8	2,763,166	151,528

GEODETIC SETTINGS

Geodetic Datum: NAD 1927 StatePlane Louisiana South FIPS 1702
Central Meridian: -91.3333
Units: Foot US

SCALE: 1 inch = 500 feet

0 500 1,000 2,000 3,000 Feet

NOTES

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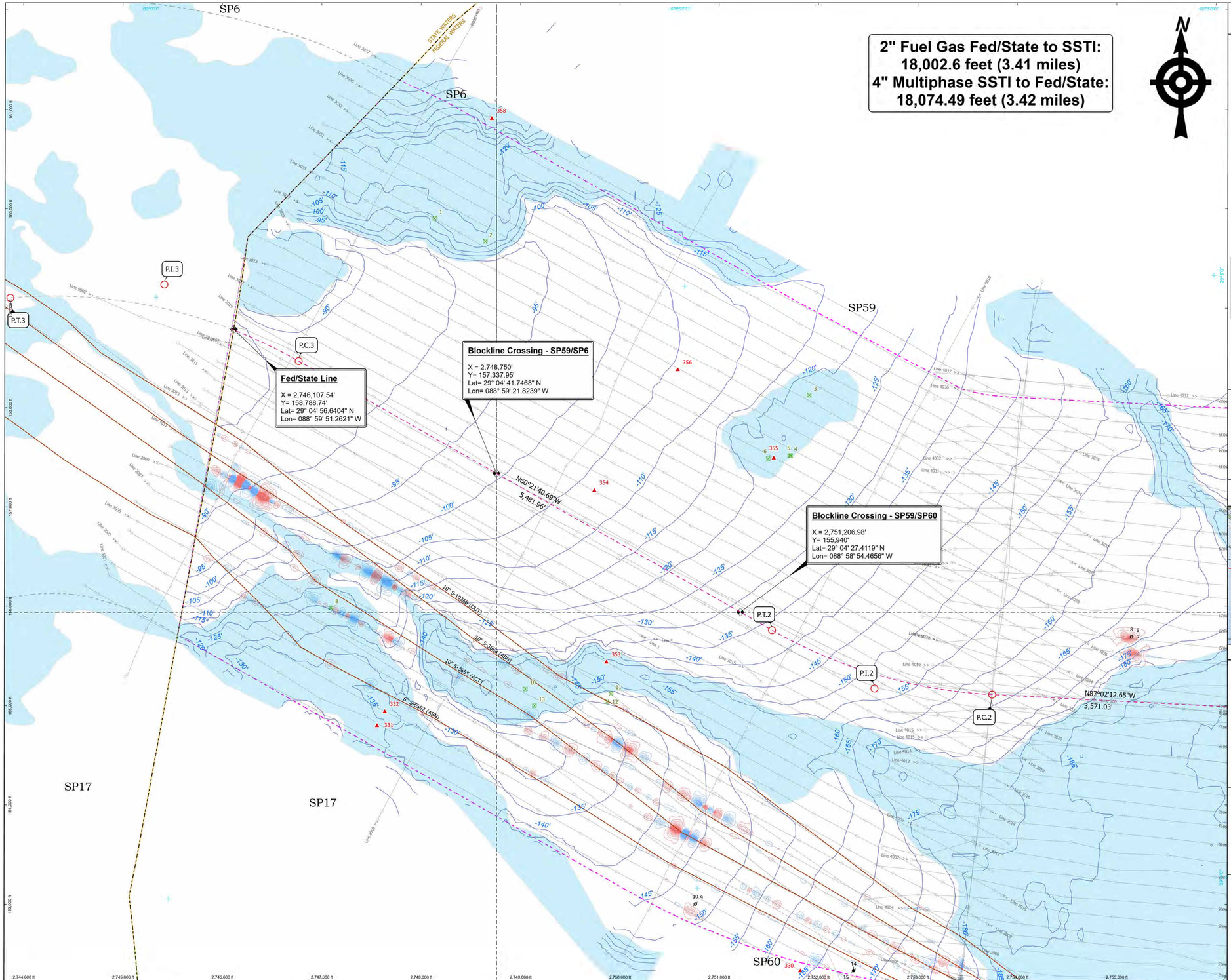
Magnetic anomalies avoidances are based on Shallow Hazards NTL 2008-G05.

Revision	Date	Description	Created	Checked	Approved
0	10/19/2023	Preliminary	SB	TM	EF
1	10/25/2023	Updated per client comments	SB	TM	EF

Job No.:	F23KNOC010	SHEET
Client.:	KNOC	
File Name:	KNOC_SP60_Federal	5 of 12

Date Exported: 10/25/2023



2" Fuel Gas Fed/State to SSTI: 18,002.6 feet (3.41 miles)
4" Multiphase SSTI to Fed/State: 18,074.49 feet (3.42 miles)

N

LEGEND

- Shipwreck Avoidance
- Shipwreck
- SSTI
- DOC - Pipelines
- Proposed Pipeline Route (Federal)
- Proposed Pipeline Route (State)
- Appurtenances
- Unknown Magnetic Anomalies
- Sonar Contacts
- Mudflow Outlines
- Magnetic Anomaly Avoidance (30m)
- Shipwreck Extents
- Outcrops
- Tracklines
- Bathymetric Contour (5 ft)
- Survey Area (Federal)
- Survey Area (State)
- DoC Platforms

BSEE Wells
- APD
- COM, DRL, ST
- TA; PA

BSEE Pipelines
Status
- ABN; A/C; OUT
- ACT
- PABN
- PREM; PROP

- Federal/State Line
- Coastline 2023
- Block Boundaries
- BOEM Active Leases

Magnetic Contours
- +10nT
- -10nT

Curve Data

CURVE 1 DATA		CURVE 3 DATA	
P.C. 12+12	P.I. CURVE 1	P.C. 173+27	P.I. CURVE 3
X= 2,761,250.74'	X= 2,759,863.67'	X= 2,748,760.63'	X= 2,745,409.33'
Y= 152,641.24'	Y= 154,794.25'	Y= 158,469.74'	Y= 159,238.70'
LAT= 29° 3' 52.71"	LAT= 29° 4' 14.30"	LAT= 29° 4' 53.35"	LAT= 29° 5' 1.23"
LONG= 88° 57' 2.09"	LONG= 88° 57' 17.21"	LONG= 88° 59' 43.97"	LONG= 88° 59' 59.05"
P.T. 59+46	R= 5,000.00'	P.T. 203+42	R= 5,000.00'
X= 2,757,305.97'	L= 4,733.80'	X= 2,743,960.10'	L= 3,015.07'
Y= 154,926.64'	Δ= 54° 14' 43.32"	Y= 159,105.57'	Δ= 34° 33' 0.45"
LAT= 29° 4' 16.14"	T= 2,561.13'	LAT= 29° 5' 0.28"	T= 1,554.94'
LONG= 88° 57' 45.99"		LONG= 89° 0' 16.51"	

CURVE 2 DATA	
P.C. 35+17	P.I. CURVE 2
X= 2,753,739.71'	X= 2,752,555.96'
Y= 155,111.24'	Y= 155,172.52'
LAT= 29° 4' 18.69"	LAT= 29° 4' 19.54"
LONG= 88° 58' 26.12"	LONG= 88° 58' 39.45"
P.T. 118+45	R= 5,000.00'
X= 2,751,525.53'	L= 2,127.86'
Y= 155,756.75'	Δ= 26° 40' 31.96"
LAT= 29° 4' 25.55"	T= 1185.43'
LONG= 88° 58' 50.92"	

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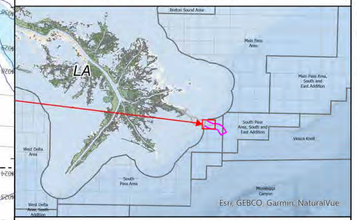
VICINITY MAP



ARCHAEOLOGICAL & HAZARD SURVEY

SEAFLOOR FEATURES MAP
PROPOSED BUNDLED 4" MULTIPHASE & 2" FUEL GAS PIPELINE ROUTE
4" SSTI ON 4" S-15062 &
2" SSTI ON 10" S-15060
BLOCK 60 TO BLOCK 6 FED/STATE LINE
SOUTH PASS AREA
GULF OF MEXICO

DoC Mapping
805 Distributors Row
New Orleans, LA 70123

LAPELS License No. VF859

PREPARED FOR:

DRAFT KNOC

Unknown Magnetic Anomalies

Anomaly No.	Signature	Intensity (nT)	Duration (ft.)	NAD27 X	NAD27 Y
330	MONOPOLE	39	329	2,751,810	152,338
331	MONOPOLE	7	273	2,747,549	154,810
332	MONOPOLE	39	554	2,747,627	154,951
353	MONOPOLE	14	880	2,749,857	155,448
354	MONOPOLE	11	214	2,749,735	157,176
355	MONOPOLE	6	286	2,751,542	157,502
356	MONOPOLE	23	219	2,750,576	158,391
358	DIPOLE	14	287	2,748,704	160,920

Sonar Contacts

Contact No.	Length (ft.)	Width (ft.)	Height (ft.)	NAD27 X	NAD27 Y
1	51.1	12.7	9.1	2,748,130	159,904
2	90.7	10.7	16.4	2,748,639	159,674
3	23.0	7.3	0.7	2,751,900	158,124
4	3.4	1.1	0.6	2,751,704	157,517
5	4.4	1.2	0.8	2,751,714	157,517
6	22.0	8.3	0.5	2,751,486	157,487
8	19.4	14.6	5.5	2,747,083	155,983
10	16.1	1.5	1.0	2,749,041	155,167
11	9.8	0.9	1.8	2,749,903	155,121
12	7.7	1.0	0.7	2,749,862	155,039
13	7.3	1.8	1.6	2,749,132	154,999

GEODETIC SETTINGS

Geodetic Datum: NAD 1927 StatePlane Louisiana South FIPS 1702
Central Meridian: -91.3333
Units: Foot US

SCALE: 1 inch = 500 feet

0 500 1,000 2,000 3,000 Feet

NOTES

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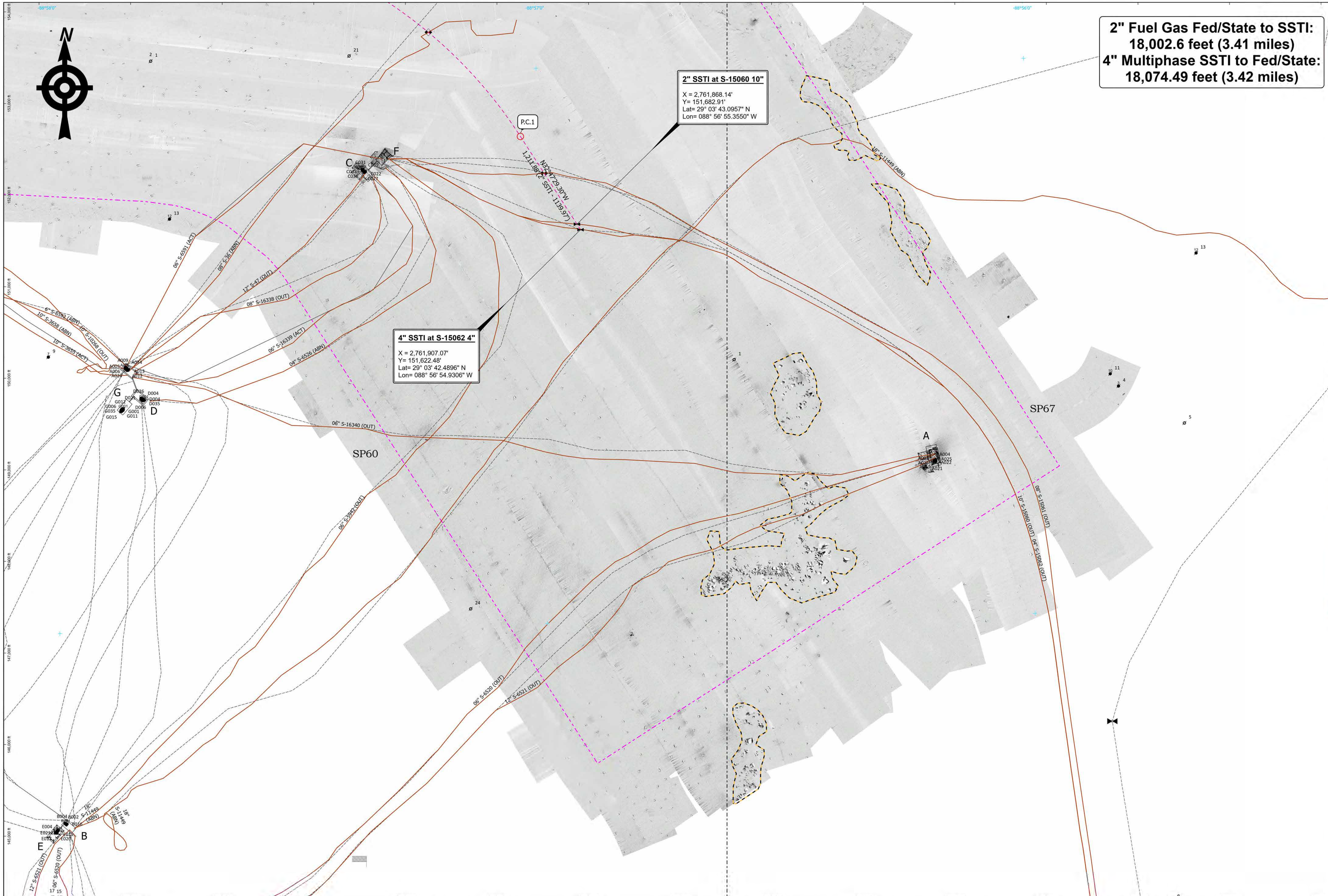
Magnetic anomalies avoidances are based on Shallow Hazards NTL 2008-G05.

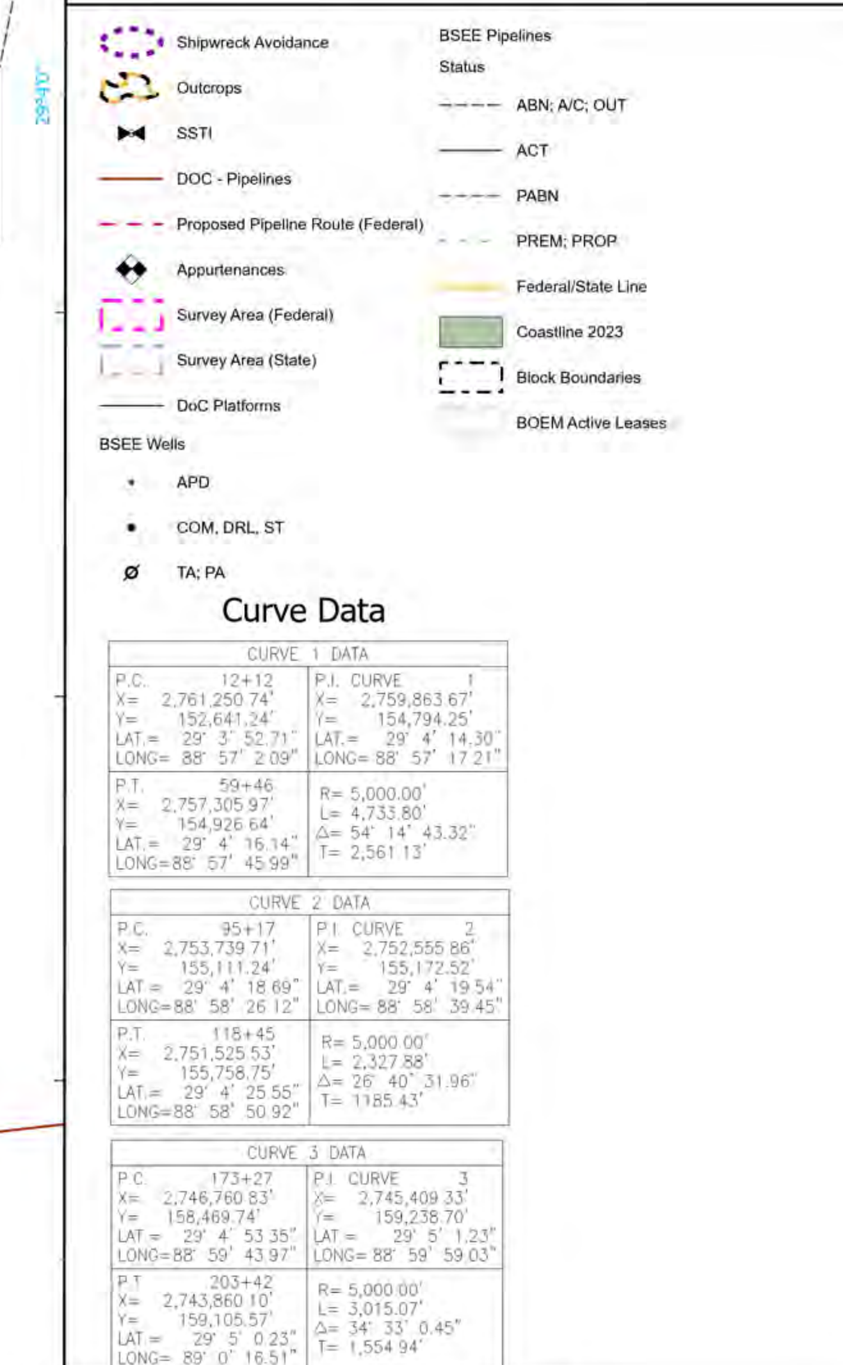
Revision	Date	Description	Created	Checked	Approved
0	10/19/2023	Preliminary	SB	TM	EF
1	10/25/2023	Updated per client comments	SB	TM	EF

Job No.:	F23KNOC010	SHEET	
Client.:	KNOC		
File Name:	KNOC_SP60_Federal	6 of 12	

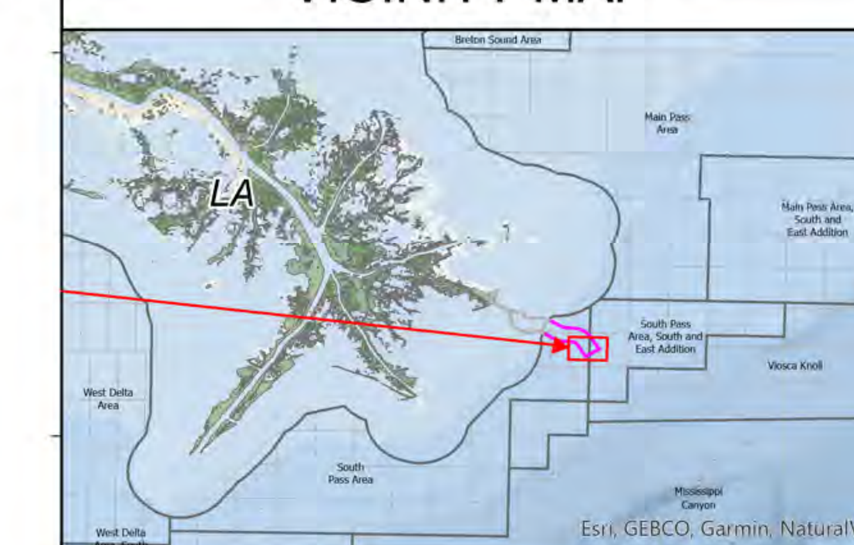
Date Exported: 10/25/2023



LEGEND



VICINITY MAP



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ARCHAEOLOGICAL & HAZARD SURVEY

SONAR MOSAIC MAP
PROPOSED BUNDLED 4" MULTIPHASE &
2" FUEL GAS PIPELINE ROUTE
4" SSTI ON 4" S-15062 &
2" SSTI ON 10" S-15060
BLOCK 60 TO BLOCK 6 FED/STATE LINE
SOUTH PASS AREA
GULF OF MEXICO

DoC Mapping
805 Distributors Row
New Orleans, LA 70123

LAPELS License No. VF859

PREPARED FOR:

DRAFT

KNOC

GEODETIC SETTINGS

Geodetic Datum: NAD 1927 StatePlane Louisiana South FIPS 1702
Central Meridian: -91.3333
Units: Foot US

SCALE: 1 inch = 500 feet

0 500 1,000 2,000 3,000 Feet

NOTES

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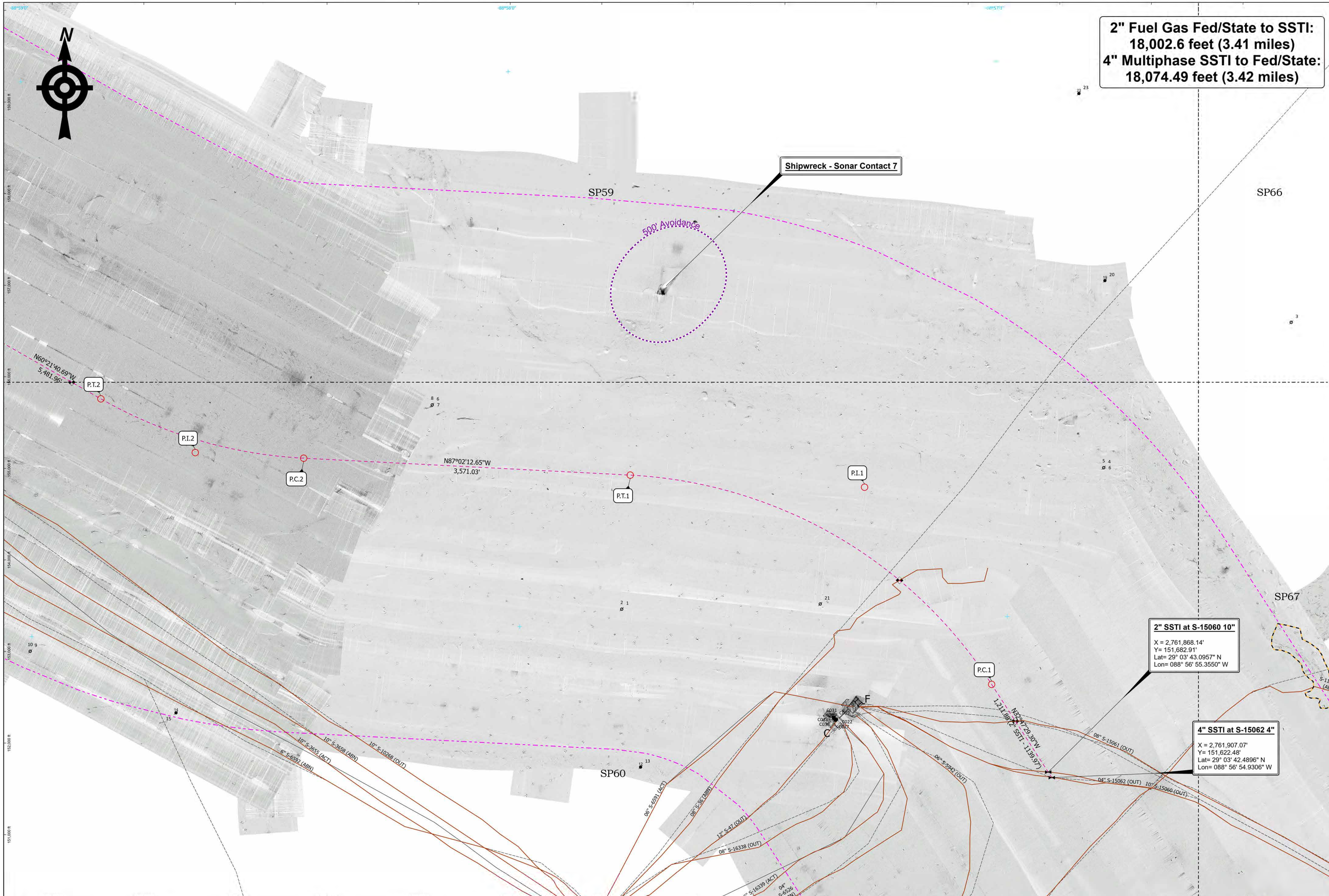
Job No.:	F23KNOC010	SHEET
Client.:	KNOC	
File Name:	KNOC_SP60_Federal	7 of 12

Date Exported: 10/25/2023



LEGEND

Shipwreck Avoidance
Outcrops
SSTI
DOC - Pipelines
Proposed Pipeline Route (Federal)
Appurtenances
Survey Area (Federal)
Survey Area (State)
DoC Platforms
BSEE Wells
APD
COM, DRL, ST
TA; PA
BSEE Pipelines Status
ABN; A/C; OUT
ACT
PABN
PREM; PROP
Federal/State Line
Coastline 2023
Block Boundaries
BOEM Active Leases

Curve Data

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VICINITY MAP

ARCHAEOLOGICAL & HAZARD SURVEY

SONAR MOSAIC MAP
PROPOSED BUNDLED 4" MULTIPHASE &
2" FUEL GAS PIPELINE ROUTE
4" SSTI ON 4" S-15062 &
2" SSTI ON 10" S-15060
BLOCK 60 TO BLOCK 6 FED/STATE LINE
SOUTH PASS AREA
GULF OF MEXICO

DoC Mapping
805 Distributors Row
New Orleans, LA 70123

LAPELS License No. VF859

PREPARED FOR:

DRAFT

KNOC

GEODETIC SETTINGS	SCALE: 1 inch = 500 feet	NOTES
Geodetic Datum: NAD 1927 StatePlane Louisiana South FIPS 1702 Central Meridian: -91.3333 Units: Foot US	0 500 1,000 2,000 3,000 Feet	Geophysical survey data was collected onboard the *M/V DoC Launch* on July 15-22 and August 10-20, 2023. Water depths were tide corrected to MLLW. Magnetic anomalies avoidances are based on Shallow Hazards NTL 2008-G05.

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Job No.:	F23KNOC010	SHEET
Client.:	KNOC	
File Name:	KNOC_SP60_Federal	8 of 12

Date Exported: 10/25/2023

2" Fuel Gas Fed/State to SSTI: 18,002.6 feet (3.41 miles)
4" Multiphase SSTI to Fed/State: 18,074.49 feet (3.42 miles)

SP6
SP59
SP17
SP60
STATE WATERS
FEDERAL WATERS
P.I.3
P.T.3
P.C.3
P.T.2
P.I.2
P.C.2
N60°21'40.69"W
5,481.96'
N87°02'12.65"W
3,571.03'
10" S-10268 (OUT)
10" S-3658 (ABN)
10" S-3655 (ACT)
6" S-6592 (ABN)
500' Avoidance
-89°0'0"
-88°59'0"
-88°58'0"
29°5'0"
29°4'0"
29°3'0"
159,000 ft
158,000 ft
157,000 ft
156,000 ft
155,000 ft
154,000 ft
153,000 ft
2,743,000 ft
2,744,000 ft
2,745,000 ft
2,746,000 ft
2,747,000 ft
2,748,000 ft
2,749,000 ft
2,750,000 ft
2,751,000 ft
2,752,000 ft
2,753,000 ft
2,754,000 ft
2,755,000 ft
2,756,000 ft
2,757,000 ft

LEGEND

- Shipwreck Avoidance
- Outcrops
- SSTI
- DOC - Pipelines
- Proposed Pipeline Route (Federal)
- Proposed Pipeline Route (State)
- Appurtenances
- Survey Area (Federal)
- Survey Area (State)
- DoC Platforms

BSEE Wells:
- APD
- COM, DRL, ST
- TA; PA

BSEE Pipelines
Status
- ABN; A/C; OUT
- ACT
- PABN
- PREM; PROP
- Federal/State Line
- Coastline 2023
- Block Boundaries
- BOEM Active Leases

Curve Data

CURVE 1 DATA	
P.C. 12+12	P.I. CURVE 1
X= 2,761,250.74'	X= 2,759,863.67'
Y= 152,641.24'	Y= 154,794.26'
LAT= 29° 3' 52.71"	LAT= 29° 4' 14.30"
LONG= 88° 57' 2.09"	LONG= 88° 57' 17.21"
P.T. 59+46	R= 5,000.00'
X= 2,757,305.97'	L= 4,733.80'
Y= 154,926.64'	Δ= 54° 14' 43.32"
LAT= 29° 4' 16.14"	T= 2,561.13'
LONG= 88° 57' 45.99"	

CURVE 2 DATA	
P.C. 95+17	P.I. CURVE 2
X= 2,753,739.71'	X= 2,752,555.86'
Y= 155,111.24'	Y= 155,172.62'
LAT= 29° 4' 16.69"	LAT= 29° 4' 19.54"
LONG= 88° 58' 26.12"	LONG= 88° 58' 39.45"
P.T. 118+45	R= 5,000.00'
X= 2,751,525.53'	L= 2,327.88'
Y= 155,758.75'	Δ= 26° 40' 31.96"
LAT= 29° 4' 25.55"	T= 1185.43'
LONG= 88° 58' 50.92"	

CURVE 3 DATA	
P.C. 173+27	P.I. CURVE 3
X= 2,746,760.83'	X= 2,745,409.33'
Y= 158,469.74'	Y= 159,238.70'
LAT= 29° 4' 53.35"	LAT= 29° 5' 1.23"
LONG= 88° 59' 43.97"	LONG= 88° 59' 59.03"
P.T. 203+42	R= 5,000.00'
X= 2,743,860.10'	L= 3,015.07'
Y= 159,105.57'	Δ= 34° 33' 0.45"
LAT= 29° 5' 0.23"	T= 1,554.94'
LONG= 89° 0' 16.51"	

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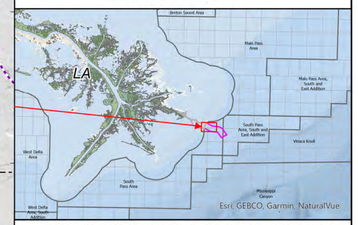

ARCHAEOLOGICAL & HAZARD SURVEY

SONAR MOSAIC MAP
PROPOSED BUNDLED 4" MULTIPHASE & 2" FUEL GAS PIPELINE ROUTE
4" SSTI ON 4" S-15062 &
2" SSTI ON 10" S-15060
BLOCK 60 TO BLOCK 6 FED/STATE LINE
SOUTH PASS AREA
GULF OF MEXICO

DoC Mapping
805 Distributors Row
New Orleans, LA 70123

LAPELS License No. VF859

PREPARED FOR:
DRAFT
KNOC

GEODETIC SETTINGS

Geodetic Datum: NAD 1927 StatePlane Louisiana South FIPS 1702
Central Meridian: -91.3333
Units: Foot US

SCALE: 1 inch = 500 feet

0 500 1,000 2,000 3,000 Feet

NOTES

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Job No.:	F23KNOC010	SHEET	
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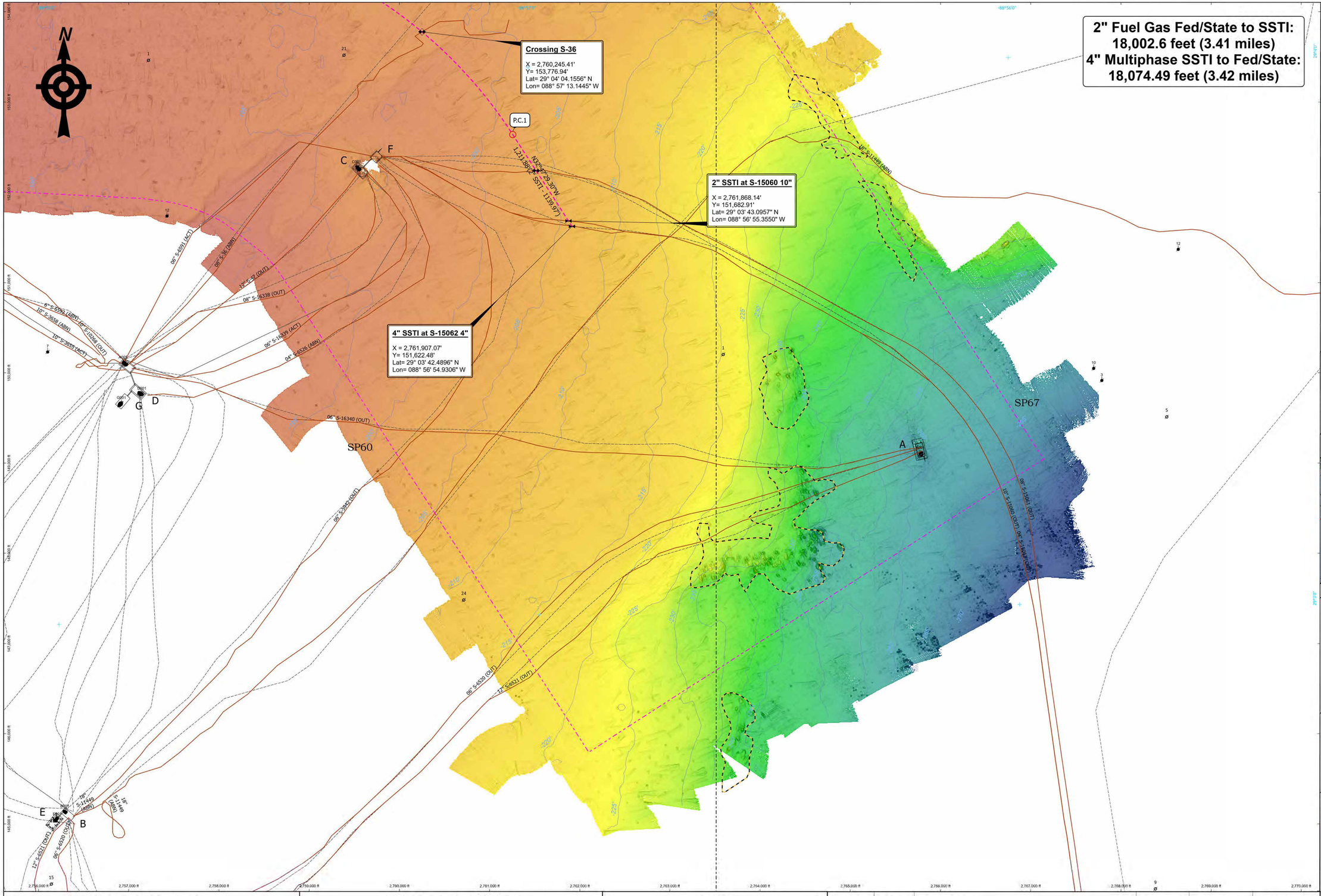
File Name:	KNOC_SP60_Federal	9 of 12	

Date Exported: 10/25/2023



LEGEND

- Shipwreck Avoidance
- Outcrops
- Bathymetric Contour (5 ft)
- SSTI
- Appurtenances
- Proposed Pipeline Route (Federal)
- Survey Area (Federal)
- Survey Area (State)
- DOC - Pipelines
- DoC Platforms

BSEE Wells
- APD
- COM, DRL, ST
- TA; PA

BSEE Pipelines
Status
- ABN; A/C; OUT
- ACT
- PABN
- PREM; PROP

- Federal/State Line
- Block Boundaries
- BOEM Active Leases

Bathymetry
- Shallower
- Deeper

Curve Data

CURVE 1 DATA	
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X= 2,761,250.74'	X= 2,759,863.67'
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LAT= 29° 3' 52.71"	LAT= 29° 4' 14.30"
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Y= 154,926.64'	Δ= 54° 14' 43.32"
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LONG= 88° 57' 45.99"	

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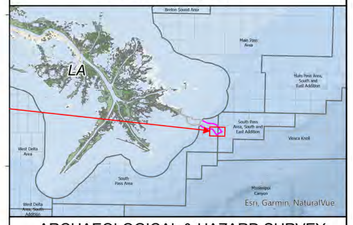

ARCHAEOLOGICAL & HAZARD SURVEY

BATHYMETRIC MOSAIC MAP
PROPOSED BUNDLED 4" MULTIPHASE &
2" FUEL GAS PIPELINE ROUTE
4" SSTI ON 4" S-15062 &
2" SSTI ON 10" S-15060
BLOCK 60 TO BLOCK 6 FED/STATE LINE
SOUTH PASS AREA
GULF OF MEXICO

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LAPELS License No. VF859

PREPARED FOR:

DRAFT KNOC

GEODETIC SETTINGS

Geodetic Datum: NAD 1927 StatePlane Louisiana South FIPS 1702
Central Meridian: -91.3333
Units: Foot US

SCALE: 1 inch = 500 feet

0 500 1,000 2,000 3,000 Feet

NOTES

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Water depths were tide corrected to MLLW.
Magnetic anomalies avoidances are based on Shallow Hazards NTL 2008-G05.

Revision	Date	Description	Created	Checked	Approved
0	10/19/2023	Preliminary	SB	TM	EF
1	10/25/2023	Updated per client comments	SB	TM	EF

Job No.:	F23KNOC010	SHEET	
Client.:	KNOC		
File Name:	KNOC_SP60_Federal	10 of 12	

Date Exported: 10/25/2023

2" Fuel Gas Fed/State to SSTI: 18,002.6 feet (3.41 miles)
4" Multiphase SSTI to Fed/State: 18,074.49 feet (3.42 miles)

N

SP59

SP66

SP67

SP60

500' Avoidance

Shipwreck - Sonar Contact 7

Blockline Crossing - SP59/SP60

X = 2,751,206.98'
Y= 155,940'
Lat= 29° 04' 27.4119" N
Lon= 088° 58' 54.4656" W

N60°21'40.69"W
5,481.96'

P.T.2

P.I.2

P.C.2

N87°02'12.65"W
3,571.03'

P.T.1

P.I.1

Crossing S-36

X = 2,760,245.41'
Y= 153,776.94'
Lat= 29° 04' 04.1556" N
Lon= 088° 57' 13.1445" W

P.C.1

1,211.78'
N32°29'30"W

2" SSTI at S-15060 10"

X = 2,761,868.14'
Y= 151,682.91'
Lat= 29° 03' 43.0957" N
Lon= 088° 56' 55.3550" W

4" SSTI at S-15062 4"

X = 2,761,907.07'
Y= 151,622.48'
Lat= 29° 03' 42.4896" N
Lon= 088° 56' 54.9306" W

F
C
C081

10" S-3655 (ACT)
10" S-3655 (ABN)
10" S-10764 (OUT)
6" S-6591 (ABN)
06" S-6591 (ACT)
06" S-36 (ABN)
12" S-47 (OUT)
08" S-16338 (OUT)
06" S-16339 (ACT)
04" S-5576 (ABN)
08" S-15061 (OUT)
06" S-5942 (OUT)
04" S-15062 (OUT)
10" S-15060 (OUT)
18" S-11446 (ABN)

LEGEND

- Shipwreck Avoidance
- Outcrops
- Bathymetric Contour (5 ft)
- SSTI
- Appurtenances
- Proposed Pipeline Route (Federal)
- Survey Area (Federal)
- Survey Area (State)
- DOC - Pipelines
- DoC Platforms

BSEE Wells
- APD
- COM, DRL, ST
- TA; PA

BSEE Pipelines
Status
- ABN; A/C; OUT
- ACT
- PABN
- PREM; PROP

- Federal/State Line
- Block Boundaries
- BOEM Active Leases

Bathymetry
- Shallower
- Deeper

Curve Data

CURVE 1 DATA	
P.C. 12+12	P.I. CURVE 1
X= 2,761,250.74'	X= 2,759,863.67'
Y= 152,641.34'	Y= 154,794.26'
LAT= 29° 3' 52.71"	LAT= 29° 4' 14.30"
LONG= 88° 57' 2.09"	LONG= 88° 57' 17.21"
P.T. 59+46	R= 5,000.00'
X= 2,757,305.97'	L= 4,733.80'
Y= 154,926.64'	Δ= 54° 14' 43.32"
LAT= 29° 4' 16.14"	T= 2,561.12'
LONG= 88° 57' 45.99"	

CURVE 2 DATA	
P.C. 95+17	P.I. CURVE 2
X= 2,753,739.71'	X= 2,752,555.86'
Y= 155,111.24'	Y= 155,172.62'
LAT= 29° 4' 18.69"	LAT= 29° 4' 19.54"
LONG= 88° 58' 26.12"	LONG= 88° 58' 39.45"
P.T. 115+45	R= 5,000.00'
X= 2,751,525.53'	L= 2,327.88'
Y= 155,754.75'	Δ= 26° 40' 31.96"
LAT= 29° 4' 25.55"	T= 1185.43'
LONG= 88° 58' 50.92"	

CURVE 3 DATA	
P.C. 173+27	P.I. CURVE 3
X= 2,746,760.83'	Δ= 2,745,409.33'
Y= 158,469.74'	Y= 159,238.70'
LAT= 29° 4' 53.35"	LAT= 29° 5' 1.23"
LONG= 88° 59' 43.97"	LONG= 88° 59' 59.03"
P.T. 203+42	R= 5,000.00'
X= 2,743,860.10'	L= 3,015.07'
Y= 159,105.57'	Δ= 34° 33' 0.45"
LAT= 29° 5' 0.23"	T= 1,554.94'
LONG= 89° 0' 16.51"	

DISCLAIMER

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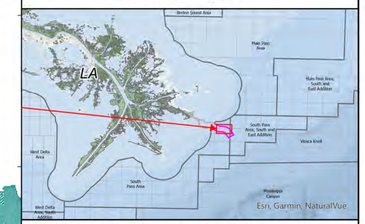
VICINITY MAP



ARCHAEOLOGICAL & HAZARD SURVEY

BATHYMETRIC MOSAIC MAP
PROPOSED BUNDLED 4" MULTIPHASE & 2" FUEL GAS PIPELINE ROUTE
4" SSTI ON 4" S-15062 &
2" SSTI ON 10" S-15060
BLOCK 60 TO BLOCK 6 FED/STATE LINE
SOUTH PASS AREA
GULF OF MEXICO

DoC Mapping
805 Distributors Row
New Orleans, LA 70123

LAPELS License No. VF859

PREPARED FOR:

DRAFT

KNOC

GEODETIC SETTINGS

Geodetic Datum: NAD 1927 StatePlane Louisiana South FIPS 1702
Central Meridian: -91.3333
Units: Foot US

SCALE: 1 inch = 500 feet

0 500 1,000 2,000 3,000 Feet

NOTES

Geophysical survey data was collected onboard the *M/V DoC Launch* on July 15-22 and August 10-20, 2023.
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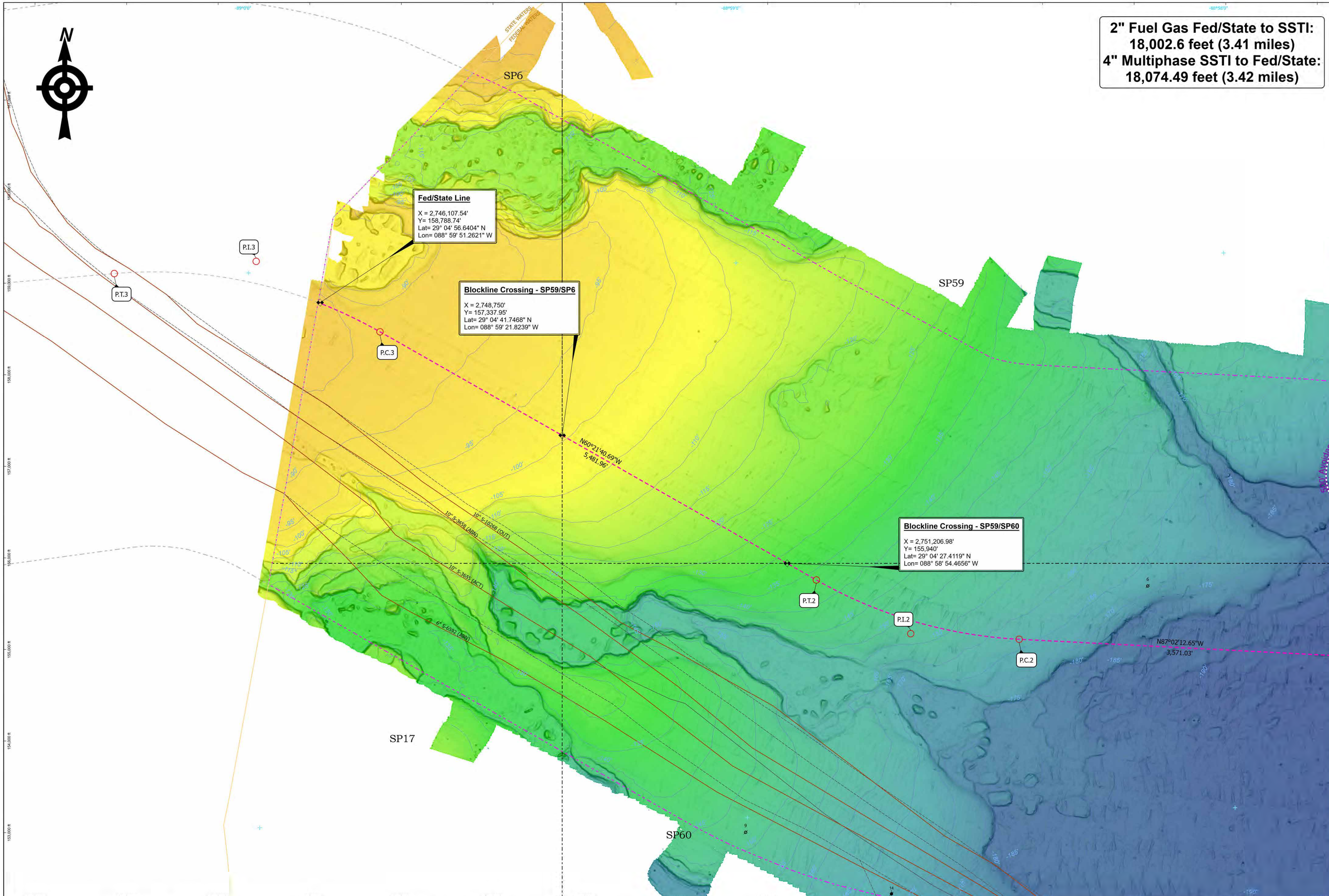
Revision	Date	Description	Created	Checked	Approved
0	10/19/2023	Preliminary	SB	TM	EF
1	10/25/2023	Updated per client comments	SB	TM	EF

Job No.:	F23KNOC010	SHEET	
Client.:	KNOC		
File Name:	KNOC_SP60_Federal	11 of 12	

Date Exported: 10/25/2023



LEGEND

Shipwreck Avoidance
Outcrops
Bathymetric Contour (5 ft)
SSTI
Appurtenances
Proposed Pipeline Route (Federal)
Proposed Pipeline Route (State)
Survey Area (Federal)
Survey Area (State)
DOC - Pipelines
DoC Platforms
BSEE Wells
APD
COM, DSI
TA, PA

BSEE Pipelines Status
ABN, A/C, OUT
ACT
PABN
PREM, PROP
Federal/State Line
Block Boundaries
BOEM Active Leases
Bathymetry
Shallower
Deeper

Curve Data

CURVE 1 DATA	
P.C. 12+12 X= 2,761,250.74' Y= 152,641.24' LAT = 29° 3' 52.71" LONG= 88° 57' 2.09"	P.I. CURVE 1 X= 2,759,863.67' Y= 154,794.25' LAT = 29° 4' 14.30" LONG= 88° 57' 17.21"
P.T. 59+46 X= 2,757,305.97' Y= 154,926.64' LAT = 29° 4' 16.14" LONG= 88° 57' 45.99"	R= 5,000.00' L= 4,733.80' Δ= 54° 14' 43.32" T= 2,561.13'

CURVE 2 DATA	
P.C. 95+17 X= 2,753,739.71' Y= 155,111.24' LAT = 29° 4' 18.69" LONG= 88° 58' 26.12"	P.I. CURVE 2 X= 2,752,555.86' Y= 155,172.52' LAT = 29° 4' 19.54" LONG= 88° 58' 39.45"
P.T. 118+45 X= 2,751,525.53' Y= 155,758.75' LAT = 29° 4' 25.55" LONG= 88° 58' 50.92"	R= 5,000.00' L= 2,327.88' Δ= 26° 40' 31.96" T= 1185.43'

CURVE 3 DATA	
P.C. 173+27 X= 2,746,760.83' Y= 158,469.74' LAT = 29° 4' 53.35" LONG= 88° 59' 43.97"	P.I. CURVE 3 X= 2,745,409.33' Y= 159,238.70' LAT = 29° 5' 1.23" LONG= 88° 59' 59.03"
P.T. 203+42 X= 2,743,860.10' Y= 159,105.57' LAT = 29° 5' 0.23" LONG= 89° 0' 16.51"	R= 5,000.00' L= 3,015.07' Δ= 34° 33' 0.45" T= 1,554.94'

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VICINITY MAP

ARCHAEOLOGICAL & HAZARD SURVEY

BATHYMETRIC MOSAIC MAP
PROPOSED BUNDLED 4" MULTIPHASE &
2" FUEL GAS PIPELINE ROUTE
4" SSTI ON 4" S-15062 &
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BLOCK 60 TO BLOCK 6 FED/STATE LINE
SOUTH PASS AREA
GULF OF MEXICO

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LAPELS License No. VF859

PREPARED FOR:
DRAFT
KNOC

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Central Meridian: -91.3333
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Revision	Date	Description	Created	Checked	Approved
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1	10/25/2023	Updated per client comments	SB	TM	EF

Job No.:	F23KNOC010	SHEET
Client.:	KNOC	
File Name:	KNOC_SP60_Federal	12 of 12

Date Exported: 10/25/2023

Anomaly No	Area/ Block	Line Number	Shot Point	Tow Height (ft)	Signature	Intensity (nT)	Duration (ft)	NAD27 Latitude	NAD27 Longitude	NAD27 X	NAD27 Y	Avoidance Distance
231	SP67	5037	7494.7	72.4	DIPOLE	19.4	182.9	29.060686	-88.936966	2765840	150959	None
232	SP67	5037	7488.2	67.0	MONOPOLE	112.0	774.8	29.063652	-88.938982	2765186	152025	98.4 ft*
259	SP60	8015	46.0	54.1	MONOPOLE	12.8	555.0	29.052223	-88.948115	2762108	148128	None
309	SP67	5035	236.9	74.7	MONOPOLE	27.0	533.0	29.067779	-88.943051	2763611	153872	None
321	SP59	4032	8376.3	42.5	DIPOLE	10578.2	889.1	29.076958	-88.961015	2757788	157054	500 ft**
330	SP60	3000	9409.4	48.5	MONOPOLE	38.8	328.9	29.064403	-88.980258	2751810	152338	None
331	SP17	3001	9429.0	45.9	MONOPOLE	6.6	272.6	29.071349	-88.993261	2747549	154810	None
332	SP17	3002	8861.8	58.0	MONOPOLE	39.2	554.2	29.071876	-88.993326	2747627	154951	None
353	SP60	3011	8842.9	69.8	MONOPOLE	14.2	879.6	29.072901	-88.985857	2749857	155448	None
354	SP59	3020	8967.2	28.8	MONOPOLE	10.8	213.6	29.077953	-88.986669	2749735	157176	None
355	SP59	3027	9146.5	26.3	MONOPOLE	5.5	285.9	29.078361	-88.980256	2751542	157502	None
356	SP59	3029	9031.2	31.6	MONOPOLE	23.1	219.3	29.080901	-88.983321	2750576	158391	None
357	SP67	5028	112.1	55.0	MONOPOLE	14.7	120.6	29.062060	-88.943515	2763514	151796	None
358	SP6	3037	9705.9	53.5	DIPOLE	14.0	286.6	29.088091	-88.989269	2748704	160920	None
398	SP59	8012	7560.5	50.4	DIPOLE	62.8	2130.2	29.076841	-88.963663	2756981	157025	98.4 ft*
399	SP60	4000	8967.9	45.7	MONOPOLE	5.5	290.0	29.063277	-88.964285	2756842	152058	None
408	SP60	4009	7704.1	68.8	MONOPOLE	16.1	427.9	29.066655	-88.962880	2757260	153294	None
409	SP60	4010	9234.1	62.4	MONOPOLE	7.2	342.4	29.067259	-88.963800	2757044	153502	None
417	SP60	4022	9471.6	64.8	MONOPOLE	5.9	235.0	29.072368	-88.960757	2757978	155379	None
422	SP59	4026	8505.4	68.2	MONOPOLE	38.3	1959.5	29.074142	-88.961791	2757566	156023	None
423	SP59	4027	8073.3	57.6	MONOPOLE	74.8	1934.2	29.074775	-88.961606	2757615	156254	None
424	SP59	4028	9597.6	64.1	DIPOLE	139.3	2734.7	29.075262	-88.961933	2757577	156424	500 ft**
425	SP59	4029	8436.4	56.3	DIPOLE	326.3	2038.8	29.075673	-88.961956	2757578	156569	500 ft**
426	SP59	4030	8133.3	49.1	DIPOLE	1246.8	1557.0	29.076136	-88.961829	2757612	156740	500 ft**
427	SP59	4031	9666.6	3.0	DIPOLE	6016.3	1117.3	29.076519	-88.961352	2757690	156891	500 ft**
428	SP59	4033	8196.9	57.3	DIPOLE	4360.4	1615.5	29.077387	-88.960919	2757891	157203	500 ft**
431	SP59	4034	9729.4	74.0	MONOPOLE	851.0	2139.4	29.077839	-88.960662	2757954	157369	500 ft**
432	SP59	4035	8319.0	51.0	DIPOLE	66.8	776.8	29.078322	-88.960662	2757967	157546	500 ft**
433	SP59	4035	8313.9	49.3	DIPOLE	84.5	2606.2	29.078540	-88.962443	2757396	157614	98.4 ft*
434	SP59	4036	8253.8	44.2	DIPOLE	70.9	2526.3	29.078678	-88.960086	2758075	157684	None
435	SP59	4037	9770.1	70.2	DIPOLE	31.4	2294.0	29.079181	-88.960216	2758036	157866	None
436	SP59	4037	9682.2	95.2	MONOPOLE	23.9	1579.7	29.079174	-88.960560	2757986	157854	None
512	SP60	5019	104.2	67.7	MONOPOLE	6.9	101.1	29.065972	-88.951536	2760972	153078	None

Anomaly No	Area/ Block	Line Number	Shot Point	Tow Height (ft)	Signature	Intensity (nT)	Duration (ft)	NAD27 Latitude	NAD27 Longitude	NAD27 X	NAD27 Y	Avoidance Distance
546	SP67	5026	311.7	57.5	DIPOLE	36.3	290.0	29.055817	-88.940099	2764620	149568	None
557	SP60	5008	9986.0	68.6	MONOPOLE	10.0	237.9	29.052379	-88.948660	2761986	148150	None
608	SP67	5034	107.9	70.5	DIPOLE	9.3	478.1	29.067451	-88.943370	2763511	153742	None
625	SP60	5031	102.2	59.6	MONOPOLE	9.7	385.4	29.068807	-88.946335	2762602	154138	None
631	SP60	5032	268.7	61.9	MONOPOLE	12.4	250.6	29.068947	-88.945972	2762716	154204	None
635	SP59	4035	8322.5	47.1	MONOPOLE	9.3	221.5	29.078082	-88.958482	2758666	157474	None
638	SP60	4010	9246.5	65.7	MONOPOLE	32.5	379.5	29.066502	-88.957103	2759190	153270	None

*Anomalies over 50 nT receive a hazard avoidance of 98.4 ft (30 m) based on BOEM NTL 2022-G01

**Anomalies covered by avoidance area around shipwreck (contact 7)

Contact No	Area/ Block	Mag Anomaly	Length (ft)	Width (ft)	Height (ft)	Shape	Latitude (NAD27)	Longitude (NAD27)	X (NAD27)	Y (NAD27)	Avoidance Distance
1	SP6	None	51.2	12.7	9.1	Possible Geology	29.085352	-88.991172	2748130	159904	None
2	SP6	None	90.7	10.7	16.4	Possible Geology	29.084693	-88.989594	2748639	159674	None
3	SP59	None	23.0	7.4	0.7	Unknown Contact	29.080248	-88.979487	2751900	158124	None
4	SP59	None	3.4	1.1	0.6	Unknown Contact	29.078590	-88.980139	2751704	157517	None
5	SP59	None	4.4	1.2	0.8	Unknown Contact	29.078589	-88.980109	2751714	157517	None
6	SP59	355	22.0	8.3	0.5	Unknown Contact	29.078518	-88.980822	2751486	157487	None
7	SP59	321, 422, 423, 424, 425, 426, 427, 428, 431, 432, 434, 435	314.1	60.7	32.7	Shipwreck	29.076813	-88.961406	2757701	156995	500 ft around visible extent
8	SP6	None	23.0	27.2	5.6	Unknown Contact Cluster	29.073221	-88.947759	2762087	155779	None
9	SP60	None	16.1	1.5	1.0	Unknown Contact	29.072279	-88.988623	2749041	155167	None
10	SP60	None	9.8	0.9	1.8	Unknown Contact	29.072103	-88.985928	2749903	155121	None
11	SP60	347	7.7	1.0	0.7	Unknown Contact	29.071881	-88.986064	2749862	155039	None
12	SP60	None	7.3	1.8	1.6	Unknown Contact	29.071811	-88.988350	2749132	154999	None
13	SP60	None	11.8	2.3	2.6	Unknown Contact	29.070090	-88.944465	2763163	154663	None
14	SP60	None	4.0	1.1	3.1	Unknown Contact	29.070076	-88.944517	2763146	154657	None
15	SP60	None	5.5	3.7	0.9	Unknown Contact	29.064112	-88.954742	2759925	152421	None
16	SP60	None	5.6	2.5	0.6	Unknown Contact	29.064094	-88.954786	2759911	152414	None
17	SP60	None	41.1	12.9	1.5	Unknown Debris	29.064050	-88.956250	2759444	152389	None
18	SP60	None	25.2	11.1	2.1	Unknown Contact	29.064027	-88.954768	2759917	152390	None
19	SP60	None	16.1	7.1	3.3	Unknown Debris`	29.063932	-88.955000	2759844	152354	None
20	SP60	None	15.2	3.1	1.0	Unknown Debris	29.063848	-88.956218	2759455	152315	None
21	SP60	None	8.7	2.9	1.8	Unknown Debris	29.063828	-88.956282	2759435	152308	None
22	SP60	None	19.1	4.6	0.6	Unknown Contact	29.063731	-88.954649	2759958	152283	None
23	SP60	None	15.1	1.1	0.9	Possible Exposed Pipeline	29.063461	-88.956183	2759470	152175	None
24	SP60	None	2.8	1.5	2.5	Unknown Debris	29.063355	-88.956052	2759512	152137	None
25	SP60	None	6.6	5.5	1.0	Unknown Contact	29.063181	-88.955641	2759645	152077	None
26	SP60	None	35.0	14.0	2.6	Unknown Contact	29.063177	-88.955773	2759603	152074	None
27	SP60	None	46.7	4.6	0.5	Unknown Contact	29.063116	-88.955726	2759618	152053	None
28	SP60	None	4.5	2.2	2.6	Unknown Contact	29.063049	-88.955696	2759628	152029	None
29	SP60	None	2.7	0.7	0.7	Unknown Contact	29.062840	-88.955961	2759545	151951	None
30	SP60	None	6.7	3.7	1.7	Unknown Contact	29.062815	-88.956304	2759436	151939	None

File: F23KNOC010_Sonar_Contact_Table.xlsx

Contact No	Area/ Block	Mag Anomaly	Length (ft)	Width (ft)	Height (ft)	Shape	Latitude (NAD27)	Longitude (NAD27)	X (NAD27)	Y (NAD27)	Avoidance Distance
31	SP60	None	7.5	1.9	0.6	Unknown Contact	29.062609	-88.957248	2759136	151858	None
32	SP60	None	6.2	7.4	1.4	Unknown Contact	29.062199	-88.955463	2759709	151721	None
33	SP60	None	34.6	7.0	1.2	Probable Geology	29.061560	-88.944556	2763198	151561	None
34	SP60	None	11.5	5.3	0.7	Probable Geology	29.061539	-88.944613	2763180	151553	None
35	SP60	None	15.1	4.8	0.9	Probable Geology	29.061492	-88.944654	2763167	151536	None
36	SP60	None	9.9	5.1	0.8	Probable Geology	29.061471	-88.944660	2763166	151528	None
37	SP60	None	115.6	8.8	0.6	Possible Pipeline	29.055601	-88.954004	2760225	149332	None
38	SP67	None	10.9	6.7	0.6	Unknown Contact	29.050276	-88.944967	2763153	147456	None
39	SP60	None	17.6	5.1	4.5	Unknown Contact	29.050058	-88.944492	2763306	147380	None
40	SP67	None	15.2	6.7	0.3	Unknown Contact	29.049685	-88.944623	2763267	147243	None
41	SP67	None	38.3	15.0	4.1	Probable Geology	29.049630	-88.947095	2762477	147207	None
42	SP67	None	22.9	3.1	0.9	Probable Geology	29.049414	-88.946918	2762536	147130	None
43	SP67	None	25.4	0.7	0.5	Exposed Pipeline	29.047566	-88.944860	2763207	146471	None
44	SP67	None	5.0	2.0	0.2	Unknown Contact	29.056557	-88.943057	2763715	149752	None
45	SP67	None	15.2	2.8	0.7	Unknown Contact	29.055245	-88.938711	2765113	149304	None
46	SP67	None	11.1	0.7	0.1	Unknown Contact	29.055047	-88.936686	2765762	149246	None
47	SP67	None	17.7	6.6	0.7	Unknown Contact	29.054912	-88.941109	2764350	149167	None
48	SP67	None	5.3	3.7	1.5	Unknown Contact	29.054747	-88.940851	2764433	149109	None
49	SP67	None	1.5	1.0	1.2	Unknown Contact	29.054609	-88.937429	2765528	149082	None
50	SP67	None	16.6	2.0	0.4	Unknown Contact	29.054573	-88.936345	2765874	149076	None
51	SP67	None	13.4	10.5	0.2	Unknown Contact	29.054526	-88.937296	2765571	149052	None
52	SP60	None	7.9	2.0	0.4	Unknown Contact	29.054246	-88.936989	2765671	148952	None
53	SP60	None	17.2	3.6	0.3	Unknown Contact	29.053952	-88.936805	2765732	148847	None
54	SP60	None	4.8	4.6	1.3	Unknown Contact	29.053758	-88.937351	2765559	148773	None
55	SP60	None	26.0	2.8	0.3	Unknown Contact	29.053249	-88.933979	2766640	148610	None
56	SP60	None	11.4	3.0	0.2	Unknown Contact	29.053220	-88.937390	2765551	148577	None
57	SP60	None	25.8	15.3	5.9	Probable Geology	29.046670	-88.942368	2764010	146162	None
58	SP67	None	19.4	14.6	5.5	Possible Geology	29.074632	-88.994698	2747083	155983	None

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Generated on 9/27/2023 10:34:07

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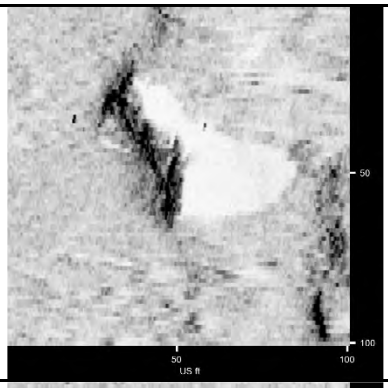
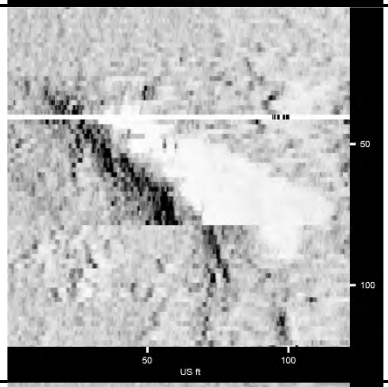
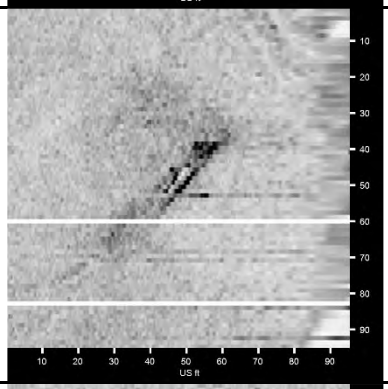
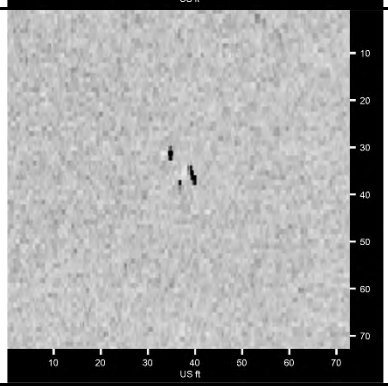
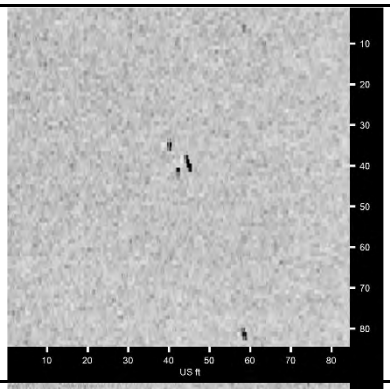
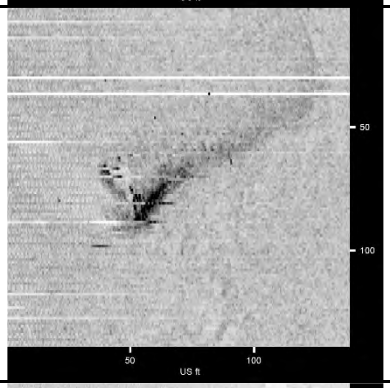
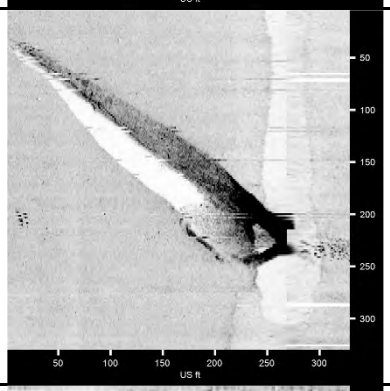
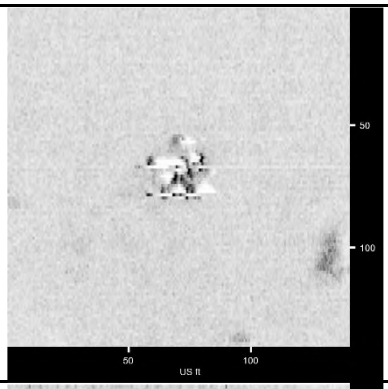
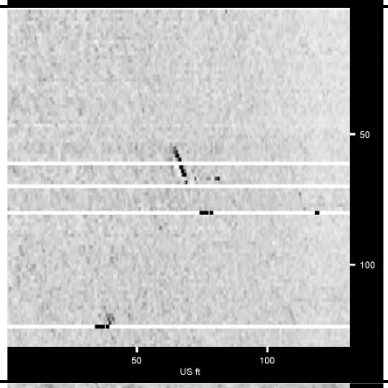
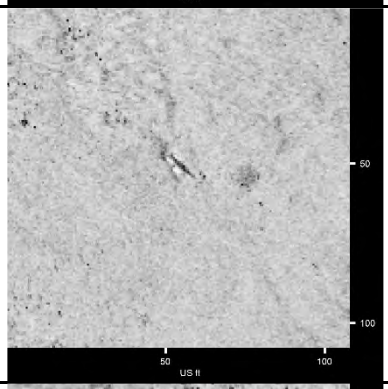
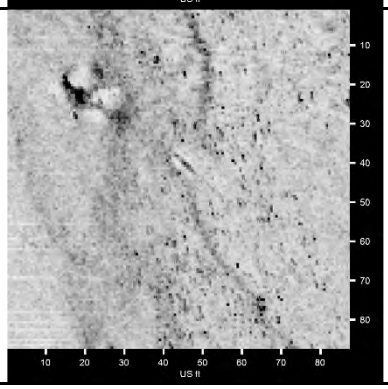
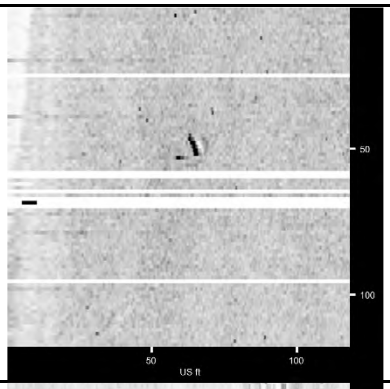
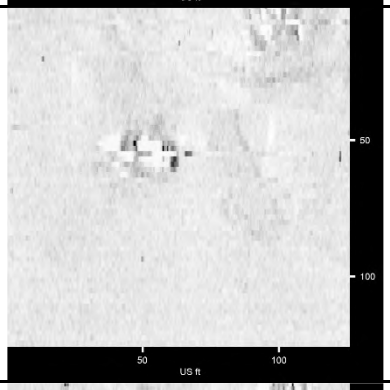
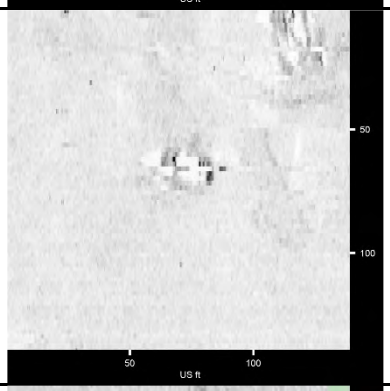
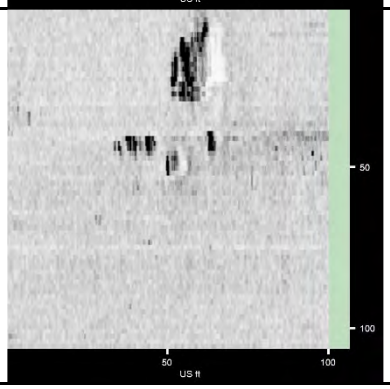
	**1** ● Sonar Time at Target: 7/16/2023 14:27:49 ● Click Position 29.0853519758 -88.9911719858 (NAD27LL) (X) 2748129.92 (Y) 159903.67 (Projected Coordinates) ● Map Projection: LA-S-MOD ● Acoustic Source File: C:\Users\Eric Fischer PC\DOC Mapping Dropbox\Field Data Sync COPY ONLY\Launch 1\Hypack Projects\Projects\F23KNOC010_SP60\Raw\3031_1424.HSX ● Line Name: 3031_1424	**Dimensions and attributes** ● Target Width: 12.73 US ft ● Target Height: 9.11 US ft ● Target Length: 51.15 US ft ● Mag Anomaly: None ● Avoidance Area: None ● Classification1: Irregular Contact ● Classification2: Possible Geology ● Area: South Pass ● Block: 6 ● Description:
	**2** ● Sonar Time at Target: 7/16/2023 14:29:03 ● Click Position 29.0846926955 -88.9895937278 (NAD27LL) (X) 2748638.88 (Y) 159674.28 (Projected Coordinates) ● Map Projection: LA-S-MOD ● Acoustic Source File: C:\Users\Eric Fischer PC\DOC Mapping Dropbox\Field Data Sync COPY ONLY\Launch 1\Hypack Projects\Projects\F23KNOC010_SP60\Raw\3031_1424.HSX ● Line Name: 3031_1424	**Dimensions and attributes** ● Target Width: 10.67 US ft ● Target Height: 16.39 US ft ● Target Length: 90.68 US ft ● Mag Anomaly: None ● Avoidance Area: None ● Classification1: Irregular Contact ● Classification2: Possible Geology ● Area: South Pass ● Block: 6 ● Description:
	**3** ● Sonar Time at Target: 7/16/2023 14:37:18 ● Click Position 29.0802478097 -88.9794872895 (NAD27LL) (X) 2751899.83 (Y) 158124.44 (Projected Coordinates) ● Map Projection: LA-S-MOD ● Acoustic Source File: C:\Users\Eric Fischer PC\DOC Mapping Dropbox\Field Data Sync COPY ONLY\Launch 1\Hypack Projects\Projects\F23KNOC010_SP60\Raw\3031_1424.HSX ● Line Name: 3031_1424	**Dimensions and attributes** ● Target Width: 7.35 US ft ● Target Height: 0.74 US ft ● Target Length: 23.01 US ft ● Mag Anomaly: None ● Avoidance Area: None ● Classification1: Linear Contact ● Classification2: Unknown Contact ● Area: South Pass ● Block: 59 ● Description:
	**4** ● Sonar Time at Target: 7/16/2023 15:01:38 ● Click Position 29.0785895815 -88.9801393182 (NAD27LL) (X) 2751703.97 (Y) 157517.29 (Projected Coordinates) ● Map Projection: LA-S-MOD ● Acoustic Source File: C:\Users\Eric Fischer PC\DOC Mapping Dropbox\Field Data Sync COPY ONLY\Launch 1\Hypack Projects\Projects\F23KNOC010_SP60\Raw\3028_1451.HSX ● Line Name: 3028_1451	**Dimensions and attributes** ● Target Width: 1.12 US ft ● Target Height: 0.55 US ft ● Target Length: 3.41 US ft ● Mag Anomaly: None ● Avoidance Area: None ● Classification1: Irregular Contact ● Classification2: Unknown Contact ● Area: South Pass ● Block: 59 ● Description:

Target Image	Target Info	User Entered Info
	**5** ● Sonar Time at Target: 7/16/2023 15:01:37 ● Click Position 29.0785892085 -88.9801092617 (NAD27LL) (X) 2751713.57 (Y) 157517.35 (Projected Coordinates) ● Map Projection: LA-S-MOD ● Acoustic Source File: C:\Users\Eric Fischer PC\DOC Mapping Dropbox\Field Data Sync COPY ONLY\Launch 1\Hypack Projects\Projects\F23KNOC010_SP60\Raw\3028_1451.HSX ● Line Name: 3028_1451	**Dimensions and attributes** ● Target Width: 1.19 US ft ● Target Height: 0.81 US ft ● Target Length: 4.40 US ft ● Mag Anomaly: None ● Avoidance Area: None ● Classification1: Irregular Contact ● Classification2: Unknown Contact ● Area: South Pass ● Block: 59 ● Description:
	**6** ● Sonar Time at Target: 7/16/2023 15:02:05 ● Click Position 29.0785180454 -88.9808221639 (NAD27LL) (X) 2751486.40 (Y) 157486.80 (Projected Coordinates) ● Map Projection: LA-S-MOD ● Acoustic Source File: C:\Users\Eric Fischer PC\DOC Mapping Dropbox\Field Data Sync COPY ONLY\Launch 1\Hypack Projects\Projects\F23KNOC010_SP60\Raw\3028_1451.HSX ● Line Name: 3028_1451	**Dimensions and attributes** ● Target Width: 8.25 US ft ● Target Height: 0.48 US ft ● Target Length: 21.97 US ft ● Mag Anomaly: 355 ● Avoidance Area: None ● Classification1: Irregular Contact ● Classification2: Unknown Contact ● Area: South Pass ● Block: 59 ● Description:
	**7** ● Sonar Time at Target: 8/10/2023 17:21:26 ● Click Position 29.0768133006 -88.9614059942 (NAD27LL) (X) 2757700.65 (Y) 156994.87 (Projected Coordinates) ● Map Projection: LA-S-MOD ● Acoustic Source File: C:\Users\Eric Fischer PC\DOC Mapping Dropbox\Field Data Sync COPY ONLY\Launch 1\Hypack Projects\Projects\F23KNOC010_SP60\Raw\4031_1714.HSX ● Line Name: 4031_1714	**Dimensions and attributes** ● Target Width: 60.73 US ft ● Target Height: 32.74 US ft ● Target Length: 314.08 US ft ● Mag Anomaly: 321, 422, 423, 424, 425, 426, 427, 428, 431, 432, 434, 435 ● Avoidance Area: 1000 ft around visible extent ● Classification1: Linear Contact ● Classification2: Shipwreck ● Area: South Pass ● Block: 59 ● Description: Wreck, likely 500ft barge listed in BOEM Arch database as ID1095
	**8** ● Sonar Time at Target: 7/22/2023 15:10:52 ● Click Position 29.0746322223 -88.9946976444 (NAD27LL) (X) 2747083.47 (Y) 155983.31 (Projected Coordinates) ● Map Projection: LA-S-MOD ● Acoustic Source File: F:\DOC Mapping Dropbox\Field Data Sync COPY ONLY\Launch 1\Hypack Projects\Projects\F23KNOC010_SP60\Raw\3005_1505.HSX ● Line Name: 3005_1505	**Dimensions and attributes** ● Target Width: 14.56 US ft ● Target Height: 5.48 US ft ● Target Length: 19.37 US ft ● Mag Anomaly: None ● Avoidance Area: None ● Classification1: Irregular Contact ● Classification2: Possible Geology ● Area: South Pass ● Block: ● Description:

Target Image	Target Info	User Entered Info
	**9** ● Sonar Time at Target: 8/17/2023 17:47:15 ● Click Position 29.0732212246 -88.9477592873 (NAD27LL) (X) 2762086.59 (Y) 155779.41 (Projected Coordinates) ● Map Projection: LA-S-MOD ● Acoustic Source File: C:\Users\Eric Fischer PC\DOC Mapping Dropbox\Field Data Sync COPY ONLY\Launch 1\Hypack Projects\Projects\F23KNOC010_SP60\Raw\5034_1745.HSX ● Line Name: 5034_1745	**Dimensions and attributes** ● Target Width: 27.23 US ft ● Target Height: 5.57 US ft ● Target Length: 22.95 US ft ● Mag Anomaly: None ● Avoidance Area: None ● Classification1: Irregular Contact ● Classification2: Unknown Contact Cluster ● Area: South Pass ● Block: 60 ● Description:
	**10** ● Sonar Time at Target: 7/22/2023 17:04:26 ● Click Position 29.0722787105 -88.9886226413 (NAD27LL) (X) 2749041.39 (Y) 155167.30 (Projected Coordinates) ● Map Projection: LA-S-MOD ● Acoustic Source File: F:\DOC Mapping Dropbox\Field Data Sync COPY ONLY\Launch 1\Hypack Projects\Projects\F23KNOC010_SP60\Raw\3008_1645.HSX ● Line Name: 3008_1645	**Dimensions and attributes** ● Target Width: 1.47 US ft ● Target Height: 1.04 US ft ● Target Length: 16.13 US ft ● Mag Anomaly: None ● Avoidance Area: None ● Classification1: Linear Contact ● Classification2: Unknown Contact ● Area: South Pass ● Block: 60 ● Description:
	**11** ● Sonar Time at Target: 7/16/2023 18:07:22 ● Click Position 29.0721026464 -88.9859280200 (NAD27LL) (X) 2749903.40 (Y) 155120.92 (Projected Coordinates) ● Map Projection: LA-S-MOD ● Acoustic Source File: C:\Users\Eric Fischer PC\DOC Mapping Dropbox\Field Data Sync COPY ONLY\Launch 1\Hypack Projects\Projects\F23KNOC010_SP60\Raw\3010_1749.HSX ● Line Name: 3010_1749	**Dimensions and attributes** ● Target Width: 0.94 US ft ● Target Height: 1.80 US ft ● Target Length: 9.79 US ft ● Mag Anomaly: 347 ● Avoidance Area: None ● Classification1: Linear Contact ● Classification2: Unknown Contact ● Area: South Pass ● Block: 60 ● Description:
	**12** ● Sonar Time at Target: 7/16/2023 18:07:21 ● Click Position 29.0718811457 -88.9860639351 (NAD27LL) (X) 2749861.64 (Y) 155039.50 (Projected Coordinates) ● Map Projection: LA-S-MOD ● Acoustic Source File: C:\Users\Eric Fischer PC\DOC Mapping Dropbox\Field Data Sync COPY ONLY\Launch 1\Hypack Projects\Projects\F23KNOC010_SP60\Raw\3010_1749.HSX ● Line Name: 3010_1749	**Dimensions and attributes** ● Target Width: 0.99 US ft ● Target Height: 0.74 US ft ● Target Length: 7.70 US ft ● Mag Anomaly: None ● Avoidance Area: None ● Classification1: Linear Contact ● Classification2: Unknown Contact ● Area: South Pass ● Block: 60 ● Description:

Target Image	Target Info	User Entered Info
	**13** ● Sonar Time at Target: 7/16/2023 18:41:35 ● Click Position 29.0718113175 -88.9883503589 (NAD27LL) (X) 2749131.84 (Y) 154999.15 (Projected Coordinates) ● Map Projection: LA-S-MOD ● Acoustic Source File: C:\Users\Eric Fischer PC\DOC Mapping Dropbox\Field Data Sync COPY ONLY\Launch 1\Hypack Projects\Projects\F23KNOC010_SP60\Raw\3007_1830.HSX ● Line Name: 3007_1830	**Dimensions and attributes** ● Target Width: 1.79 US ft ● Target Height: 1.61 US ft ● Target Length: 7.26 US ft ● Mag Anomaly: None ● Avoidance Area: None ● Classification1: Irregular Contact ● Classification2: Unknown Contact ● Area: South Pass ● Block: 60 ● Description:
	**14** ● Sonar Time at Target: 8/15/2023 14:47:38 ● Click Position 29.0700904427 -88.9444649934 (NAD27LL) (X) 2763162.56 (Y) 154663.09 (Projected Coordinates) ● Map Projection: LA-S-MOD ● Acoustic Source File: C:\Users\Eric Fischer PC\DOC Mapping Dropbox\Field Data Sync COPY ONLY\Launch 1\Hypack Projects\Projects\F23KNOC010_SP60\Raw\5037_1433.HSX ● Line Name: 5037_1433	**Dimensions and attributes** ● Target Width: 2.34 US ft ● Target Height: 2.60 US ft ● Target Length: 11.84 US ft ● Mag Anomaly: None ● Avoidance Area: None ● Classification1: Irregular Contact ● Classification2: Unknown Contact ● Area: South Pass ● Block: 60 ● Description:
	**15** ● Sonar Time at Target: 8/15/2023 14:47:38 ● Click Position 29.0700756807 -88.9445173625 (NAD27LL) (X) 2763145.94 (Y) 154657.38 (Projected Coordinates) ● Map Projection: LA-S-MOD ● Acoustic Source File: C:\Users\Eric Fischer PC\DOC Mapping Dropbox\Field Data Sync COPY ONLY\Launch 1\Hypack Projects\Projects\F23KNOC010_SP60\Raw\5037_1433.HSX ● Line Name: 5037_1433	**Dimensions and attributes** ● Target Width: 1.09 US ft ● Target Height: 3.08 US ft ● Target Length: 3.97 US ft ● Mag Anomaly: None ● Avoidance Area: None ● Classification1: Irregular Contact ● Classification2: Unknown Contact ● Area: South Pass ● Block: 60 ● Description:
	**16** ● Sonar Time at Target: 8/19/2023 14:24:52 ● Click Position 29.0641119681 -88.9547420143 (NAD27LL) (X) 2759924.99 (Y) 152421.22 (Projected Coordinates) ● Map Projection: LA-S-MOD ● Acoustic Source File: C:\Users\Eric Fischer PC\DOC Mapping Dropbox\Field Data Sync COPY ONLY\Launch 1\Hypack Projects\Projects\F23KNOC010_SP60\Raw\5010_1421.HSX ● Line Name: 5010_1421	**Dimensions and attributes** ● Target Width: 3.68 US ft ● Target Height: 0.93 US ft ● Target Length: 5.47 US ft ● Mag Anomaly: None ● Avoidance Area: None ● Classification1: Irregular Contact ● Classification2: Unknown Contact ● Area: South Pass ● Block: 60 ● Description:

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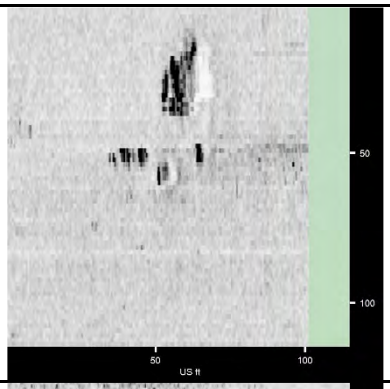
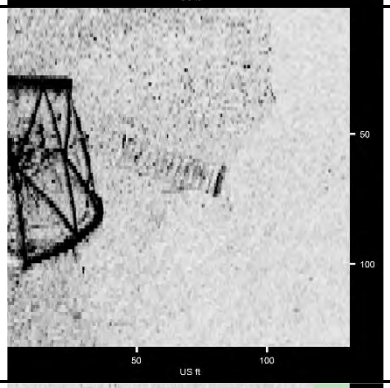
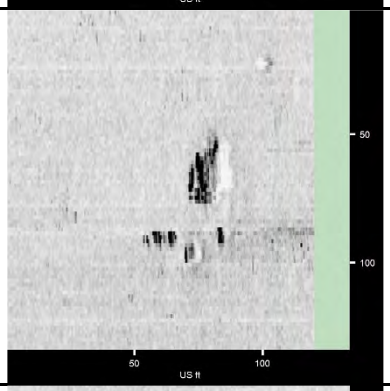
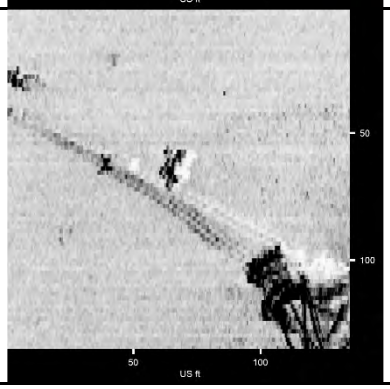
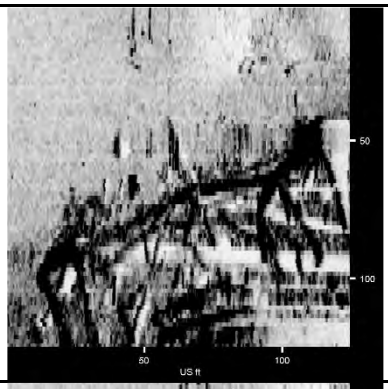
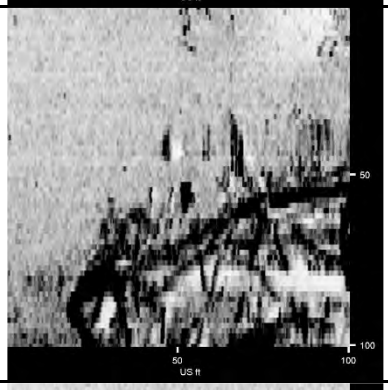
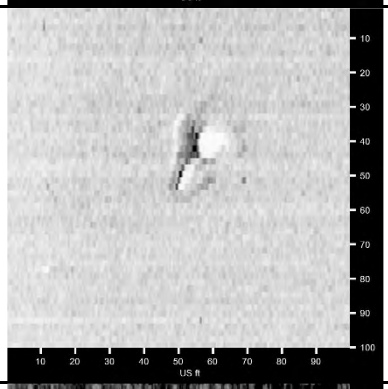
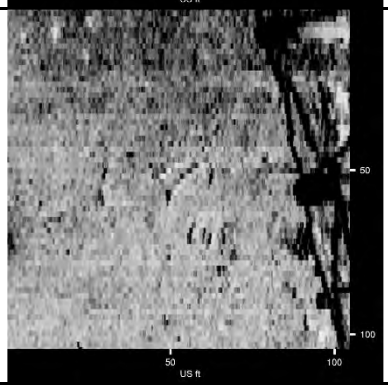
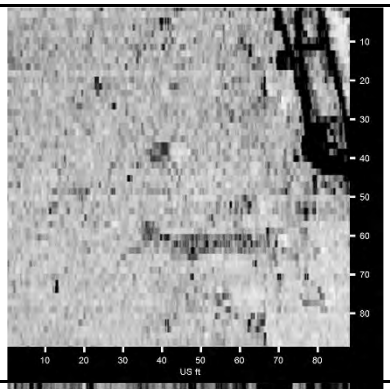
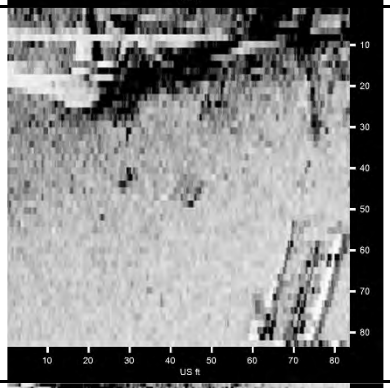
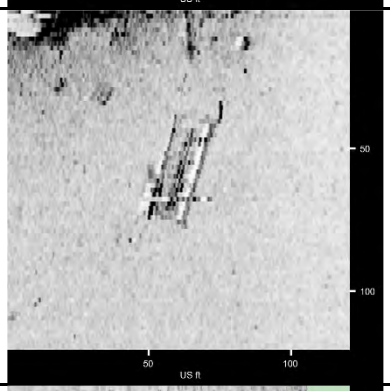
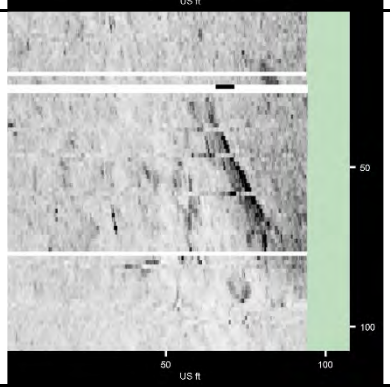
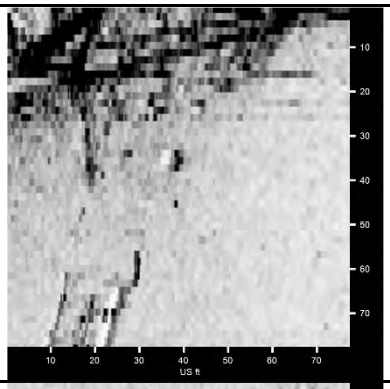
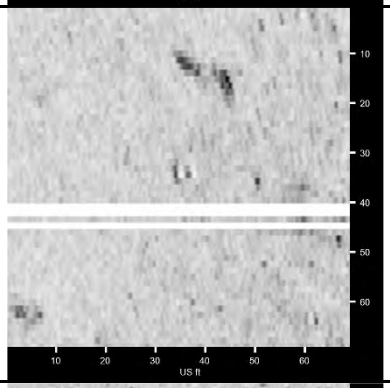
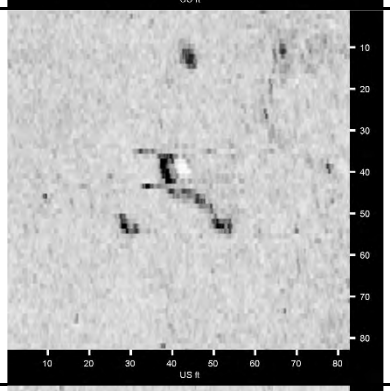
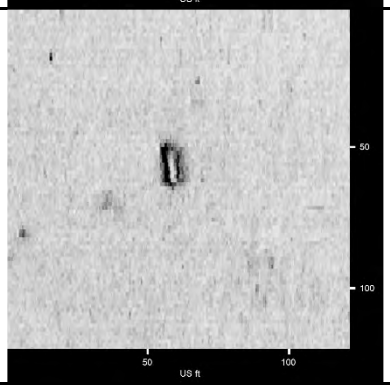
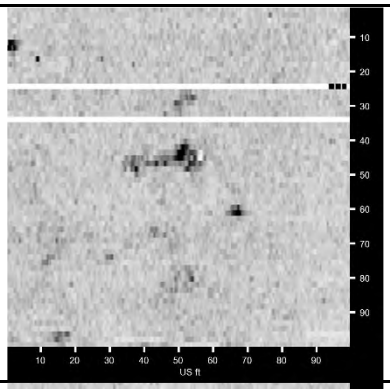
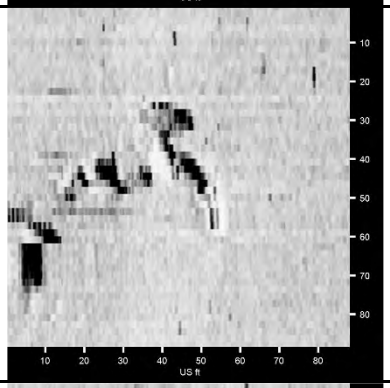
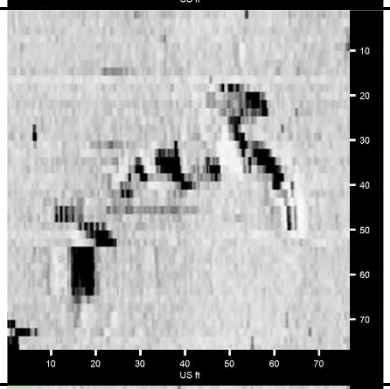
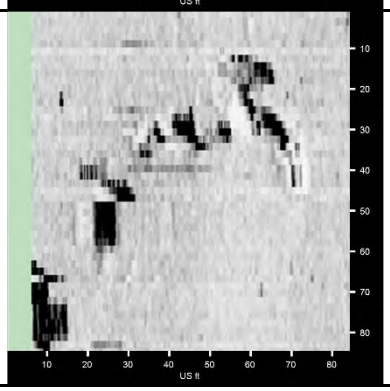
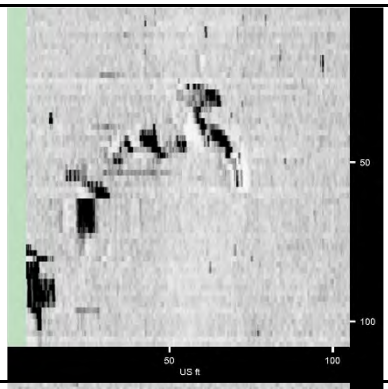
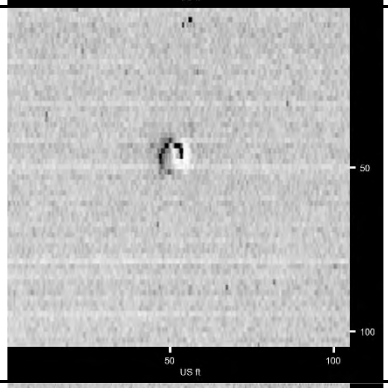
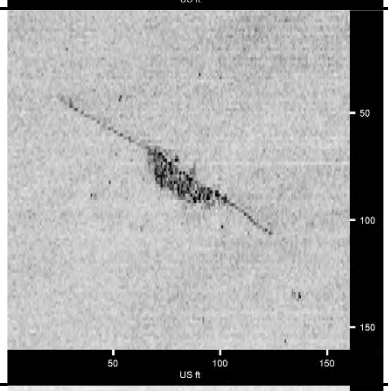
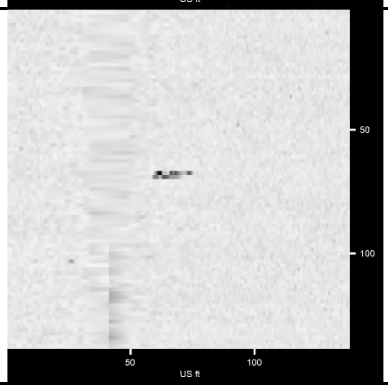
	**17** • Sonar Time at Target: 8/19/2023 14:24:53 • Click Position 29.0640939817 -88.9547863286 (NAD27LL) (X) 2759910.97 (Y) 152414.39 (Projected Coordinates) • Map Projection: LA-S-MOD • Acoustic Source File: C:\Users\Eric Fischer PC\DOC Mapping Dropbox\Field Data Sync COPY ONLY\Launch 1\Hypack Projects\Projects\F23KNOC010_SP60\Raw\5010_1421.HSX • Line Name: 5010_1421	**Dimensions and attributes** • Target Width: 2.45 US ft • Target Height: 0.58 US ft • Target Length: 5.58 US ft • Mag Anomaly: None • Avoidance Area: None • Classification1: Irregular Contact • Classification2: Unknown Contact • Area: South Pass • Block: 60 • Description:
	**18** • Sonar Time at Target: 8/12/2023 17:00:55 • Click Position 29.0640497165 -88.9562495751 (NAD27LL) (X) 2759443.89 (Y) 152388.60 (Projected Coordinates) • Map Projection: LA-S-MOD • Acoustic Source File: C:\Users\Eric Fischer PC\DOC Mapping Dropbox\Field Data Sync COPY ONLY\Launch 1\Hypack Projects\Projects\F23KNOC010_SP60\Raw\4005_1658.HSX • Line Name: 4005_1658	**Dimensions and attributes** • Target Width: 12.94 US ft • Target Height: 1.45 US ft • Target Length: 41.09 US ft • Mag Anomaly: None • Avoidance Area: None • Classification1: Rectangular Contact • Classification2: Unknown Debris • Area: South Pass • Block: 60 • Description:
	**19** • Sonar Time at Target: 8/19/2023 14:24:56 • Click Position 29.0640268308 -88.9547675740 (NAD27LL) (X) 2759917.47 (Y) 152390.10 (Projected Coordinates) • Map Projection: LA-S-MOD • Acoustic Source File: C:\Users\Eric Fischer PC\DOC Mapping Dropbox\Field Data Sync COPY ONLY\Launch 1\Hypack Projects\Projects\F23KNOC010_SP60\Raw\5010_1421.HSX • Line Name: 5010_1421	**Dimensions and attributes** • Target Width: 11.14 US ft • Target Height: 2.11 US ft • Target Length: 25.15 US ft • Mag Anomaly: None • Avoidance Area: None • Classification1: Irregular Contact • Classification2: Unknown Contact • Area: South Pass • Block: 60 • Description:
	**20** • Sonar Time at Target: 8/20/2023 16:32:38 • Click Position 29.0639320890 -88.9550004649 (NAD27LL) (X) 2759843.79 (Y) 152354.11 (Projected Coordinates) • Map Projection: LA-S-MOD • Acoustic Source File: C:\Users\Eric Fischer PC\DOC Mapping Dropbox\Field Data Sync COPY ONLY\Launch 1\Hypack Projects\Projects\F23KNOC010_SP60\Raw\5011_1629.HSX • Line Name: 5011_1629	**Dimensions and attributes** • Target Width: 7.12 US ft • Target Height: 3.25 US ft • Target Length: 16.08 US ft • Mag Anomaly: None • Avoidance Area: None • Classification1: Irregular Contact • Classification2: Unknown Debris` • Area: South Pass • Block: SP60 • Description:

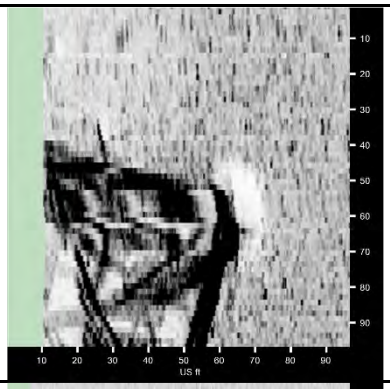
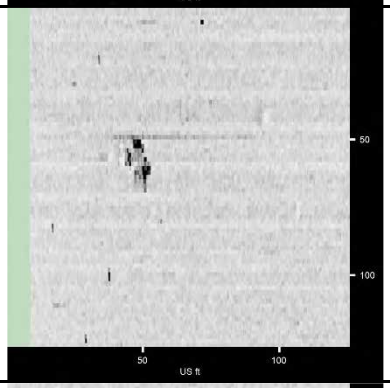
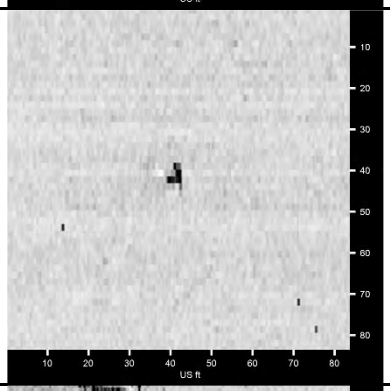
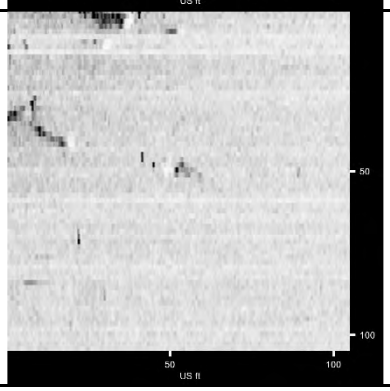
Target Image	Target Info	User Entered Info
	**21** ● Sonar Time at Target: 8/20/2023 17:06:12 ● Click Position 29.0638477161 -88.9562182721 (NAD27LL) (X) 2759455.41 (Y) 152315.36 (Projected Coordinates) ● Map Projection: LA-S-MOD ● Acoustic Source File: C:\Users\Eric Fischer PC\DOC Mapping Dropbox\Field Data Sync COPY ONLY\Launch 1\Hypack Projects\Projects\F23KNOC010_SP60\Raw\5008_1651.HSX ● Line Name: 5008_1651	**Dimensions and attributes** ● Target Width: 3.12 US ft ● Target Height: 1.02 US ft ● Target Length: 15.23 US ft ● Mag Anomaly: None ● Avoidance Area: None ● Classification1: Irregular Contact ● Classification2: Unknown Debris ● Area: South Pass ● Block: 60 ● Description:
	**22** ● Sonar Time at Target: 8/20/2023 17:06:12 ● Click Position 29.0638283283 -88.9562819871 (NAD27LL) (X) 2759435.20 (Y) 152307.89 (Projected Coordinates) ● Map Projection: LA-S-MOD ● Acoustic Source File: C:\Users\Eric Fischer PC\DOC Mapping Dropbox\Field Data Sync COPY ONLY\Launch 1\Hypack Projects\Projects\F23KNOC010_SP60\Raw\5008_1651.HSX ● Line Name: 5008_1651	**Dimensions and attributes** ● Target Width: 2.90 US ft ● Target Height: 1.78 US ft ● Target Length: 8.70 US ft ● Mag Anomaly: None ● Avoidance Area: None ● Classification1: Irregular Contact ● Classification2: Unknown Debris ● Area: South Pass ● Block: 60 ● Description:
	**23** ● Sonar Time at Target: 8/20/2023 16:20:16 ● Click Position 29.0637310123 -88.9546486476 (NAD27LL) (X) 2759957.69 (Y) 152283.34 (Projected Coordinates) ● Map Projection: LA-S-MOD ● Acoustic Source File: C:\Users\Eric Fischer PC\DOC Mapping Dropbox\Field Data Sync COPY ONLY\Launch 1\Hypack Projects\Projects\F23KNOC010_SP60\Raw\5012_1606.HSX ● Line Name: 5012_1606	**Dimensions and attributes** ● Target Width: 4.59 US ft ● Target Height: 0.61 US ft ● Target Length: 19.10 US ft ● Mag Anomaly: None ● Avoidance Area: None ● Classification1: Linear Contact ● Classification2: Unknown Contact ● Area: South Pass ● Block: 60 ● Description:
	**24** ● Sonar Time at Target: 8/20/2023 17:05:56 ● Click Position 29.0634610977 -88.9561825023 (NAD27LL) (X) 2759469.75 (Y) 152175.04 (Projected Coordinates) ● Map Projection: LA-S-MOD ● Acoustic Source File: C:\Users\Eric Fischer PC\DOC Mapping Dropbox\Field Data Sync COPY ONLY\Launch 1\Hypack Projects\Projects\F23KNOC010_SP60\Raw\5008_1651.HSX ● Line Name: 5008_1651	**Dimensions and attributes** ● Target Width: 1.14 US ft ● Target Height: 0.86 US ft ● Target Length: 15.09 US ft ● Mag Anomaly: None ● Avoidance Area: None ● Classification1: Linear Contact ● Classification2: Possible Exposed Pipeline ● Area: South Pass ● Block: 60 ● Description:

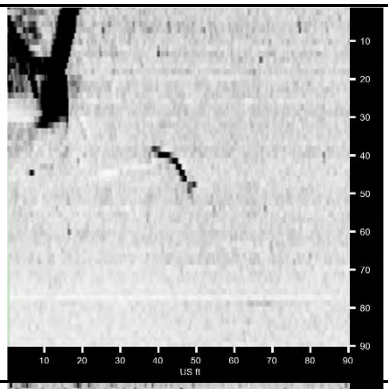
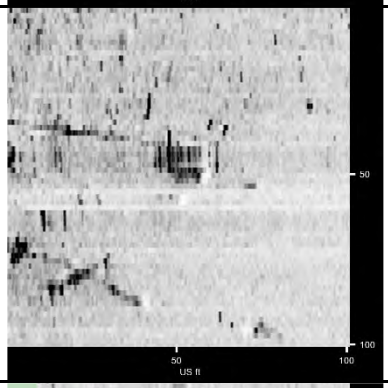
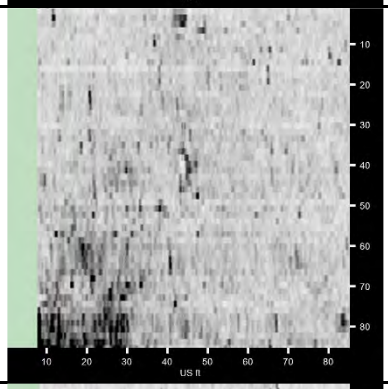
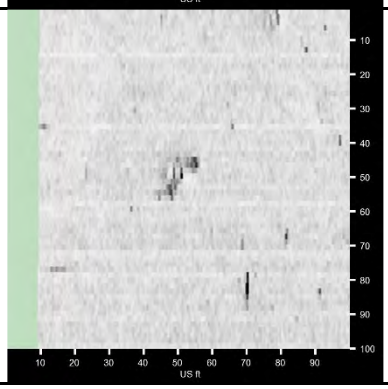
Target Image	Target Info	User Entered Info
	**25** • Sonar Time at Target: 8/20/2023 17:05:50 • Click Position 29.0633554221 -88.9560521419 (NAD27LL) (X) 2759512.19 (Y) 152137.48 (Projected Coordinates) • Map Projection: LA-S-MOD • Acoustic Source File: C:\Users\Eric Fischer PC\DOC Mapping Dropbox\Field Data Sync COPY ONLY\Launch 1\Hypack Projects\Projects\F23KNOC010_SP60\Raw\5008_1651.HSX • Line Name: 5008_1651	**Dimensions and attributes** • Target Width: 1.45 US ft • Target Height: 2.45 US ft • Target Length: 2.76 US ft • Mag Anomaly: None • Avoidance Area: None • Classification1: Irregular Contact • Classification2: Unknown Debris • Area: South Pass • Block: 60 • Description:
	**26** • Sonar Time at Target: 8/12/2023 19:01:15 • Click Position 29.0631810558 -88.9556406463 (NAD27LL) (X) 2759644.96 (Y) 152076.82 (Projected Coordinates) • Map Projection: LA-S-MOD • Acoustic Source File: C:\Users\Eric Fischer PC\DOC Mapping Dropbox\Field Data Sync COPY ONLY\Launch 1\Hypack Projects\Projects\F23KNOC010_SP60\Raw\4006_1848.HSX • Line Name: 4006_1848	**Dimensions and attributes** • Target Width: 5.52 US ft • Target Height: 1.04 US ft • Target Length: 6.55 US ft • Mag Anomaly: None • Avoidance Area: None • Classification1: Irregular Contact • Classification2: Unknown Contact • Area: South Pass • Block: 60 • Description:
	**27** • Sonar Time at Target: 8/12/2023 19:01:11 • Click Position 29.0631770246 -88.9557725876 (NAD27LL) (X) 2759602.84 (Y) 152074.48 (Projected Coordinates) • Map Projection: LA-S-MOD • Acoustic Source File: C:\Users\Eric Fischer PC\DOC Mapping Dropbox\Field Data Sync COPY ONLY\Launch 1\Hypack Projects\Projects\F23KNOC010_SP60\Raw\4006_1848.HSX • Line Name: 4006_1848	**Dimensions and attributes** • Target Width: 13.95 US ft • Target Height: 2.63 US ft • Target Length: 34.98 US ft • Mag Anomaly: None • Avoidance Area: None • Classification1: Rectanular Contact • Classification2: Unknown Contact • Area: South Pass • Block: 60 • Description:
	**28** • Sonar Time at Target: 8/12/2023 17:41:16 • Click Position 29.0631162025 -88.9557261534 (NAD27LL) (X) 2759618.13 (Y) 152052.67 (Projected Coordinates) • Map Projection: LA-S-MOD • Acoustic Source File: C:\Users\Eric Fischer PC\DOC Mapping Dropbox\Field Data Sync COPY ONLY\Launch 1\Hypack Projects\Projects\F23KNOC010_SP60\Raw\4001_1739.HSX • Line Name: 4001_1739	**Dimensions and attributes** • Target Width: 4.55 US ft • Target Height: 0.52 US ft • Target Length: 46.66 US ft • Mag Anomaly: None • Avoidance Area: None • Classification1: Linear Contact • Classification2: Unknown Contact • Area: South Pass • Block: 60 • Description:

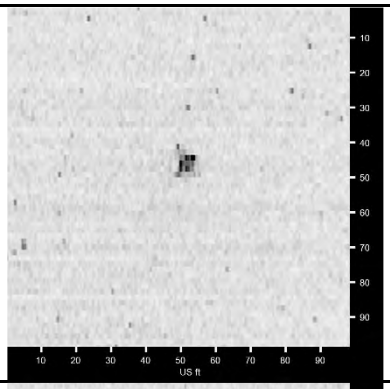
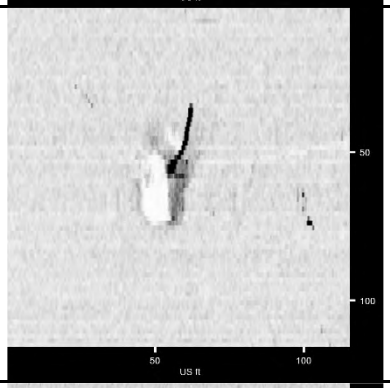
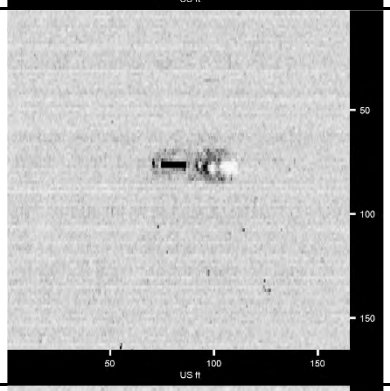
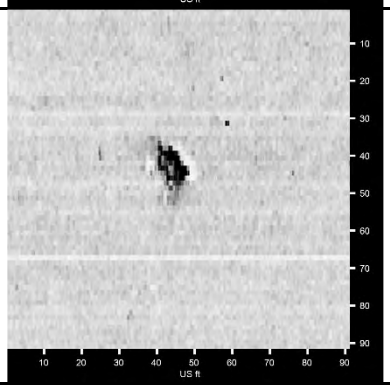
Target Image	Target Info	User Entered Info
	**29** • Sonar Time at Target: 8/12/2023 19:01:16 • Click Position 29.0630492290 -88.9556962549 (NAD27LL) (X) 2759628.19 (Y) 152028.52 (Projected Coordinates) • Map Projection: LA-S-MOD • Acoustic Source File: C:\Users\Eric Fischer PC\DOC Mapping Dropbox\Field Data Sync COPY ONLY\Launch 1\Hypack Projects\Projects\F23KNOC010_SP60\Raw\4006_1848.HSX • Line Name: 4006_1848	**Dimensions and attributes** • Target Width: 2.23 US ft • Target Height: 2.64 US ft • Target Length: 4.49 US ft • Mag Anomaly: None • Avoidance Area: None • Classification1: Irregular Contact • Classification2: Unknown Contact • Area: South Pass • Block: 60 • Description:
	**30** • Sonar Time at Target: 8/12/2023 17:41:25 • Click Position 29.0628396648 -88.9559608129 (NAD27LL) (X) 2759545.26 (Y) 151950.58 (Projected Coordinates) • Map Projection: LA-S-MOD • Acoustic Source File: C:\Users\Eric Fischer PC\DOC Mapping Dropbox\Field Data Sync COPY ONLY\Launch 1\Hypack Projects\Projects\F23KNOC010_SP60\Raw\4001_1739.HSX • Line Name: 4001_1739	**Dimensions and attributes** • Target Width: 0.73 US ft • Target Height: 0.72 US ft • Target Length: 2.70 US ft • Mag Anomaly: None • Avoidance Area: None • Classification1: Irregular Contact • Classification2: Unknown Contact • Area: South Pass • Block: 60 • Description:
	**31** • Sonar Time at Target: 8/12/2023 17:41:40 • Click Position 29.0628154395 -88.9563044936 (NAD27LL) (X) 2759435.65 (Y) 151939.49 (Projected Coordinates) • Map Projection: LA-S-MOD • Acoustic Source File: C:\Users\Eric Fischer PC\DOC Mapping Dropbox\Field Data Sync COPY ONLY\Launch 1\Hypack Projects\Projects\F23KNOC010_SP60\Raw\4001_1739.HSX • Line Name: 4001_1739	**Dimensions and attributes** • Target Width: 3.66 US ft • Target Height: 1.72 US ft • Target Length: 6.67 US ft • Mag Anomaly: None • Avoidance Area: None • Classification1: Irregular Contact • Classification2: Unknown Contact • Area: South Pass • Block: 60 • Description:
	**32** • Sonar Time at Target: 8/19/2023 15:01:25 • Click Position 29.0626090225 -88.9572479679 (NAD27LL) (X) 2759135.82 (Y) 151858.19 (Projected Coordinates) • Map Projection: LA-S-MOD • Acoustic Source File: C:\Users\Eric Fischer PC\DOC Mapping Dropbox\Field Data Sync COPY ONLY\Launch 1\Hypack Projects\Projects\F23KNOC010_SP60\Raw\5007_1446.HSX • Line Name: 5007_1446	**Dimensions and attributes** • Target Width: 1.89 US ft • Target Height: 0.61 US ft • Target Length: 7.51 US ft • Mag Anomaly: None • Avoidance Area: None • Classification1: Linear Contact • Classification2: Unknown Contact • Area: South Pass • Block: 60 • Description:

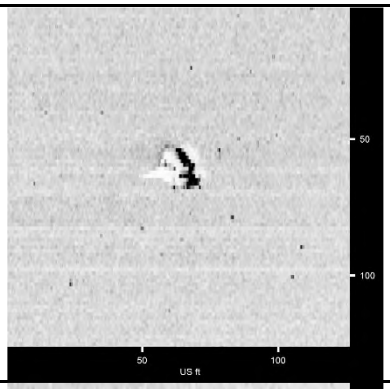
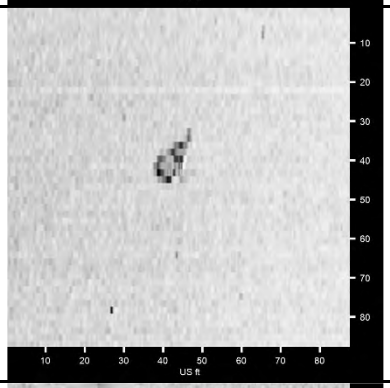
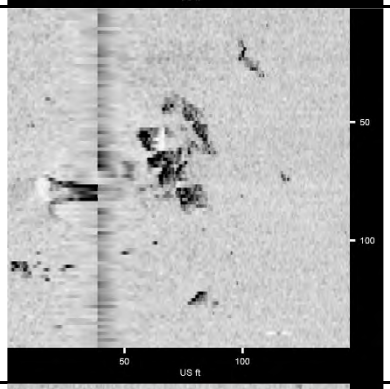
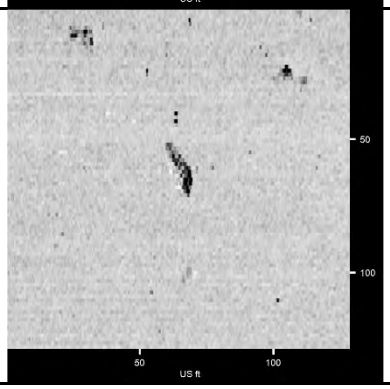
Target Image	Target Info	User Entered Info
	**33** ● Sonar Time at Target: 8/12/2023 19:01:40 ● Click Position 29.0621990128 -88.9554627606 (NAD27LL) (X) 2759709.19 (Y) 151720.96 (Projected Coordinates) ● Map Projection: LA-S-MOD ● Acoustic Source File: C:\Users\Eric Fischer PC\DOC Mapping Dropbox\Field Data Sync COPY ONLY\Launch 1\Hypack Projects\Projects\F23KNOC010_SP60\Raw\4006_1848.HSX ● Line Name: 4006_1848	**Dimensions and attributes** ● Target Width: 7.42 US ft ● Target Height: 1.42 US ft ● Target Length: 6.15 US ft ● Mag Anomaly: None ● Avoidance Area: None ● Classification1: Irregular Contact ● Classification2: Unknown Contact ● Area: South Pass ● Block: 60 ● Description:
	**34** ● Sonar Time at Target: 8/17/2023 19:17:47 ● Click Position 29.0615604279 -88.9445556467 (NAD27LL) (X) 2763198.26 (Y) 151561.27 (Projected Coordinates) ● Map Projection: LA-S-MOD ● Acoustic Source File: C:\Users\Eric Fischer PC\DOC Mapping Dropbox\Field Data Sync COPY ONLY\Launch 1\Hypack Projects\Projects\F23KNOC010_SP60\Raw\5025_1908.HSX ● Line Name: 5025_1908	**Dimensions and attributes** ● Target Width: 6.97 US ft ● Target Height: 1.24 US ft ● Target Length: 34.58 US ft ● Mag Anomaly: None ● Avoidance Area: None ● Classification1: Irregular Contact ● Classification2: Probable Geology ● Area: South Pass ● Block: 60 ● Description:
	**35** ● Sonar Time at Target: 8/17/2023 19:17:47 ● Click Position 29.0615389715 -88.9446129570 (NAD27LL) (X) 2763180.11 (Y) 151553.09 (Projected Coordinates) ● Map Projection: LA-S-MOD ● Acoustic Source File: C:\Users\Eric Fischer PC\DOC Mapping Dropbox\Field Data Sync COPY ONLY\Launch 1\Hypack Projects\Projects\F23KNOC010_SP60\Raw\5025_1908.HSX ● Line Name: 5025_1908	**Dimensions and attributes** ● Target Width: 5.30 US ft ● Target Height: 0.68 US ft ● Target Length: 11.52 US ft ● Mag Anomaly: None ● Avoidance Area: None ● Classification1: Irregular Contact ● Classification2: Probable Geology ● Area: South Pass ● Block: 60 ● Description:
	**36** ● Sonar Time at Target: 8/17/2023 19:17:46 ● Click Position 29.0614923371 -88.9446543455 (NAD27LL) (X) 2763167.25 (Y) 151535.86 (Projected Coordinates) ● Map Projection: LA-S-MOD ● Acoustic Source File: C:\Users\Eric Fischer PC\DOC Mapping Dropbox\Field Data Sync COPY ONLY\Launch 1\Hypack Projects\Projects\F23KNOC010_SP60\Raw\5025_1908.HSX ● Line Name: 5025_1908	**Dimensions and attributes** ● Target Width: 4.81 US ft ● Target Height: 0.88 US ft ● Target Length: 15.07 US ft ● Mag Anomaly: None ● Avoidance Area: None ● Classification1: Irregular Contact ● Classification2: Probable Geology ● Area: South Pass ● Block: 60 ● Description:

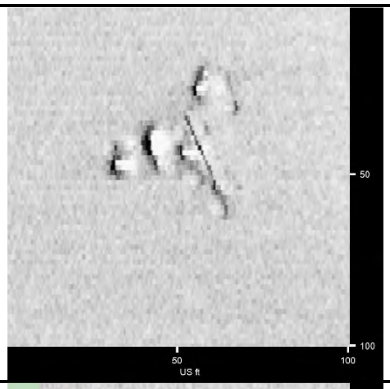
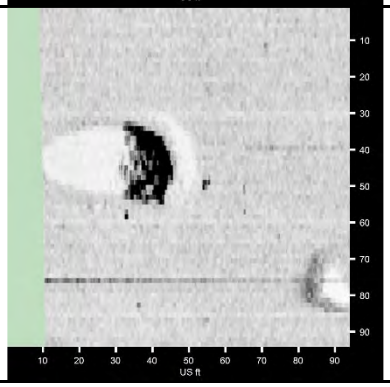
Target Image	Target Info	User Entered Info
	**37** ● Sonar Time at Target: 8/17/2023 19:17:45 ● Click Position 29.0614709397 -88.9446598225 (NAD27LL) (X) 2763165.66 (Y) 151528.04 (Projected Coordinates) ● Map Projection: LA-S-MOD ● Acoustic Source File: C:\Users\Eric Fischer PC\DOC Mapping Dropbox\Field Data Sync COPY ONLY\Launch 1\Hypack Projects\Projects\F23KNOC010_SP60\Raw\5025_1908.HSX ● Line Name: 5025_1908	**Dimensions and attributes** ● Target Width: 5.06 US ft ● Target Height: 0.79 US ft ● Target Length: 9.87 US ft ● Mag Anomaly: None ● Avoidance Area: None ● Classification1: Irregular Contact ● Classification2: Probable Geology ● Area: South Pass ● Block: 60 ● Description:
	**38** ● Sonar Time at Target: 8/20/2023 14:42:41 ● Click Position 29.0565567523 -88.9430573488 (NAD27LL) (X) 2763714.84 (Y) 149752.09 (Projected Coordinates) ● Map Projection: LA-S-MOD ● Acoustic Source File: C:\Users\Eric Fischer PC\DOC Mapping Dropbox\Field Data Sync COPY ONLY\Launch 1\Hypack Projects\Projects\F23KNOC010_SP60\Raw\5023_1435.HSX ● Line Name: 5023_1435	**Dimensions and attributes** ● Target Width: 2.03 US ft ● Target Height: 0.24 US ft ● Target Length: 5.04 US ft ● Mag Anomaly: None ● Avoidance Area: None ● Classification1: Irregular Contact ● Classification2: Unknown Contact ● Area: South Pass ● Block: 67 ● Description:
	**39** ● Sonar Time at Target: 8/20/2023 17:42:05 ● Click Position 29.0556014834 -88.9540035775 (NAD27LL) (X) 2760225.13 (Y) 149331.99 (Projected Coordinates) ● Map Projection: LA-S-MOD ● Acoustic Source File: C:\Users\Eric Fischer PC\DOC Mapping Dropbox\Field Data Sync COPY ONLY\Launch 1\Hypack Projects\Projects\F23KNOC010_SP60\Raw\5002_1732.HSX ● Line Name: 5002_1732	**Dimensions and attributes** ● Target Width: 8.77 US ft ● Target Height: 0.63 US ft ● Target Length: 115.58 US ft ● Mag Anomaly: None ● Avoidance Area: None ● Classification1: Linear Contact ● Classification2: Possible Pipeline ● Area: South Pass ● Block: 60 ● Description:
	**40** ● Sonar Time at Target: 8/17/2023 18:53:18 ● Click Position 29.0552452429 -88.9387109162 (NAD27LL) (X) 2765113.33 (Y) 149304.26 (Projected Coordinates) ● Map Projection: LA-S-MOD ● Acoustic Source File: C:\Users\Eric Fischer PC\DOC Mapping Dropbox\Field Data Sync COPY ONLY\Launch 1\Hypack Projects\Projects\F23KNOC010_SP60\Raw\5028_1839.HSX ● Line Name: 5028_1839	**Dimensions and attributes** ● Target Width: 2.77 US ft ● Target Height: 0.68 US ft ● Target Length: 15.17 US ft ● Mag Anomaly: None ● Avoidance Area: None ● Classification1: Linear Contact ● Classification2: Unknown Contact ● Area: South Pass ● Block: 67 ● Description:

Target Image	Target Info	User Entered Info
	**41** ● Sonar Time at Target: 8/17/2023 18:14:31 ● Click Position 29.0550469934 -88.9366863433 (NAD27LL) (X) 2765761.62 (Y) 149245.71 (Projected Coordinates) ● Map Projection: LA-S-MOD ● Acoustic Source File: C:\Users\Eric Fischer PC\DOC Mapping Dropbox\Field Data Sync COPY ONLY\Launch 1\Hypack Projects\Projects\F23KNOC010_SP60\Raw\5031_1810.HSX ● Line Name: 5031_1810	**Dimensions and attributes** ● Target Width: 0.71 US ft ● Target Height: 0.08 US ft ● Target Length: 11.07 US ft ● Mag Anomaly: None ● Avoidance Area: None ● Classification1: Linear Contact ● Classification2: Unknown Contact ● Area: South Pass ● Block: 67 ● Description:
	**42** ● Sonar Time at Target: 8/17/2023 19:13:19 ● Click Position 29.0549121788 -88.9411089235 (NAD27LL) (X) 2764349.77 (Y) 149167.17 (Projected Coordinates) ● Map Projection: LA-S-MOD ● Acoustic Source File: C:\Users\Eric Fischer PC\DOC Mapping Dropbox\Field Data Sync COPY ONLY\Launch 1\Hypack Projects\Projects\F23KNOC010_SP60\Raw\5025_1908.HSX ● Line Name: 5025_1908	**Dimensions and attributes** ● Target Width: 6.58 US ft ● Target Height: 0.65 US ft ● Target Length: 17.69 US ft ● Mag Anomaly: None ● Avoidance Area: None ● Classification1: Irregular Contact ● Classification2: Unknown Contact ● Area: South Pass ● Block: 67 ● Description:
	**43** ● Sonar Time at Target: 8/17/2023 19:13:10 ● Click Position 29.0547467638 -88.9408510647 (NAD27LL) (X) 2764433.40 (Y) 149108.75 (Projected Coordinates) ● Map Projection: LA-S-MOD ● Acoustic Source File: C:\Users\Eric Fischer PC\DOC Mapping Dropbox\Field Data Sync COPY ONLY\Launch 1\Hypack Projects\Projects\F23KNOC010_SP60\Raw\5025_1908.HSX ● Line Name: 5025_1908	**Dimensions and attributes** ● Target Width: 3.67 US ft ● Target Height: 1.53 US ft ● Target Length: 5.25 US ft ● Mag Anomaly: None ● Avoidance Area: None ● Classification1: Irregular Contact ● Classification2: Unknown Contact ● Area: South Pass ● Block: 67 ● Description:
	**44** ● Sonar Time at Target: 8/17/2023 18:53:59 ● Click Position 29.0546092686 -88.9374292011 (NAD27LL) (X) 2765527.63 (Y) 149081.60 (Projected Coordinates) ● Map Projection: LA-S-MOD ● Acoustic Source File: C:\Users\Eric Fischer PC\DOC Mapping Dropbox\Field Data Sync COPY ONLY\Launch 1\Hypack Projects\Projects\F23KNOC010_SP60\Raw\5028_1839.HSX ● Line Name: 5028_1839	**Dimensions and attributes** ● Target Width: 1.00 US ft ● Target Height: 1.20 US ft ● Target Length: 1.46 US ft ● Mag Anomaly: None ● Avoidance Area: None ● Classification1: Irregular Contact ● Classification2: Unknown Contact ● Area: South Pass ● Block: 67 ● Description:

Target Image	Target Info	User Entered Info
	**45** • Sonar Time at Target: 8/17/2023 18:14:08 • Click Position 29.0545727989 -88.9363449709 (NAD27LL) (X) 2765874.28 (Y) 149075.59 (Projected Coordinates) • Map Projection: LA-S-MOD • Acoustic Source File: C:\Users\Eric Fischer PC\DOC Mapping Dropbox\Field Data Sync COPY ONLY\Launch 1\Hypack Projects\Projects\F23KNOC010_SP60\Raw\5031_1810.HSX • Line Name: 5031_1810	**Dimensions and attributes** • Target Width: 1.99 US ft • Target Height: 0.36 US ft • Target Length: 16.64 US ft • Mag Anomaly: None • Avoidance Area: None • Classification1: Linear Contact • Classification2: Unknown Contact • Area: South Pass • Block: 67 • Description:
	**46** • Sonar Time at Target: 8/17/2023 18:54:04 • Click Position 29.0545260883 -88.9372958618 (NAD27LL) (X) 2765570.86 (Y) 149052.25 (Projected Coordinates) • Map Projection: LA-S-MOD • Acoustic Source File: C:\Users\Eric Fischer PC\DOC Mapping Dropbox\Field Data Sync COPY ONLY\Launch 1\Hypack Projects\Projects\F23KNOC010_SP60\Raw\5028_1839.HSX • Line Name: 5028_1839	**Dimensions and attributes** • Target Width: 10.54 US ft • Target Height: 0.23 US ft • Target Length: 13.39 US ft • Mag Anomaly: None • Avoidance Area: None • Classification1: Irregular Contact • Classification2: Unknown Contact • Area: South Pass • Block: 67 • Description:
	**47** • Sonar Time at Target: 8/17/2023 18:54:19 • Click Position 29.0542457163 -88.9369893231 (NAD27LL) (X) 2765670.92 (Y) 148952.37 (Projected Coordinates) • Map Projection: LA-S-MOD • Acoustic Source File: C:\Users\Eric Fischer PC\DOC Mapping Dropbox\Field Data Sync COPY ONLY\Launch 1\Hypack Projects\Projects\F23KNOC010_SP60\Raw\5028_1839.HSX • Line Name: 5028_1839	**Dimensions and attributes** • Target Width: 2.01 US ft • Target Height: 0.39 US ft • Target Length: 7.92 US ft • Mag Anomaly: None • Avoidance Area: None • Classification1: Irregular Contact • Classification2: Unknown Contact • Area: South Pass • Block: 67 • Description:
	**48** • Sonar Time at Target: 8/17/2023 18:54:32 • Click Position 29.0539520113 -88.9368053155 (NAD27LL) (X) 2765731.94 (Y) 148846.81 (Projected Coordinates) • Map Projection: LA-S-MOD • Acoustic Source File: C:\Users\Eric Fischer PC\DOC Mapping Dropbox\Field Data Sync COPY ONLY\Launch 1\Hypack Projects\Projects\F23KNOC010_SP60\Raw\5028_1839.HSX • Line Name: 5028_1839	**Dimensions and attributes** • Target Width: 3.62 US ft • Target Height: 0.32 US ft • Target Length: 17.23 US ft • Mag Anomaly: None • Avoidance Area: None • Classification1: Irregular Contact • Classification2: Unknown Contact • Area: South Pass • Block: 67 • Description:

Target Image	Target Info	User Entered Info
	**49** • Sonar Time at Target: 8/17/2023 18:54:29 • Click Position 29.0537584400 -88.9373505181 (NAD27LL) (X) 2765559.23 (Y) 148772.80 (Projected Coordinates) • Map Projection: LA-S-MOD • Acoustic Source File: C:\Users\Eric Fischer PC\DOC Mapping Dropbox\Field Data Sync COPY ONLY\Launch 1\Hypack Projects\Projects\F23KNOC010_SP60\Raw\5028_1839.HSX • Line Name: 5028_1839	**Dimensions and attributes** • Target Width: 4.60 US ft • Target Height: 1.30 US ft • Target Length: 4.78 US ft • Mag Anomaly: None • Avoidance Area: None • Classification1: Rectangular Contact • Classification2: Unknown Contact • Area: South Pass • Block: 67 • Description:
	**50** • Sonar Time at Target: 8/17/2023 18:12:52 • Click Position 29.0532489246 -88.9339787511 (NAD27LL) (X) 2766640.29 (Y) 148610.10 (Projected Coordinates) • Map Projection: LA-S-MOD • Acoustic Source File: C:\Users\Eric Fischer PC\DOC Mapping Dropbox\Field Data Sync COPY ONLY\Launch 1\Hypack Projects\Projects\F23KNOC010_SP60\Raw\5031_1810.HSX • Line Name: 5031_1810	**Dimensions and attributes** • Target Width: 2.76 US ft • Target Height: 0.30 US ft • Target Length: 25.97 US ft • Mag Anomaly: None • Avoidance Area: None • Classification1: Linear Contact • Classification2: Unknown Contact • Area: South Pass • Block: 67 • Description:
	**51** • Sonar Time at Target: 8/20/2023 14:27:11 • Click Position 29.0532200394 -88.9373900744 (NAD27LL) (X) 2765550.69 (Y) 148576.79 (Projected Coordinates) • Map Projection: LA-S-MOD • Acoustic Source File: C:\Users\Eric Fischer PC\DOC Mapping Dropbox\Field Data Sync COPY ONLY\Launch 1\Hypack Projects\Projects\F23KNOC010_SP60\Raw\5026_1411.HSX • Line Name: 5026_1411	**Dimensions and attributes** • Target Width: 2.96 US ft • Target Height: 0.21 US ft • Target Length: 11.35 US ft • Mag Anomaly: None • Avoidance Area: None • Classification1: Rectangular Contact • Classification2: Unknown Contact • Area: South Pass • Block: 67 • Description:
	**52** • Sonar Time at Target: 8/19/2023 14:03:24 • Click Position 29.0502760327 -88.9449665709 (NAD27LL) (X) 2763152.51 (Y) 147455.91 (Projected Coordinates) • Map Projection: LA-S-MOD • Acoustic Source File: C:\Users\Eric Fischer PC\DOC Mapping Dropbox\Field Data Sync COPY ONLY\Launch 1\Hypack Projects\Projects\F23KNOC010_SP60\Raw\5013_1359.HSX • Line Name: 5013_1359	**Dimensions and attributes** • Target Width: 6.72 US ft • Target Height: 0.59 US ft • Target Length: 10.91 US ft • Mag Anomaly: None • Avoidance Area: None • Classification1: Irregular Contact • Classification2: Unknown Contact • Area: South Pass • Block: 60 • Description:

Target Image	Target Info	User Entered Info
	**53** • Sonar Time at Target: 8/19/2023 14:03:06 • Click Position 29.0500578437 -88.9444918463 (NAD27LL) (X) 2763305.83 (Y) 147379.74 (Projected Coordinates) • Map Projection: LA-S-MOD • Acoustic Source File: C:\Users\Eric Fischer PC\DOC Mapping Dropbox\Field Data Sync COPY ONLY\Launch 1\Hypack Projects\Projects\F23KNOC010_SP60\Raw\5013_1359.HSX • Line Name: 5013_1359	**Dimensions and attributes** • Target Width: 5.09 US ft • Target Height: 4.49 US ft • Target Length: 17.64 US ft • Mag Anomaly: None • Avoidance Area: None • Classification1: Irregular Contact • Classification2: Unknown Contact • Area: South Pass • Block: 60 • Description:
	**54** • Sonar Time at Target: 8/20/2023 19:10:17 • Click Position 29.0496854089 -88.9446227431 (NAD27LL) (X) 2763266.84 (Y) 147243.47 (Projected Coordinates) • Map Projection: LA-S-MOD • Acoustic Source File: C:\Users\Eric Fischer PC\DOC Mapping Dropbox\Field Data Sync COPY ONLY\Launch 1\Hypack Projects\Projects\F23KNOC010_SP60\Raw\8016_1900.HSX • Line Name: 8016_1900	**Dimensions and attributes** • Target Width: 6.68 US ft • Target Height: 0.31 US ft • Target Length: 15.20 US ft • Mag Anomaly: None • Avoidance Area: None • Classification1: Irregular Contact • Classification2: Unknown Contact • Area: South Pass • Block: 60 • Description:
	**55** • Sonar Time at Target: 8/19/2023 14:50:29 • Click Position 29.0496304270 -88.9470954737 (NAD27LL) (X) 2762477.25 (Y) 147207.02 (Projected Coordinates) • Map Projection: LA-S-MOD • Acoustic Source File: C:\Users\Eric Fischer PC\DOC Mapping Dropbox\Field Data Sync COPY ONLY\Launch 1\Hypack Projects\Projects\F23KNOC010_SP60\Raw\5007_1446.HSX • Line Name: 5007_1446	**Dimensions and attributes** • Target Width: 15.04 US ft • Target Height: 4.09 US ft • Target Length: 38.34 US ft • Mag Anomaly: None • Avoidance Area: None • Classification1: Irregular Contact • Classification2: Probable Geology • Area: South Pass • Block: 60 • Description:
	**56** • Sonar Time at Target: 8/20/2023 16:55:35 • Click Position 29.0494144526 -88.9469178101 (NAD27LL) (X) 2762535.65 (Y) 147129.68 (Projected Coordinates) • Map Projection: LA-S-MOD • Acoustic Source File: C:\Users\Eric Fischer PC\DOC Mapping Dropbox\Field Data Sync COPY ONLY\Launch 1\Hypack Projects\Projects\F23KNOC010_SP60\Raw\5008_1651.HSX • Line Name: 5008_1651	**Dimensions and attributes** • Target Width: 3.14 US ft • Target Height: 0.91 US ft • Target Length: 22.92 US ft • Mag Anomaly: None • Avoidance Area: None • Classification1: Irregular Contact • Classification2: Probable Geology • Area: South Pass • Block: 60 • Description:

Target Image	Target Info	User Entered Info
	**57** ● Sonar Time at Target: 8/19/2023 16:53:00 ● Click Position 29.0475663003 -88.9448597073 (NAD27LL) (X) 2763207.19 (Y) 146471.45 (Projected Coordinates) ● Map Projection: LA-S-MOD ● Acoustic Source File: C:\Users\Eric Fischer PC\DOC Mapping Dropbox\Field Data Sync COPY ONLY\Launch 1\Hypack Projects\Projects\F23KNOC010_SP60\Raw\5009_1650.HSX ● Line Name: 5009_1650	**Dimensions and attributes** ● Target Width: 0.72 US ft ● Target Height: 0.45 US ft ● Target Length: 25.41 US ft ● Mag Anomaly: None ● Avoidance Area: None ● Classification1: Linear Contact ● Classification2: Exposed Pipeline ● Area: South Pass ● Block: 60 ● Description:
	**58** ● Sonar Time at Target: 8/19/2023 14:00:32 ● Click Position 29.0466704336 -88.9423684790 (NAD27LL) (X) 2764009.91 (Y) 146162.35 (Projected Coordinates) ● Map Projection: LA-S-MOD ● Acoustic Source File: C:\Users\Eric Fischer PC\DOC Mapping Dropbox\Field Data Sync COPY ONLY\Launch 1\Hypack Projects\Projects\F23KNOC010_SP60\Raw\5013_1359.HSX ● Line Name: 5013_1359	**Dimensions and attributes** ● Target Width: 15.25 US ft ● Target Height: 5.92 US ft ● Target Length: 25.83 US ft ● Mag Anomaly: None ● Avoidance Area: None ● Classification1: Irregular Contact ● Classification2: Probable Geology ● Area: South Pass ● Block: 67 ● Description:

04-in	1	29.06197166	-88.94870758	TIE-IN	Begin Pipeline Abandonment at SSTI at Proposed 2" Fuel Gas Pipeline
04-in	2	29.06187966	-88.94915846		
04-in	3	29.06201548	-88.94989391		
04-in	4	29.06226310	-88.95071480		
04-in	5	29.06278893	-88.95202388		
04-in	6	29.06358207	-88.95352139		
04-in	7	29.06376990	-88.95397621		
04-in	8	29.06385462	-88.95417246		
04-in	9	29.06403859	-88.95449497		
04-in	10	29.06404126	-88.95510287	RISER	Riser on SP60 'F' Platform

0	1	29.06180266	-88.94859185	TIE-IN	Begin Proposed 4" Multiphase Pipeline at SSTI Segment 15062
0	2	29.06197166	-88.94870758	TIE-IN	Begin Proposed 2" Fuel Gas Pipeline at SSTI Segment 15060
0	3	29.06352043	-88.94979095	CROSSING	Crossing Segment 15061
0	4	29.06464113	-88.95057926		
0	5	29.06490327	-88.95076747		
0	6	29.06516161	-88.95096236		
0	7	29.06541602	-88.95116383		
0	8	29.06566638	-88.95137178		
0	9	29.06591256	-88.95158610		
0	10	29.06615443	-88.95180668		
0	11	29.06639187	-88.95203341		
0	12	29.06662476	-88.95226617		
0	13	29.06685298	-88.95250486		
0	14	29.06707642	-88.95274933		
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0	16	29.06750848	-88.95325517		
0	17	29.06771689	-88.95351628		

0	18	29.06771689	-88.95351628	CROSSING	Crossing Segment 36
0	19	29.06792007	-88.95378266		
0	20	29.06811793	-88.95405420		
0	21	29.06831036	-88.95433074		
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0	27	29.06934566	-88.95608711		
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0	30	29.06978275	-88.95702100		
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0	40	29.07082277	-88.96033635
0	41	29.07089009	-88.96068070
0	42	29.07095057	-88.96102670
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0	67	29.07346420	-88.98020707

0	68	29.07361156	-88.98051080		
0	69	29.07376480	-88.98081073		
0	70	29.07428169	-88.98179626	BLOCKLINE	Blockline Crossing SP60 to SP59
0	71	29.07826232	-88.98939514	BLOCKLINE	Blockline Crossing SP59 to SP6
0	72	29.08148644	-88.99554858		
0	73	29.08164081	-88.99585090		
0	74	29.08178922	-88.99615708		
0	75	29.08193157	-88.99646696		
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0	77	29.08219786	-88.99709719		
0	78	29.08232166	-88.99741723		
0	79	29.08238029	-88.99758148		Crossing Federal/State Line
0	80	29.08238139	-88.99758149		
0	81	29.08243915	-88.99774033		
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0	88	29.08308029	-89.00007429		
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0	99	29.08358573	-89.00713348	CROSSING	Crossing Segment 3655
0	100	29.08373451	-89.01083374	CROSSING	Crossing Segment 6592

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0	144	29.09320259	-89.03380584	CROSSING	Crossing Unknown Pipeline
0	145	29.09514427	-89.03521728	BLOCKLINE	Blockline Crossing SP6 to SP7
0	146	29.09572677	-89.03563881		
0	147	29.09597663	-89.03582436		
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0	150	29.09670417	-89.03641742		

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0       161 29.09904696 -89.03902076

0       162 29.09923158 -89.03928754

0       163 29.10194587 -89.04329681 CROSSING        Crossing Unknown Pipeline

0       164 29.10223197 -89.04372406 CROSSING        Crossing Unknown Pipeline

0       165 29.10369110 -89.04587554 BLOCKLINE       Blockline Crossing SP7

0       166 29.11280544 -89.05934997

0       167 29.11295907 -89.05958152
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0 168 29.11310892 -89.05981626

0 169 29.11325491 -89.06005414

0 170 29.11339701 -89.06029505

0 171 29.11969096 -89.07118397

0 172 29.11951252 -89.07131770 RISER End Proposed Pipeline Bundle at LLOX Facility

15062 1 28.93713899 -88.91232805 RISER Begin Reused Segment 15062 at Riser MC21 'B'

15062 2 28.93713854 -88.91235930

15062 3 28.93713818 -88.91238535

15062 4 28.93713483 -88.91262030

15062 5 28.93713439 -88.91265155

15062 6 28.93741844 -88.91265677

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15062 178 29.06161122 -88.94674864

15062 179 29.06156932 -88.94722294

15062 180 29.06180145 -88.94853549

15062 181 29.06180266 -88.94859185 TIE-IN End reused Segment 15060 at SSTI with proposed 4" Multiphase Pipeline

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City, State, ZIP+4® Houston TX 77079

PS Form 3800, April 2015 PSN 7530-02-000-9047 See Reverse for Instructions

KNOC Eagle Ford Corporation
5599 San Felipe St. Suite 725 Houston, TX, 77056
Phone: (713) 552-9304 Fax: (713) 552-1898

December 20, 2023

VIA CERTIFIED MAIL (No. 7017 1450 0001 5029 5223)
RETURN RECEIPT REQUESTED

BP Pipelines of America
501 Westlake Park Blvd
#WL1-LR4
Houston, Texas, 77079

Attention: Ms. Janet Aceves

Subject: Korea Nation Oil Corporation Eagle Ford Application for the MC 21B Reroute Project in South Pass Area, Block SP 6/7/60, Gulf of Mexico, Federal/State Waters, Offshore Louisiana

Dear Ms. Janet Aceves:

Korea National Oil Corporation Eagle Ford (KNOC EF) has finalized plans for the above referenced pipeline and will file applications for pipeline right-of-way modifications with the Bureau of Safety and Environmental Enforcement (BSEE). The proposed pipelines will be crossing your five(5) Pipelines, S-6592 – 6" Gas Line / S-3655 - 10" Gas Line / S-3658 - 10" Oil Line / S-10268 – 10" Oil line / S-36 – 8" Oil Line. The location of the crossings is in Block 6/60, South Pass Area, and Gulf of Mexico, as shown on the enclosures. Construction of the proposed pipelines will also be as noted and shown on the enclosures.

The proposed pipelines will be grouped into a bundle containing one 4.500-inch pipeline and 2.375-inch O.D. pipeline. The crossing details are shown on the attached Drawings. Line numbers 5 thru 9 noted in green are the lines for your review to the no objection crossing.

The proposed pipeline modifications will be assigned segment numbers by BSEE as the permitting process is further developed.

Korea Nation Oil Corporation Eagle Ford Application for the MC 21B Reroute Project in South Pass Area, Block SP 6/7/60, Gulf of Mexico, Federal/State Waters, Offshore Louisiana

In order to expedite receipt of the above mentioned ROW modification, KNOC EF would appreciate your review of our proposal and an indication from BP Pipelines of America with a note of "No Objection" to the plans by signing and dating both of the duplicate originals of this letter and returning one of them to Mr. Ho Lim, KNOC Eagle Ford Corporation, Suite 725, 5599 San Felipe St., Houston, TX, 77056.

Please provide your preferred contact person and number in order for KNOC EF to provide notice to the actual timing of the crossing in the event you require a person on board.

Your attention to this matter is greatly appreciated. Should you have any questions or require further information, please contact Mr. Dohyoung Kim at (713)-805-4834 or by email dkim@knocef.com.

Sincerely,

KNOC Eagle Ford Corporation

Ho Lim
Manager of Land and Acquisitions

Enclosures
Certified Mail (No. No. 7017 1450 0001 5029 5223)

Confirmation of No Objection:

Korea National Oil Corporation (KNOC EF) should contact BP Pipelines of America

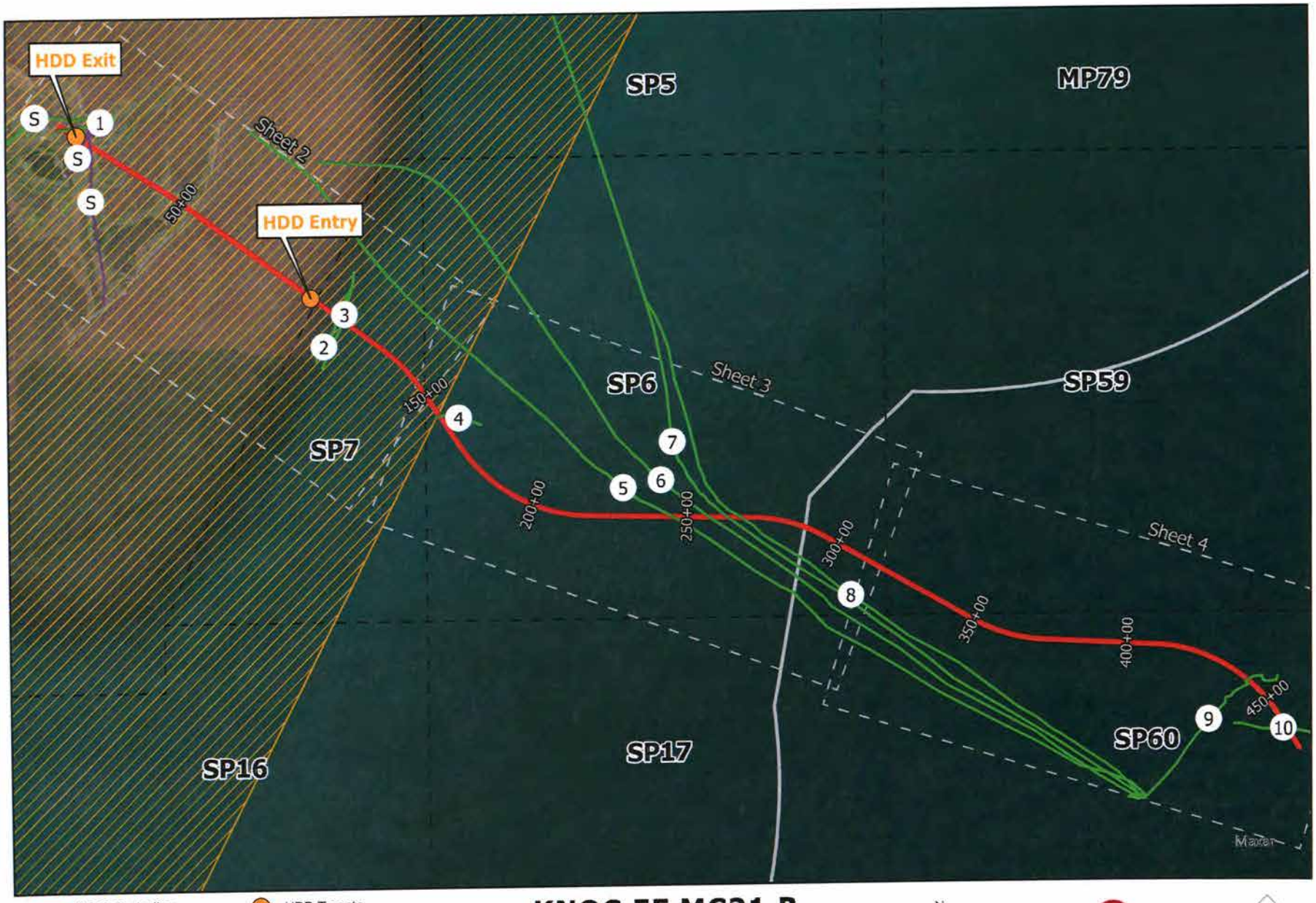
__Contact name_____

at (_____) _____ at least three (3) days prior to the commencement of any pipeline crossing construction operations noted herein , if requested. By signing this, I hereby declare BP Pipelines of America has "No Objection" to KNOC EF's proposed pipeline bundle crossings of BP Pipelines of America's five(5) Pipelines, S-6592 – 6" Gas / S-3655 - 10" Gas / S-3658 - 10" Oil / S-10268 – 10" Oil / S-36 – 8" Oil in Block 6/60, South Pass Area, Gulf of Mexico, as described in and shown on the enclosures herewith on this
the _____ day of _____, 2023.

For: BP Pipelines of America

_____
Signature

_____ _____
Name (Type or Print) Title (Type or Print)



KNOC Centerline
DOC Foreign Pipelines
SONRIS Foreign Pipelines
Federal / State Boundary
HDD Targets
Pass A Loutre WMA
Offshore Blocks
Sheet Index

KNOC EF MC21 B REROUTE PROJECT

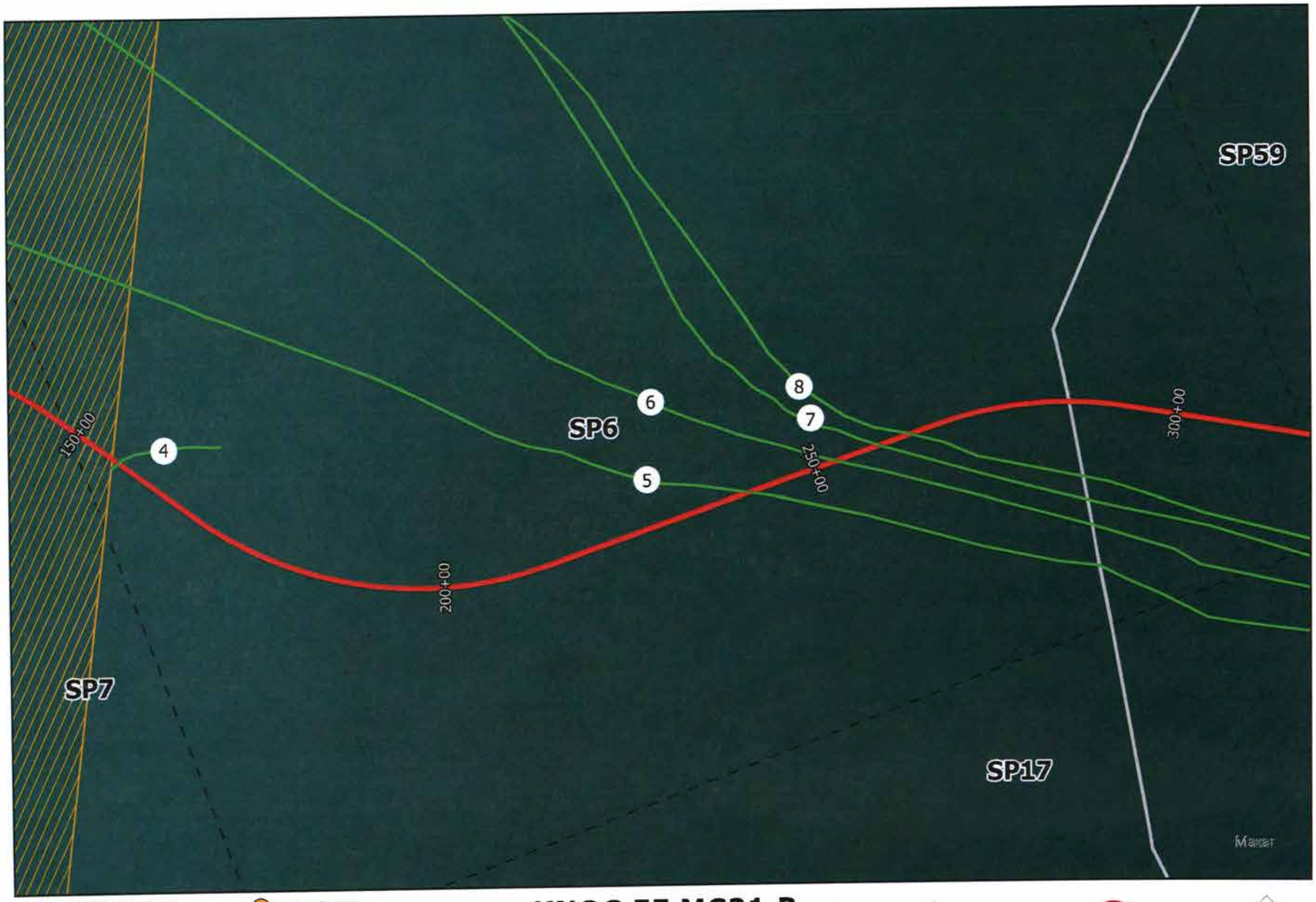
FOREIGN LINE CROSSINGS

12/14/2023 NAD 1927 StatePlane Louisiana South FIPS 1702 8.5" x 11"

N

0 2,000 4,000 US Feet

Sheet 1 of 4


SP59
SP6
SP7
SP17
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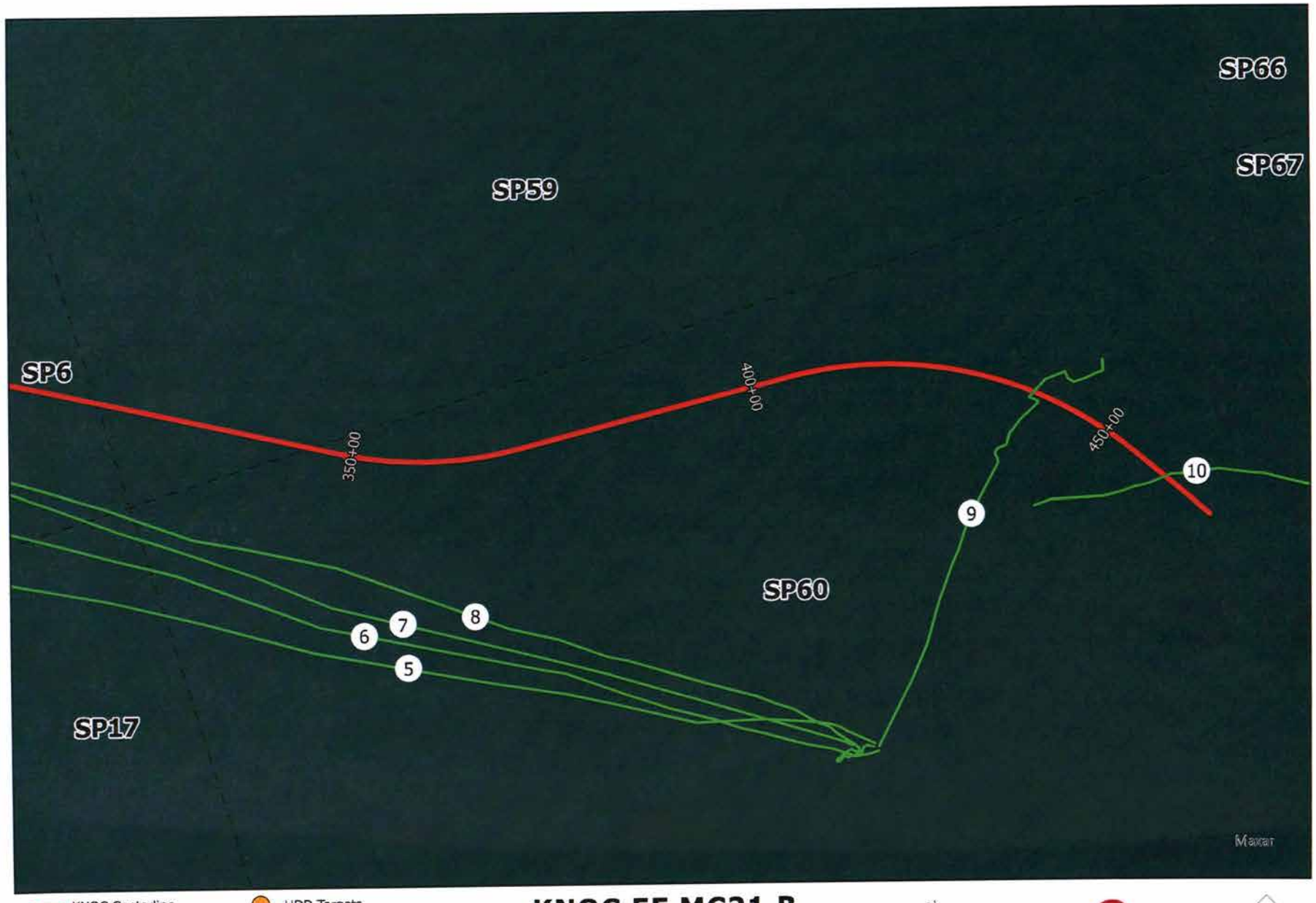
200+00
250+00
300+00
KNOC Centerline
DOC Foreign Pipelines
SONRIS Foreign Pipelines
Federal / State Boundary
HDD Targets
Pass A Loutre WMA
Offshore Blocks
KNOC EF MC21 B REROUTE PROJECT
FOREIGN LINE CROSSINGS
12/14/2023 NAD 1927 StatePlane Louisiana South FIPS 1702 8.5" x 11"
N
0 1,000 2,000 US Feet
KNOC
Sheet 3 of 4



KNOC Centerline
DOC Foreign Pipelines
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Federal / State Boundary
HDD Targets
Pass A Loutre WMA
Offshore Blocks

KNOC EF MC21 B REROUTE PROJECT

FOREIGN LINE CROSSINGS

12/14/2023 NAD 1927 StatePlane Louisiana South FIPS 1702 8.5" x 11"

N

0 1,000 2,000 US Feet

Sheet 4 of 4

SENDER: COMPLETE THIS SECTION

- Complete items 1, 2, and 3.
- Print your name and address on the reverse so that we can return the card to you.
- Attach this card to the back of the mailpiece, or on the front if space permits.

1. Article Addressed to:

LLOX, LLC
[illegible] Ochsner Blvd Suite A
Covington LA 70433

9590 9402 8525 3186 8330 88

2. Article Number *(Transfer from service label)*

7017 1450 0001 5029 5247

COMPLETE THIS SECTION ON DELIVERY

A. Signature

X [signature] ☐ Agent ☐ Addressee

B. Received by *(Printed Name)* Karen Nabers

C. Date of Delivery 12/27/23

D. Is delivery address different from item 1? ☐ Yes
If YES, enter delivery address below: ☐ No

3. Service Type

- ☐ Adult Signature
- ☐ Adult Signature Restricted Delivery
- ☐ Certified Mail®
- ☐ Certified Mail Restricted Delivery
- ☐ Collect on Delivery
- ☐ Collect on Delivery Restricted Delivery
- ☐ Insured Mail
- ☐ Insured Mail Restricted Delivery (over $500)
- ☐ Priority Mail Express®
- ☐ Registered Mail™
- ☐ Registered Mail Restricted Delivery
- ☐ Signature Confirmation™
- ☐ Signature Confirmation Restricted Delivery

PS Form 3811, July 2020 PSN 7530-02-000-9053 Domestic Return Receipt

SENDER: COMPLETE THIS SECTION

- Complete items 1, 2, and 3.
- Print your name and address on the reverse so that we can return the card to you.
- Attach this card to the back of the mailpiece, or on the front if space permits.

1. Article Addressed to:

BP Pipelines of America (MS. Janet Aceves)
501 Westlake Park Blvd #WL1-L24
Houston TX 77079

9590 9402 5417 9189 5410 99

2. Article Number *(Transfer from service label)*

7017 1450 0001 5029 5223

COMPLETE THIS SECTION ON DELIVERY

A. Signature

X MailRoom ☐ Agent ☐ Addressee

B. Received by *(Printed Name)*

C. Date of Delivery 12/27/23

D. Is delivery address different from item 1? ☐ Yes
If YES, enter delivery address below: ☐ No

3. Service Type

- ☐ Adult Signature
- ☐ Adult Signature Restricted Delivery
- ☐ Certified Mail®
- ☐ Certified Mail Restricted Delivery
- ☐ Collect on Delivery
- ☐ Collect on Delivery Restricted Delivery
- ☐ Insured Mail
- ☐ Insured Mail Restricted Delivery (over $500)
- ☐ Priority Mail Express®
- ☐ Registered Mail™
- ☐ Registered Mail Restricted Delivery
- ☐ Return Receipt for Merchandise
- ☐ Signature Confirmation™
- ☐ Signature Confirmation Restricted Delivery

PS Form 3811, July 2015 PSN 7530-02-000-9053 Domestic Return Receipt

1. **Does this request propose any explosive-severance charges and/or Unusual Technology (NUT)?**

   No.

   No explosive charges or new or unusual technology will be used in this project.

2. **Does this request propose the use of the vessel's moon pool?**

   Yes.
   If yes, please provide additional vessel identification and information. Does the Moon Pool have doors that close? Provide any proposed mitigation(s).

   The specific dive vessel to be used on the project will be determined after completion of the Request for Quotation process planned to occur in January/February 2024.

   As described in this application we will utilize a self-propelled dive vessel and anchor handling tugs. Movement in the water would typically travel at a speed of 8 to 9 knots. The dive vessel used during system installation operations may have a moon pool. If so, the dive vessel crew members will monitor and log inspection of the moon pool daily during the operations.

3. **Does this request include dive activities, the use of lines in the water or equipment that may have an entanglement or entrapment risk (e.g., flexible lines/ropes) to ESA-listed species?**

   Yes.
   If yes, please provide information on the proposed equipment.

   If an animal is detected entangled, will ensure requisite personnel safety first and then contact: For marine mammals and sea turtle entanglement contact the stranding network listed at https://www.fisheries.noaa.gov/report. Other ESA-listed species should be reported to state agency wildlife lines and call 985-722-7902 for additional guidance on continued monitoring requirements, recovery assistance needs (if required), and incidental report information.

   Within 24 hours of any event, notify NMFS at nmfs.psoreview@noaa.gov and BSEE at protectedspecies.@bseecom .

4. **Does this request propose impact/pile hammers for installation of subsea components?**

   No.

   No pile driving activities will occur within Federal Waters.

5. **Is any subsea infrastructure proposed to be decommissioned in place other than a facility or pipeline, specify type?**

   Yes.
   If yes, please provide details on additional subsea infrastructure proposed to be decommissioned in place.

   An approximately 2,300 feet long section of the KNOC EF 10" Bulk Oil pipeline (S-15060) and an approximately 2,300 feet long section of the KNOC EF 4" Gas pipeline (S-15062) will be abandoned in place between the proposed cut points in SP 60 and the current termination points at the base of the risers at SP 60F platform. The ends of the 10" and 4" pipeline segments to be

abandoned in place will be plugged, lowered to 3' below natural bottom and covered with concrete mats.

6. **If a SSTI or other equipment is present, will the SSTI or other equipment be abandoned in place or will the SSTI remain in service with another pipeline after the proposed pipeline segment is removed or abandoned in place??**

   No.

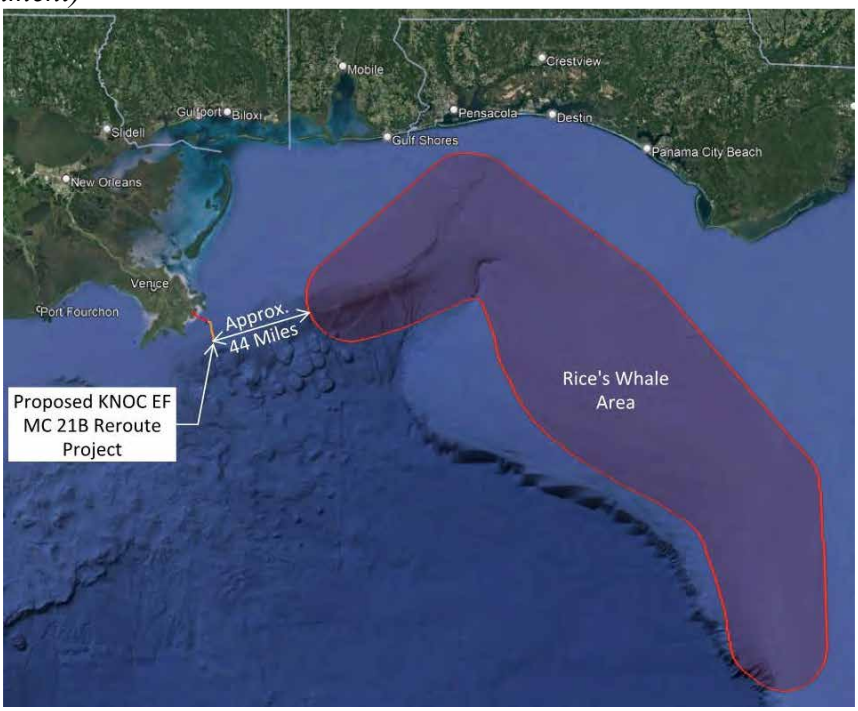
   Nothing other than the buried pipelines will be abandoned in place.

7. **Will any vessels supporting your proposed activities, including pipeplay, supply, and crew vessels, require crossing or enter the Bryde's (Rice's) whale area?**

   No

   The project area does not lie within nor will any vessels associated with the project enter the Bryde's (Rice's) whale area. Vessels which traverse recognized shipping fairways to the work site from either Fourchon, Louisiana or which utilize South Pass of the Mississippi River would transit through the 100m – 400m water depth contour zone. Please see the requested map appended to this Questionnaire.

   (PCS GIS will develop chart similar to the screenshot below which will be provided as a separate document)



8. Is there any additional information associated with your proposed operations that can assist BOEM in the review of your application as it relates to the protection of ESA-listed species and their critical habitat?

Yes.
If yes, please provide the additional information below.

KNOC EF has reviewed the referenced opinion and provides the following to assist in the evaluation process to ensure the ESA listed species are protected as provided for in the BiOp of 3-13-2020.

- *The Biological Opinion can be found here:* h%ps://www.fisheries.noaa.gov/resource/document/biological-opinion-federally-regulated-oil- and-gas-program-activities-gulf-mexico.
- *As described in this application we will utilize a self-propelled dive vessel and an anchor handling tug. Movement in the water would typically travel at a speed of 8 to 9 knots. The dive vessel used in the pipeline abandonment operations will have a moon pool. DSV vessel crew member will monitor and log inspection of the moon pool daily during the operations.*

During all pre-work meetings with contractors, KNOC EF will provide the Sea Turtle Handling and Resuscitation Guidelines. Any sea turtles taken incidentally during the course of fishing or scientific research activities must be handled with due care to prevent injury to live specimens, observed for activity, and returned to the water according to the following procedures.

Sea turtles that are actively moving or determined to be dead (as described in paragraph (B)(4) below) must be released over the stern of the boat. In addition, they must be released only when fishing or scientific collection gear is not in use, when the engine gears are in neutral position, and in areas where they are unlikely to be recaptured or injured by vessels.

Resuscitation must be attempted on sea turtles that are comatose or inactive by:

- *Placing the turtle on its bottom shell (plastron) so that the turtle is right side up and elevating its hindquarters at least 6 inches (15.2 cm) for a period of 4 to 24 hours. The amount of elevation depends on the size of the turtle; greater elevations are needed for larger turtles. Periodically, rock the turtle gently left to right and right to left by holding the outer edge of the shell (carapace) and lifting one side about 3 inches (7.6 cm) then alternate to the other side. Gently touch the eye and pinch the tail (reflex test) periodically to see if there is a response.*
- *Sea turtles being resuscitated must be shaded and kept damp or moist but under no circumstance be placed into a container holding water. A water-soaked towel placed over the head, carapace, and flippers is the most effective method in keeping a turtle moist.*
- *Sea turtles that revive and become active must be released over the stern of the boat only when fishing or scientific collection gear is not in use, when the engine gears are in neutral position, and in areas where they are unlikely to be recaptured or injured by vessels. Sea turtles that fail to respond to the reflex test or fail to move within 4 hours (up*

to 24, if possible) must be returned to the water in the same manner as that for actively moving turtles.

- *A turtle is determined to be dead if the muscles are stiff (rigor mortis) and/or the flesh has begun to rot; otherwise, the turtle is determined to be comatose or inactive and resuscitation attempts are necessary. Any sea turtle so taken must not be consumed, sold, landed, offloaded, trans shipped, or kept below deck. These requirements are excerpted from 50 CFR 223.206(d)(1).*

9. Will this request require the use of divers?

Yes.
If yes, please provide specific activity diver will be involved in along with how many hours/days the activity will last.

- *Rework breakaway joints at MC 21B – 12 days*
- *Pre-lay pipeline crossing preparation – 8 days*
- *Pre-lay SP 60 Subsea Tie-in (SSTI) preparation – 10 days*
- *Abandon risers at SP 60F – 6 days*
- *Post-lay pipeline crossing completion – 9 days*
- *Complete SP 60 SSTI installation – 8 days*

10. Will this request require the use of divers? Line follow up specifications?

Yes.
If yes, please specify how long the lines are expected to be in the water and how the line will be weighted, moored, or a%ached.

Diving operations will be conducted 24 hours per day, 7 days per week. The ends of all lines will be secured at the work area on the seabed by the diver and at the line-tending location by the diver tender. Diver hoses, umbilicals and downlines will be kept taut at all times which also reduces the amount of effort required by the diver while conducting work tasks. KNOC EF will utilize hands-on monitoring, lashings, tape, and other tensioning tools to reduce any unnecessary looseness in the lines and or potential looping. The lines will be monitored regularly.

11. Will this request require the use of divers? Additional Line follow up specifications.

Yes.
If yes, will the divers and/or tenders be able to monitor the lines? Will there be separate descent lines that are also loose or if the divers free/descending/swimming to the activity area.

Diver hoses, umbilicals, descent or downlines will be kept taut at all times by the divers and/or tenders. Keeping the lines taut also reduces the amount of effort required by the diver while conducting work tasks because it results in less line for the diver to drag while working. The only time a diver is anticipated to be free/descending/swimming will be during the initial descent from the diving platform or saturation diving bell to the activity area during which time the diver will keep the downline or descent line taut.

12. Is this a structure removal or pipeline activity that proposes the use of survey equipment the emits a sound source?

Yes.
If yes, please describe the type of equipment and include the frequency of the sound source.

An as-built survey may be conducted along the centerline of the route after completion of construction. If required, a subbottom profiler would operate at 200 kHz and a multi-beam echosounder would operate at 400 kHz.

Other Checklist Items

1. Do any segments traverse through a Sand Sediment Resource Area?

No.
If yes, please list SRRAs.

Blocks to be traversed with the KNOC EF MC 21B reroute project include SP60, SP59, SP6 and SP7, none of which are listed as Sand Sediment Resource Areas in the BOEM Marine Minerals Information System.

2. Do any segments cross through a fairway or anchorage Area?

No.
If yes, you MUST get approval from the US COE before this application can be approved.

The KNOC EF MC 21B reroute project does not cross any fairways or anchorage areas.

3. Will all segments be pigged?

Yes.
If no, please provide justification for this departure.

All pipeline segments to be put into service for the KNOC EF MC 21B reroute project will be pigged when flooding the systems for hydrostatic testing.

4. Will all segments be flushed and filled with uninhibited seawater?

Yes.
If no, please provide justification for this departure.

The segments of 10" S-15060 and 4" S-15062 to be abandoned in place will be flushed with uninhibited seawater prior to cutting, plugging, lowering to 3' below natural bottom and covered with concrete mats. The 8" S-15061 will be left out-of-service to serve as a contingency for future use in the event that either of the other two pipelines would require a replacement of their services.

5. **Will all segments be decommissioned by a complete removal?**

No.
If no, please provide justification for this departure.

The segments of the 10" bulk oil pipeline (S-15060) and the 4" natural gas pipeline (S-15062) to be abandoned in place lie entirely within Block SP 60 which are not Sand Resource blocks

Additional Checklist Items on Karen V's checklist

1. **Does this application include a route modification?**

Yes.

10" Gas (S-15060) modification application to include:

- *Modification to Existing ROW for "early abandonment" to disconnect from SP60 Platform F which is scheduled to be removed.*
- *A separate ROW modification application for the installation program to include:*
  - *Partial decommission segment in SP60 adjacent to SP60F*
  - *Extend ROW to the Federal/State line*
  - *Change of Service from gas to gas supply*
  - *Change in direction of flow*

8" Oil (S-15061 - MAOP = 2,220 psi) modification application to include:

- *Disconnecting pipeline from SP60 F Platform during the early abandonment program*

4" bi-directional Gas (S-15062 - MAOP = 1,480 psi) modification application to include:

- *Modification to Existing ROW for "early abandonment" to disconnect from SP60 Platform*
- *A separate ROW modification application for the installation program to include:*
  - *Change current service from gas to Gas and Oil*
  - *Partial decommission segment in SP60 adjacent to SP60F*
  - *Extend ROW to the Federal/State line.*

2. **Has the qualified signer for this company signed the application?**

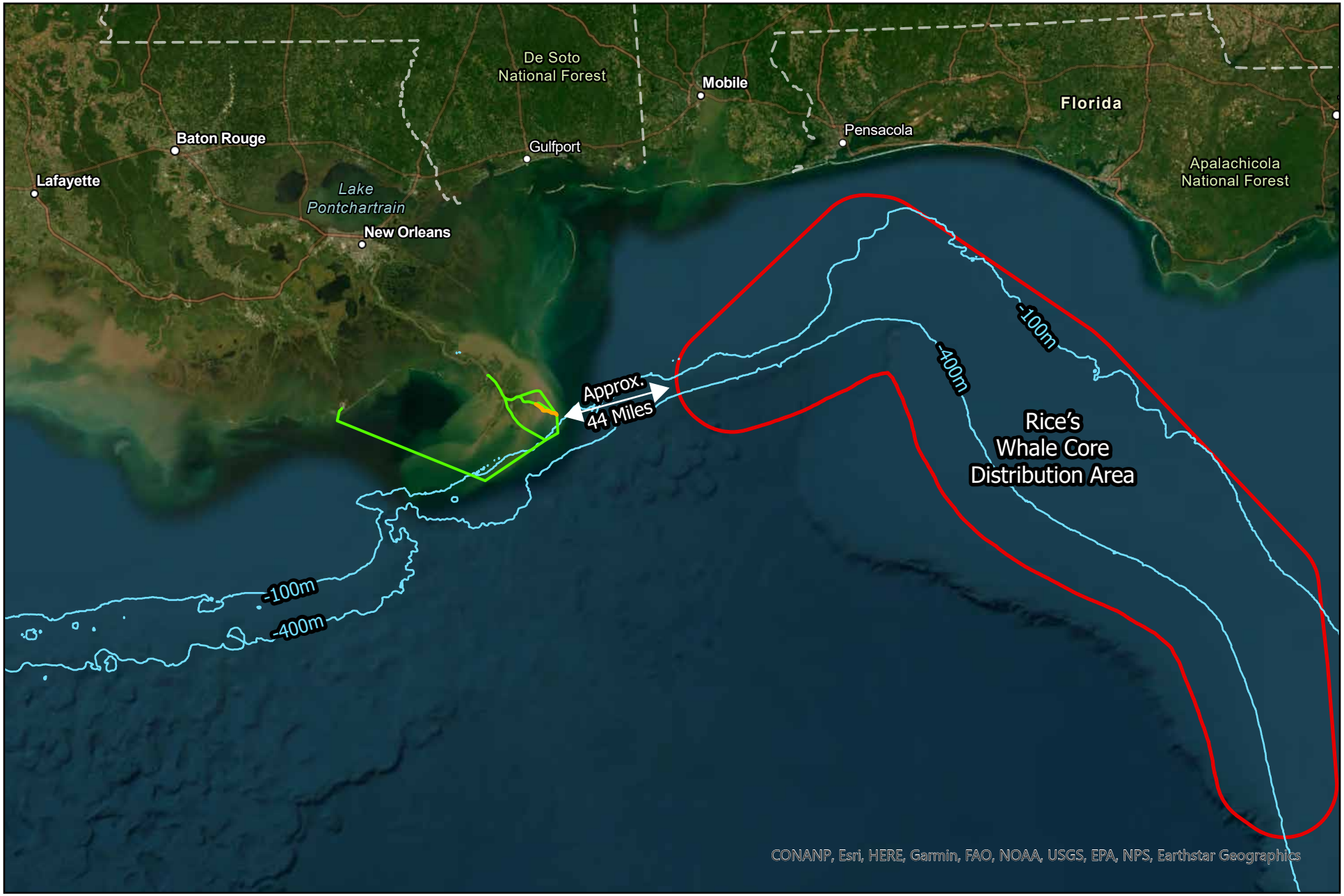
Yes.

KNOC EF to verify.

3. **Is this a change in approval authority?**

No.

KNOC EF to verify.



KNOC Proposed Pipeline
KNOC Access Routes
Bathymetry Contours
Rice's Whale Area

N

KNOC EF MC21 B REROUTE PROJECT

RICE'S WHALE AREA

0 25 50 Miles

12/19/2023 NAD 1927 StatePlane Louisiana South FIPS 1702 8.5" x 11"

KNOC Eagle Ford Corporation
ADEM Tracking Number ACAMP-2024-058
Supplemental Information

- **What is the shorebase for the project?** Construction operations will use existing facilities at Venice, LA for the project.
- **Are any new onshore facilities required?** New onshore facilities will not be required.
- **Are the disposal methods of waste & discharges discussed?**
    - Specific municipal, Parish or State facilities should be identified. This includes household type waste that is generated by the crew during pipeline construction.
    - On larger vessels, gray water will be processed through an onboard Marine Sanitation Devices meeting the requirements of 33 CFR 159.
    - On smaller vessels, gray water will be retained and disposed of at a dockside pump-out station, such as the pump out at Cypress Cove Marina in Venice.
    - Household-type waste will be compacted, bagged, and be returned to shore for disposal at a Louisiana DEQ approved solid waste facility in Plaquemines or Orleans parishes. See the attached list of DEQ authorized solid waste facilities.
- **Oil Spill Response Plan addressing worst case discharge? Please provide a copy of BSEE OSRP approval or in-compliance letter within the past 2 years.** BSEE letter attached.
- **Location of primary response equipment & staging areas**. Response equipment and staging areas are in Venice and Houma, Louisiana.
- **Estimated time of spill response by remotely sited equipment**. One (1) hour.
- **Estimated time to contain spill to MEP.** Recovery and response time to within the hour of arrival on station.
- **Discussion of Potential Shoreline Impacts**. Oil is received at the LLOX South Pass 7 Facility. LLOX has reviewed the data and supplies the Environmental Sensitivity Index map (see attached) for the vicinity of the South Pass Facility. It is further noted that the South Pass 7 Facility is curbed, sumped, and has permanent hard boom deployed to advance mitigate potential impacts (see SPCC certification attached).
- **Name(s) of Oil Spill Removal Organization(s).** LLOX is a member of Clean Gulf and has contracted E3/OMI as its Oil Spill Response Organization.

Parish	LDEQ Master AI#	Facility Name
Orleans	1036	New Orleans City of - Sanitation Dept Gentilly Landfill
Orleans	3520	Recovery 1 Landfill
Orleans	27133	Ricca Demolishing Corp
Orleans	28107	9130 Almonaster Site - Hamp Enterprises LLC
Plaquemines	2418	Harvest Louisiana Terminals LLC - Alliance Refinery dba Belle Chasse Terminal
Plaquemines	20061	Tidewater Landfill LLC - Coast Guard Road Sanitary Landfill

United States Department of the Interior

BUREAU OF SAFETY AND ENVIRONMENTAL ENFORCEMENT
Gulf of Mexico Region
1201 Elmwood Park Boulevard
New Orleans, Louisiana 70123-2394

In Reply Refer To: GE 250 December 12, 2023

Ms. Karen Vanacor
ANKOR Energy LLC
3500 North Causeway Boulevard, Suite 500
Metairie, Louisiana 70002

Dear Ms. Vanacor:

On October 27, 2023, we received revisions to the approved Oil Spill Response Plan (OSRP) for ANKOR Energy LLC. In accordance with 30 CFR 254.30(b)(3) you revised your plan to reflect a change in the name or capabilities of one or more of your oil spill removal organizations cited in the plan. These revisions are approved. Our consolidated findings are documented in the enclosed Submission Disposition form. Please consider them when preparing your next OSRP submittal.

Be reminded, you must review your entire OSRP and submit any resulting modifications to this office no later than January 27, 2024, in accordance with 30 CFR 254.30(a).

The following companies are covered under this OSRP:

ANKOR Energy LLC	03059
ANKOR E&P Holdings Corporation	02981
KNOC Eagle Ford Corporation	03695

If you have any questions regarding this letter, contact Thomas Tregle at (504) 736-3279. Refer to the operator number of 03059 and the OSRP number of O-654.

Sincerely,

HARRY JUNEAU
Digitally signed by HARRY JUNEAU
Date: 2023.12.12 14:39:31 -06'00'

for Sara K. Moore
Gulf OSP Section Supervisor
Oil Spill Preparedness Division

cc: Forefront Emergency Management (electronic)
USCG Eighth District Response Advisory Team (DRAT) (electronic)

LOUISIANA

SHORELINE HABITAT RANKINGS

1B) EXPOSED, SOLID MAN-MADE STRUCTURES

2A) EXPOSED WAVE-CUT PLATFORMS IN CLAY OR MUD
2B) EXPOSED SCARPS AND STEEP SLOPES IN CLAY OR MUD

3A) FINE- TO MEDIUM-GRAINED SAND BEACHES
3B) SCARPS AND STEEP SLOPES IN SAND

4) COARSE-GRAINED SAND BEACHES

5) MIXED SAND AND GRAVEL (SHELL) BEACHES

6A) GRAVEL BEACHES

6B) RIPRAP

7) EXPOSED TIDAL FLATS

8A) SHELTERED SCARPS IN CLAY OR MUD

8B) SHELTERED, SOLID MAN-MADE STRUCTURES

8C) SHELTERED RIPRAP
8E) PEAT

9A) SHELTERED TIDAL FLATS

10A) SALT- AND BRACKISH-WATER MARSHES

10B) FRESHWATER MARSHES

10C) SWAMPS

10D) SCRUB-SHRUB WETLANDS, INCLUDING BLACK MANGROVES

HUMAN-USE FEATURES

ACCESS

AIRPORT / HELIPORT

AQUACULTURE SITE

ARCHAEOLOGICAL SITE

ARTIFICIAL REEF

BOAT RAMP

COAST GUARD

CRITICAL HABITAT

FACILITY / PORT

FERRY

LOCK / DAM

MANAGEMENT AREA

MARINA

NATIONAL PARK

NATURE CONSERVANCY

PARK

RECREATIONAL BEACH

WATER INTAKE

WILDLIFE REFUGE

123 HUMAN-USE NUMBER

MANAGEMENT AREA BOUNDARY

STATE BOUNDARY

SENSITIVE BIOLOGICAL RESOURCES

BIRD

DIVING BIRD

GULL / TERN

PASSERINE BIRD

PELAGIC BIRD

RAPTOR

SHOREBIRD

WADING BIRD

WATERFOWL

NESTING SITE

FISH

FISH

MARINE MAMMAL

DOLPHIN

MANATEE

WHALE

TERRESTRIAL MAMMAL

BEAR

INVERTEBRATE

BIVALVE

CEPHALOPOD

CRAB

CRAYFISH

SHRIMP

REPTILE / AMPHIBIAN

ALLIGATOR

TURTLE

BENTHIC MARINE HABITAT

AQUATIC VEGETATION

DEEP SEA CORAL

OYSTER REEF

SEAGRASS

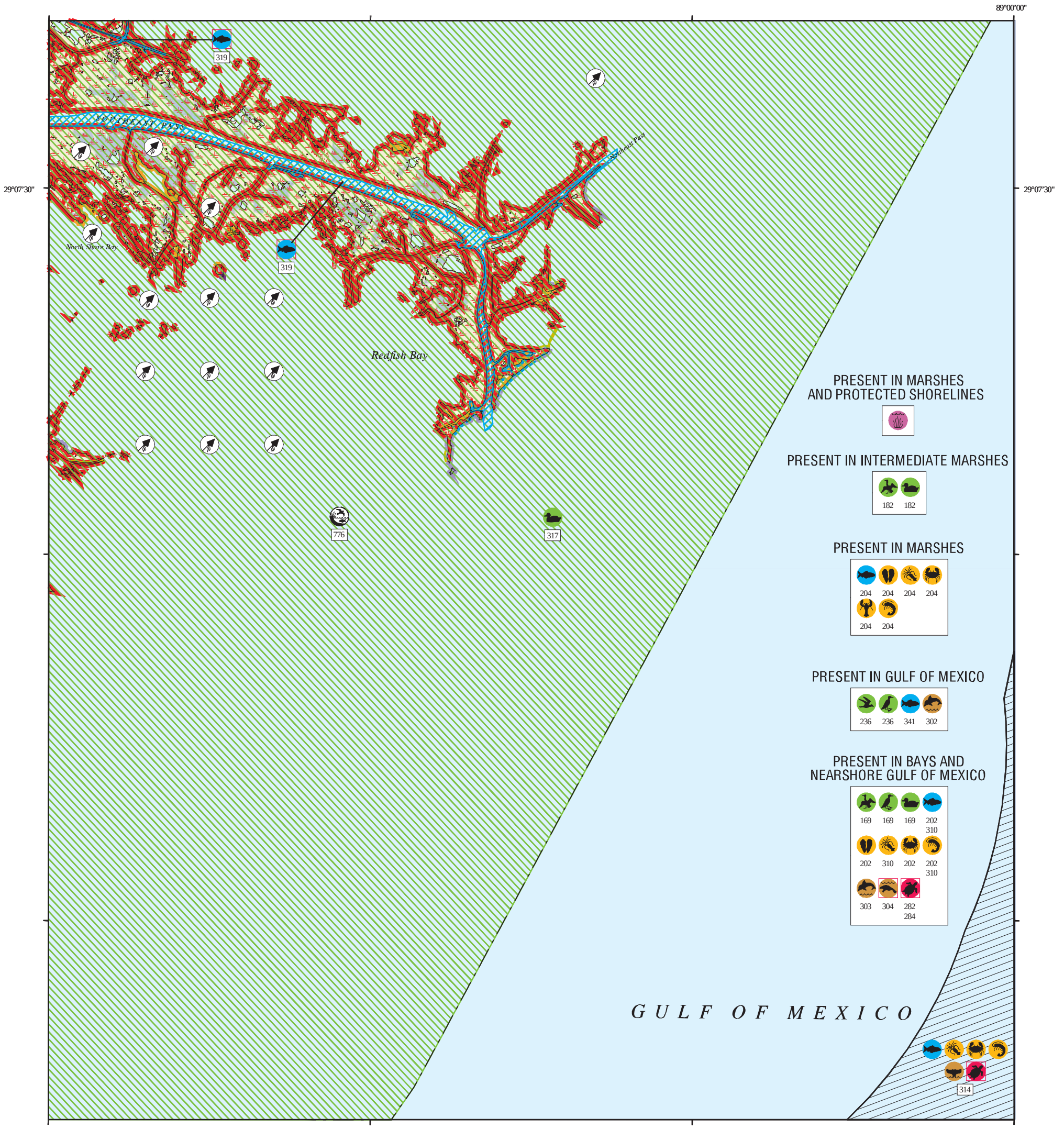
SAV

123 RAR NUMBER

MULTI-GROUP

THREATENED / ENDANGERED

ENVIRONMENTAL SENSITIVITY INDEX MAP



SHORELINE HABITATS (ESI)

- 1B EXPOSED, SOLID MAN–MADE STRUCTURES
- 2A EXPOSED WAVE–CUT PLATFORMS IN CLAY OR MUD
  2B EXPOSED SCARPS AND STEEP SLOPES IN CLAY OR MUD
- 3A FINE– TO MEDIUM–GRAINED SAND BEACHES
  3B SCARPS AND STEEP SLOPES IN SAND
- 4 COARSE–GRAINED SAND BEACHES
- 5 MIXED SAND AND GRAVEL (SHELL) BEACHES
- 6A GRAVEL BEACHES
- 6B RIPRAP
- 7 EXPOSED TIDAL FLATS
- 8A SHELTERED SCARPS IN CLAY OR MUD
- 8B SHELTERED, SOLID MAN–MADE STRUCTURES
- 8C SHELTERED RIPRAP
  8E PEAT
- 9A SHELTERED TIDAL FLATS
  9B VEGETATED LOW BANKS
- 10A SALT–AND BRACKISH–WATER MARSHES
- 10B FRESHWATER MARSHES
- 10C SWAMPS
- 10D SCRUB–SHRUB WETLANDS, INCLUDING BLACK MANGROVES

N W E S

SCALE 1:50000

1 .5 0 1 KILOMETER

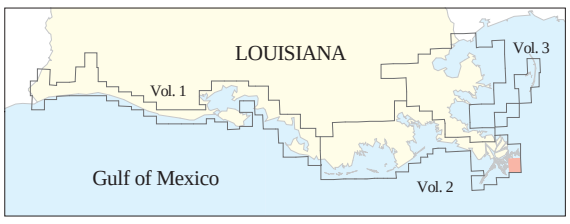
1 .5 0 1 MILE

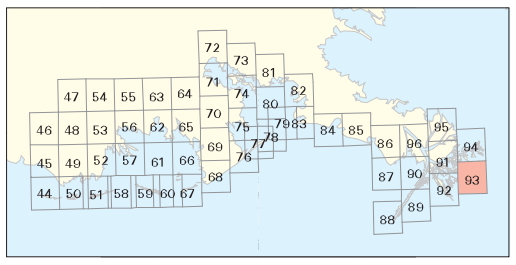
1 .5 0 1 NAUTICAL MILE

Not For Navigation

Published: December 2013

Published at Seattle, Washington
National Oceanic and Atmospheric Administration
National Ocean Service
Office of Response and Restoration
Emergency Response Division





Louisiana: ESIMAP 93

BIOLOGICAL RESOURCES:

BIRD:

RAR#	Species	S	F	Conc.	J	F	M	A	M	J	J	A	S	O	N	D	Nesting	Migrating	Molting
169	Common loon				X	X	X	X							X	X	-	-	-
	Northern gannet				X	X	X							X	X	X	-	-	-
	Scaup			100S	X	X	X	X	X					X	X	X	-	-	-
182	American coot			UP TO 1058 IND/SQ MI	X	X	X	X					X	X	X	X	-	-	-
	American white pelican			100S	X	X	X	X	X	X	X	X	X	X	X	X	-	-	-
	American wigeon			UP TO 113 IND/SQ MI	X	X	X	X						X	X	X	-	-	-
	Blue-winged teal			UP TO 103 IND/SQ MI	X	X	X	X					X	X	X	X	-	-	-
	Canvasback			UP TO 106 IND/SQ MI	X	X	X								X	X	-	-	-
	Gadwall			UP TO 492 IND/SQ MI	X	X	X	X						X	X	X	-	-	-
	Green-winged teal			UP TO 147 IND/SQ MI	X	X	X	X						X	X	X	-	-	-
	Hooded merganser			UP TO 1 IND/SQ MI	X	X	X	X						X	X	X	-	-	-
	Mallard			UP TO 32 IND/SQ MI	X	X	X	X						X	X	X	-	-	-
	Mottled duck			UP TO 38 IND/SQ MI	X	X	X	X	X	X	X	X	X	X	X	X	MAR-JUN	-	-
	Northern pintail			UP TO 484 IND/SQ MI	X	X	X	X						X	X	X	-	-	-
	Northern shoveler			UP TO 25 IND/SQ MI	X	X	X	X	X				X	X	X	X	-	-	-
	Ring-necked duck			UP TO 403 IND/SQ MI	X	X	X								X	X	-	-	-
	Scaup			UP TO 196 IND/SQ MI	X	X	X	X	X					X	X	X	-	-	-
236	Black tern										X	X	X				-	-	-
	Cory's shearwater									X	X	X	X	X			-	-	-
	Great shearwater						X				X	X	X	X			-	-	-
	Gulls				X	X	X	X	X	X	X	X	X	X	X	X	-	-	-
	Magnificent frigatebird							X	X	X	X	X	X	X			-	-	-
	Northern gannet				X	X	X							X	X	X	-	-	-
	Parasitic jaeger								X	X		X	X				-	-	-
	Pomarine skua				X	X	X	X	X			X	X	X	X	X	-	-	-
	Royal tern				X	X	X	X	X	X	X	X	X	X	X	X	-	-	-
	Sandwich tern							X	X	X	X	X	X	X			-	-	-
317	Dabbling ducks			100,000S	X	X	X	X	X			X	X	X	X		-	-	-
	Diving ducks			10,000S	X	X	X	X	X					X	X	X	-	-	-
	Snow goose			10,000S	X	X	X	X							X	X	-	-	-

FISH:

RAR#	Species	S	F	Conc.	J	F	M	A	M	J	J	A	S	O	N	D	Spawning	Eggs	Larvae	Juveniles	Adults
202	Black drum			COMMON	X	X	X	X	X	X	X	X	X	X	X	X	JAN-JUL	-	JAN-JUL	JAN-DEC	JAN-DEC
	Blue catfish			ABUNDANT			X	X	X	X	X	X	X				APR-JUL	APR-JUL	-	MAR-OCT	MAR-OCT
	Gafftopsail catfish			HIGHLY ABUNDANT				X	X	X	X	X	X	X			-	-	-	-	-
	Gulf menhaden			HIGHLY ABUNDANT			X	X	X	X	X	X	X	X			-	-	-	-	APR-NOV
	Killifish			ABUNDANT	X	X	X	X	X	X	X	X	X	X	X	X	APR-SEP	-	-	JAN-DEC	JAN-DEC
	Kingfishes			HIGHLY ABUNDANT	X	X	X	X	X	X	X	X	X	X	X	X	-	-	-	-	-
	Red snapper			HIGHLY ABUNDANT	X	X	X	X	X	X	X	X	X	X	X	X	-	-	-	JAN-DEC	-
	Shad			ABUNDANT	X	X		X	X	X	X	X	X	X	X	X	-	-	-	-	-
	Spotted seatrout			COMMON	X	X	X	X	X	X	X	X	X	X	X	X	APR-SEP	-	APR-SEP	APR-DEC	APR-DEC
	Striped mullet			ABUNDANT	X	X	X	X	X	X	X	X	X	X	X	X	-	-	-	JAN-DEC	JAN-DEC
204	Alligator gar			PRESENT	X	X	X	X	X	X	X	X	X	X	X	X	-	-	-	-	-
	American eel			PRESENT	X	X	X	X	X	X	X	X	X	X	X	X	-	-	-	JAN-DEC	JAN-DEC
	Anchovies			ABUNDANT	X	X	X	X	X	X	X	X	X	X	X	X	MAR-SEP	MAR-SEP	MAR-SEP	JAN-DEC	JAN-DEC
	Atlantic spadefish			ABUNDANT						X	X	X	X	X			-	-	-	-	-
	Black drum			PRESENT	X	X	X	X	X	X	X	X	X	X	X	X	JAN-JUL	-	JAN-JUL	JAN-DEC	JAN-DEC
	Blue catfish			ABUNDANT	X	X	X	X	X							X	-	-	-	DEC-MAY	DEC-MAY
	Bowfin			PRESENT	X	X	X	X	X	X	X	X	X	X	X	X	-	-	-	-	-
	Bream			PRESENT	X	X	X	X	X	X	X	X	X	X	X	X	MAR-AUG	MAR-AUG	MAR-NOV	JAN-DEC	JAN-DEC
	Buffalo			PRESENT	X	X	X	X	X	X	X	X	X	X	X	X	-	-	-	-	-
	Bull shark			COMMON			X	X	X	X	X	X	X				-	-	MAY-SEP	MAR-OCT	-
	Channel catfish			PRESENT	X	X	X	X	X	X	X	X	X	X	X	X	APR-JUL	APR-JUL	-	-	JAN-DEC
	Crappie			PRESENT	X	X	X	X	X	X	X	X	X	X	X	X	FEB-MAY	FEB-MAY	FEB-JUN	JAN-DEC	JAN-DEC
	Croakers			HIGHLY ABUNDANT	X	X	X	X	X	X	X	X	X	X	X	X	-	-	-	-	-
	Flathead catfish			PRESENT	X	X	X	X	X	X	X	X	X	X	X	X	-	-	-	-	-
	Forage fish			ABUNDANT				X	X	X	X	X	X	X			-	-	-	-	-
	Freshwater drum			PRESENT	X	X	X	X	X	X	X	X	X	X	X	X	-	-	-	-	-
	Gafftopsail catfish			HIGHLY ABUNDANT						X	X	X	X	X			-	-	-	-	-
	Gulf menhaden			HIGHLY ABUNDANT	X	X	X	X	X	X	X	X	X	X	X	X	-	-	-	JAN-DEC	JAN-DEC
	Herrings and sardines			ABUNDANT	X	X	X	X	X	X	X	X	X	X	X	X	-	-	-	-	-
	Killifish			COMMON	X	X	X	X	X	X	X	X	X	X	X	X	APR-SEP	-	-	JAN-DEC	JAN-DEC
	Kingfishes			ABUNDANT	X	X	X	X	X	X	X	X	X	X	X	X	-	-	-	-	-
	Largemouth bass			ABUNDANT	X	X	X	X	X	X	X	X	X	X	X	X	JAN-MAY	-	-	JAN-DEC	JAN-DEC
	Longnose gar			PRESENT	X	X	X	X	X	X	X	X	X	X	X	X	MAR-APR	MAR-APR	MAR-APR	MAR-JUN	JAN-DEC
	Paddlefish			PRESENT	X	X	X	X	X	X	X	X	X	X	X	X	-	-	-	-	-
	Pipefish			PRESENT	X	X	X	X	X	X	X	X	X	X	X	X	-	-	-	-	-
	Red drum			ABUNDANT	X	X	X	X	X	X	X	X	X	X	X	X	-	-	-	JAN-DEC	APR-NOV
	Seahorses			PRESENT	X	X	X	X	X	X	X	X	X	X	X	X	-	-	-	-	-
	Shad			HIGHLY ABUNDANT	X	X	X	X	X	X	X	X	X	X	X	X	MAR-MAY	MAR-MAY	MAR-JUN	MAR-JUL	JAN-DEC
	Sheepshead			HIGHLY ABUNDANT	X	X	X	X	X	X	X	X	X	X	X	X	-	-	-	JAN-DEC	JAN-DEC
	Southern flounder			ABUNDANT	X	X	X	X	X	X	X	X	X	X	X	X	-	-	-	JAN-DEC	JAN-DEC
	Spotted gar			ABUNDANT	X	X	X	X	X	X	X	X	X	X	X	X	MAR-APR	MAR-APR	MAR-APR	MAR-JUN	JAN-DEC
	Spotted seatrout			ABUNDANT	X	X	X	X	X	X	X	X	X	X	X	X	APR-SEP	-	APR-SEP	JAN-DEC	JAN-DEC
	Striped mullet			ABUNDANT	X	X	X	X	X	X	X	X	X	X	X	X	-	-	-	JAN-DEC	JAN-DEC
	Tarpon			PRESENT				X	X	X	X	X	X	X	X		-	-	-	MAY-NOV	-
	White bass			ABUNDANT	X	X	X	X									-	-	-	-	-
	White trout			HIGHLY ABUNDANT	X	X	X	X	X	X	X	X	X	X	X	X	MAR-SEP	-	MAR-SEP	JAN-DEC	JAN-DEC
310	Anchovies			ABUNDANT	X	X	X	X	X	X	X	X	X	X	X	X	MAR-SEP	MAR-SEP	JAN-DEC	JAN-DEC	JAN-DEC
	Atlantic sharpnose shark			HIGHLY ABUNDANT			X	X	X	X	X	X	X				-	-	MAY-OCT	MAR-OCT	MAR-OCT
	Atlantic spadefish				X	X	X	X	X	X	X	X	X	X	X	X	APR-SEP	APR-SEP	APR-SEP	SEP-MAY	JAN-DEC
	Atlantic tripletail						X	X	X	X	X	X					-	-	-	APR-SEP	APR-SEP
	Blacktip shark			COMMON			X	X	X	X	X	X	X				-	-	MAR-OCT	MAR-OCT	MAR-OCT
	Bull shark						X	X	X	X	X	X	X				-	-	-	MAR-OCT	MAR-OCT
	Cobia								X	X	X	X	X				JUN-AUG	JUN-AUG	JUN-AUG	JUN-SEP	JUN-SEP
	Croakers			ABUNDANT	X	X	X	X	X	X	X	X	X	X	X	X	DEC-MAR	DEC-MAR	NOV-MAY	-	JAN-DEC
	Finetooth shark						X	X	X	X	X	X	X	X			-	-	MAR-OCT	MAR-OCT	MAR-OCT
	Florida pompano						X	X	X	X	X	X	X	X			-	-	MAY-AUG	APR-NOV	APR-NOV
	Forage fish				X	X	X	X	X	X	X	X	X	X	X	X	-	-	-	-	-
	Gray snapper				X	X	X	X	X	X	X	X	X	X	X	X	JUN-NOV	JUN-NOV	JUN-NOV	JAN-DEC	JAN-DEC
	Gray triggerfish				X	X	X	X	X	X	X	X	X	X	X	X	JUN-SEP	JUN-SEP	APR-SEP	JAN-DEC	JAN-DEC
	Great barracuda				X	X	X	X	X	X	X	X	X	X	X	X	APR-OCT	APR-OCT	APR-OCT	JAN-DEC	JAN-DEC
	Great hammerhead				X	X	X	X	X	X	X	X	X	X	X	X	-	-	-	JAN-DEC	JAN-DEC
	Herrings and sardines				X	X	X	X	X	X	X	X	X	X	X	X	-	-	APR-SEP	JAN-DEC	JAN-DEC
	King mackerel						X	X	X	X	X	X	X	X	X		JUN-NOV	JUN-NOV	JUN-NOV	MAR-NOV	MAR-NOV
	Lane snapper				X	X	X	X	X	X	X	X	X	X	X	X	MAR-AUG	MAR-AUG	MAR-AUG	JAN-DEC	JAN-DEC
	Red drum			ABUNDANT	X	X	X	X	X	X	X	X	X	X	X	X	AUG-OCT	AUG-NOV	SEP-NOV	JAN-DEC	JAN-DEC
	Scalloped hammerhead				X	X	X	X	X	X	X	X	X	X	X	X	-	-	MAR-OCT	JAN-DEC	JAN-DEC
	Sheepshead				X	X	X	X	X	X	X	X	X	X	X	X	JAN-APR	JAN-APR	JAN-MAY	-	DEC-MAR
	Shortfin mako				X	X	X	X	X	X	X	X	X	X	X	X	-	-	-	-	-
	Southern flounder				X	X	X	X	X	X	X	X	X	X	X	X	SEP-FEB	SEP-FEB	SEP-APR	-	JAN-DEC
	Spanish mackerel						X	X	X	X	X	X	X				APR-OCT	APR-OCT	APR-OCT	MAR-OCT	MAR-OCT
	Spinner shark				X	X	X	X	X	X	X	X	X	X	X	X	-	-	-	JAN-DEC	-
	Tarpon							X	X	X	X	X	X	X			-	-	JUN-AUG	MAY-NOV	MAY-NOV
	White trout				X	X	X	X	X	X	X	X	X	X	X	X	MAR-OCT	MAR-OCT	MAR-OCT	JAN-DEC	JAN-DEC
314	Anchovies				X	X	X	X	X	X	X	X	X	X	X	X	MAR-SEP	MAR-SEP	JAN-DEC	JAN-DEC	JAN-DEC
	Atlantic sharpnose shark			HIGHLY ABUNDANT	X	X	X	X	X	X	X	X	X	X	X	X	-	-	-	-	JAN-DEC

Biological information shown on the maps represents known concentration areas or occurrences, but does not necessarily represent the full distribution or range of each species. The LDWF-LNHP provided information for some of the federally and state listed species and species of conservation concern for display in the ESI atlas and accompanying digital data in 2013. The available LNHP data sets are to be used for oil spill response and spill response planning only. These data represent existing information known to the LNHP at the time of the request and should never be substituted for consultation with the LNHP. The more spatially generalized 2011 polygonal waterbird colony data was provided by LNHP and the more spatially specific 2006 point waterbird colony data was provided by BTNEP. The display of these two data sets does not imply that EITHER or BOTH sets of polygons and/or points (especially if counts are aggregated) reflect current nest locations OR counts, but rather are to be used as a guide for what species could be present.

Louisiana: ESIMAP 93 (cont.)

BIOLOGICAL RESOURCES: (cont.)

FISH: (cont.)

RAR#	Species	S	F	Conc.	J	F	M	A	M	J	J	A	S	O	N	D	Spawning	Eggs	Larvae	Juveniles	Adults
314	Atlantic spadefish				X	X	X	X	X	X	X	X	X	X	X	X	APR-SEP	APR-SEP	APR-SEP	SEP-MAY	JAN-DEC
	Atlantic tripletail						X	X	X	X	X	X					MAY-SEP	MAY-SEP	-	-	APR-OCT
	Ballyhoo				X	X	X	X	X	X	X	X	X	X	X	X	MAR-JUL	MAR-JUL	MAY-JUL	JAN-DEC	JAN-DEC
	Blacknose shark			LOW	X	X	X	X	X	X	X	X	X	X	X	X	-	-	-	-	-
	Blacktip shark				X	X	X	X	X	X	X	X	X	X	X	X	-	-	-	JAN-DEC	JAN-DEC
	Bluefin tuna			RARE			X	X	X								-	-	APR-JUN	-	-
	Bull shark				X	X	X	X	X	X	X	X	X	X	X	X	-	-	-	JAN-DEC	JAN-DEC
	Cobia								X	X	X	X	X				JUN-AUG	JUN-AUG	JUN-AUG	JUN-SEP	JUN-SEP
	Croakers				X	X	X	X	X	X	X	X	X	X	X	X	DEC-MAR	DEC-MAR	NOV-MAY	-	JAN-DEC
	Dolphinfish								X	X	X	X	X	X	X		-	-	-	MAY-NOV	MAY-NOV
	Dusky shark				X	X	X	X	X	X	X	X	X	X	X	X	-	-	-	JAN-DEC	JAN-DEC
	Finetooth shark				X	X	X	X	X	X	X	X	X	X	X	X	-	-	-	-	JAN-DEC
	Florida pompano						X	X	X	X	X	X	X	X			-	-	MAY-AUG	APR-NOV	APR-NOV
	Forage fish				X	X	X	X	X	X	X	X	X	X	X	X	-	-	-	-	-
	Gag				X	X	X	X	X	X	X	X	X	X	X	X	-	-	-	JAN-DEC	JAN-DEC
	Gray snapper				X	X	X	X	X	X	X	X	X	X	X	X	-	-	-	-	JAN-DEC
	Gray triggerfish				X	X	X	X	X	X	X	X	X	X	X	X	JUN-SEP	JUN-SEP	APR-SEP	JAN-DEC	JAN-DEC
	Great barracuda				X	X	X	X	X	X	X	X	X	X	X	X	APR-OCT	APR-OCT	APR-OCT	JAN-DEC	JAN-DEC
	Greater amberjack				X	X	X	X	X	X	X	X	X	X	X	X	-	-	-	JAN-DEC	JAN-DEC
	Gulf menhaden				X	X	X	X					X	X	X	X	OCT-APR	OCT-APR	OCT-APR	-	OCT-APR
	Herrings and sardines						X	X	X	X	X	X					APR-SEP	APR-SEP	APR-SEP	APR-SEP	APR-SEP
	King mackerel					X	X	X	X	X	X	X	X	X	X		JUN-NOV	JUN-NOV	JUN-NOV	MAR-NOV	MAR-NOV
	Kingfishes				X	X	X	X	X	X	X	X	X	X	X	X	APR-AUG	-	-	-	-
	Lane snapper				X	X	X	X	X	X	X	X	X	X	X	X	MAR-AUG	MAR-AUG	MAR-AUG	JAN-DEC	JAN-DEC
	Red snapper				X	X	X	X	X	X	X	X	X	X	X	X	MAR-NOV	MAR-NOV	MAR-NOV	JAN-DEC	JAN-DEC
	Scalloped hammerhead				X	X	X	X	X	X	X	X	X	X	X	X	-	-	-	JAN-DEC	JAN-DEC
	Shortfin mako				X	X	X	X	X	X	X	X	X	X	X	X	-	-	-	-	-
	Southern flounder				X	X	X	X	X	X	X	X	X	X	X	X	SEP-FEB	SEP-FEB	SEP-APR	-	JAN-DEC
	Spinner shark				X	X	X	X	X	X	X	X	X	X	X	X	-	-	-	-	JAN-DEC
	Striped mullet				X	X							X	X	X	X	SEP-FEB	-	OCT-FEB	-	SEP-FEB
	Tarpon				X	X	X	X	X	X	X	X	X	X	X	X	-	-	-	JAN-DEC	JAN-DEC
	Vermilion snapper				X	X	X	X	X	X	X	X	X	X	X	X	-	-	-	-	-
	Wahoo				X	X	X	X	X	X	X	X	X	X	X	X	-	-	-	JAN-DEC	JAN-DEC
	White trout				X	X	X	X	X	X	X	X	X	X	X	X	MAR-OCT	MAR-OCT	MAR-OCT	JAN-DEC	JAN-DEC
	Yellowfin tuna				X	X	X	X	X	X	X	X	X	X	X	X	-	-	-	JAN-DEC	JAN-DEC
319	Pallid sturgeon	E	E	PRESENT	X	X	X	X	X	X	X	X	X	X	X	X	-	-	-	-	-
341	Whale shark			COMMON MAR-OCT	X	X	X	X	X	X	X	X	X	X	X	X	-	-	-	-	-

INVERTEBRATE:

RAR#	Species	S	F	Conc.	J	F	M	A	M	J	J	A	S	O	N	D	Spawning	Eggs	Larvae	Juveniles	Adults
202	Atlantic rangia			PRESENT	X	X	X	X	X	X	X	X	X	X	X	X	MAR-NOV	-	MAR-NOV	JAN-DEC	JAN-DEC
	Atlantic seabob shrimp			ABUNDANT			X	X	X	X	X	X					-	-	-	-	-
	Blue crab			HIGHLY ABUNDANT	X	X	X	X	X			X	X	X	X		APR-MAY SEP-NOV	APR-MAY SEP-NOV	APR-MAY	SEP-MAY	SEP-MAY
	Grass shrimp			ABUNDANT	X	X	X	X	X	X	X	X	X	X	X	X	-	-	-	-	-
	River shrimp			HIGHLY ABUNDANT		X	X	X	X	X							APR-JUN	-	APR-JUN	-	FEB-JUN
	White shrimp			ABUNDANT	X	X	X	X	X	X	X	X	X	X	X	X	MAY-NOV	-	-	-	JAN-DEC
204	Atlantic rangia			PRESENT	X	X	X	X	X	X	X	X	X	X	X	X	MAR-NOV	-	MAR-NOV	JAN-DEC	JAN-DEC
	Atlantic seabob shrimp			ABUNDANT			X	X	X	X	X	X	X	X			-	-	-	-	-
	Blue crab			HIGHLY ABUNDANT	X	X	X	X	X	X	X	X	X	X	X	X	APR-NOV	APR-NOV	APR-NOV	JAN-DEC	JAN-DEC
	Brown shrimp			ABUNDANT		X	X	X	X	X	X	X	X	X	X	X	-	-	MAR-NOV	APR-DEC	-
	Fiddler crab			PRESENT	X	X	X	X	X	X	X	X	X	X	X	X	JUN-AUG	-	-	-	-
	Grass shrimp			ABUNDANT	X	X	X	X	X	X	X	X	X	X	X	X	-	-	-	-	-
	Red swamp crawfish			PRESENT	X	X	X	X	X	X	X	X	X	X	X	X	MAR-MAY	JAN-DEC	JAN-DEC	JAN-DEC	JAN-DEC
	River shrimp			ABUNDANT		X	X	X	X								APR-JUN	-	APR-JUN	-	FEB-JUN
	Squid			COMMON	X	X	X	X	X	X	X	X	X	X	X	X	-	-	-	MAY-JUL	MAY-JUL
	White shrimp			HIGHLY ABUNDANT	X	X	X	X	X	X	X	X	X	X	X	X	-	-	MAY-NOV	JAN-DEC	-
310	Brown shrimp			ABUNDANT	X	X	X	X	X	X	X	X	X	X	X	X	-	-	FEB-APR	-	JAN-DEC
	Squid			ABUNDANT	X	X	X	X	X	X	X	X	X	X	X	X	MAR-NOV	MAR-NOV	MAR-NOV	JAN-DEC	JAN-DEC
314	Blue crab						X	X	X	X	X	X	X	X			-	-	MAR-NOV	MAR-NOV	MAR-NOV
	Brown shrimp				X	X	X	X	X	X	X	X	X	X	X	X	SEP-MAY	-	-	-	JAN-DEC
	Pink shrimp				X	X	X	X	X	X	X	X	X	X	X	X	-	-	-	-	-
	Squid				X	X	X	X	X	X	X	X	X	X	X	X	MAR-NOV	MAR-NOV	MAR-NOV	JAN-DEC	JAN-DEC
	White shrimp			ABUNDANT	X	X	X	X	X	X	X	X	X	X	X	X	MAY-NOV	-	-	-	MAY-NOV

MARINE MAMMAL:

RAR#	Species	S	F	Conc.	J	F	M	A	M	J	J	A	S	O	N	D	Mating	Calving	Pupping	Molting
302	Atlantic spotted dolphin			COMMON	X	X	X	X	X	X	X	X	X	X	X	X	-	-	-	-
	Bottlenose dolphin			ABUNDANT	X	X	X	X	X	X	X	X	X	X	X	X	-	-	-	-
303	Bottlenose dolphin			VERY ABUNDANT	X	X	X	X	X	X	X	X	X	X	X	X	-	-	-	-
304	West Indian manatee	E	E	RARE TO UNCOMMON	X	X	X	X	X	X	X	X	X	X	X	X	-	-	-	-
314	Bryde's whale			RARE	X	X	X	X	X	X	X	X	X	X	X	X	-	-	-	-

REPTILE:

RAR#	Species	S	F	Conc.	J	F	M	A	M	J	J	A	S	O	N	D	Nesting	Hatching	Internesting	Juveniles	Adults
282	Kemp's ridley sea turtle	E	E	ABUNDANT				X	X	X	X	X	X				-	-	-	APR-SEP	-
284	Green sea turtle	T	T	OCCASIONAL				X	X	X	X	X	X	X	X		-	-	-	MAR-NOV	MAR-NOV
	Hawksbill sea turtle	E	E	VERY RARE				X	X	X	X	X	X	X			-	-	-	MAR-OCT	-
	Leatherback sea turtle	E	E	RARE	X	X	X	X	X	X	X	X	X	X	X	X	-	-	-	JAN-DEC	JAN-DEC
	Loggerhead sea turtle	T	T	COMMON				X	X	X	X	X	X	X	X		-	-	-	MAR-NOV	MAR-NOV
314	Leatherback sea turtle	E	E	RARE	X	X	X	X	X	X	X	X	X	X	X	X	-	-	-	JAN-DEC	JAN-DEC

HUMAN USE RESOURCES:

MANAGEMENT AREA:

HUN#	Name	Contact	Phone
776	PASS A LOUTRE WMA	LDWF	

Biological information shown on the maps represents known concentration areas or occurrences, but does not necessarily represent the full distribution or range of each species. The LDWF-LNHP provided information for some of the federally and state listed species and species of conservation concern for display in the ESI atlas and accompanying digital data in 2013. The available LNHP data sets are to be used for oil spill response and spill response planning only. These data represent existing information known to the LNHP at the time of the request and should never be substituted for consultation with the LNHP. The more spatially generalized 2011 polygonal waterbird colony data was provided by LNHP and the more spatially specific 2006 point waterbird colony data was provided by BTNEP. The display of these two data sets does not imply that EITHER or BOTH sets of polygons and/or points (especially if counts are aggregated) reflect current nest locations OR counts, but rather are to be used as a guide for what species could be present.

FIGURE A. 10

GENERAL INFORMATION			
Facility Name:	South Pass 7 Facility	**Parish:**	Plaquemines Parish
Date and Year of Initial Facility Operations:	April 2023	**Latitude:**	29° 07' 11" N
		Longitude:	89° 04' 17" W

SITE PHOTOGRAPH

SITE SPECIFIC FACILITY COMMENTS

- Facility is located approximately 20 miles southeast of Venice, Louisiana on the South Pass of the Mississippi River.
- Facility began operation in 2023.
- Facility is manned, lighted, and operates 24 hours, 7 days a week, but only conducts transfer operations during daylight hours.
- Further response guidance can be found in the Facility's FRP and DOM.
- Daily well through-put is 4 Million Standard Cubic Feet per Day (MMSCFD) (Natural Gas), 600 Barrels of Oil per Day (BOPD), 50 Barrels Water Produced per Day (BWPD)

FIGURE A. 10 (Cont'd)

SITE SPECIFIC FACILITY COMMENTS (Cont'd)
• The Facility receives a full stream oil and gas from two (2) oil production wells which is directed to the oil production Facility for separation, treatment, and storage. For transportation, the oil is transferred over water to a 10,000 bbl transport barge (max capacity) via pump and flexible hose at a maximum loading rate of 4,500 BPH.
• The transportation barge moors to the pile clusters adjacent to the oil transfer station located on the oil storage barge. Sufficient slack is allowed in the transportation barge's ropes for changes in draft, drift, and tide during the transfer operations.
• Facility is accessible only by boat or amphibious aircraft.
• Facility is comprised of three (3) permanently moored barges that makeup the Facility. The three (3) barges are: 1) The production barge for processing; 2) The oil tank barge which holds storage tanks that are constructed of, a) bolted galvanized steel in accordance with API-12B Specification for Bolted Tanks for Storage of Production Liquids, and b) welded common steel in accordance with API 12F Specification for Shop Welded Tanks for Storage of Production Liquids. The bulk oil tanks are equipped with level controls, equalizing lines and atmospheric vents to ensure vacuum protection; and 3) The oil storage barge that stores 10,000 bbls in the barge compartments.
• Various production chemicals may periodically be located onsite in portable containers of varying capacities.

FIGURE A. 10 (Cont'd)

LLOX, LLC – SOUTH PASS 7 FACILITY
PROFESSIONAL ENGINEER CERTIFICATION

By means of this Professional Engineer (P.E.) Certification, I hereby attest, to the best of my knowledge and belief, to the following:

- I am familiar with the requirements of 40 CFR Part 112 and have verified that this Plan has been prepared in accordance with the requirements of this Part.
- I or my agent visited and examined the Facility on May 1, 2023. My certification is based upon the condition of the Facility as of this date. Any material changes to the Facility made subsequent to this date must be separately reviewed, documented and P.E. certified as a Technical Amendment, as appropriate.
- I have verified that this Plan has been prepared in accordance with good engineering practice, including consideration of applicable industry standards.
- I have verified that the required inspection and testing procedures have been established as described in this Plan.
- I have verified that the Plan is adequate for the Facility.
- My certification of this Plan in no way relieves the owner/operator of the Facility of their duty to prepare and fully implement the Plan in accordance with the requirements of 40 CFR Part 112. The attestations listed above are limited to only those facilities, programs, practices, and procedures pertaining to oil and oil products. I in no way assume any liability of whatsoever kind or nature by my certification.
- The owner/operator, by "Management Approval" located on the following page, acknowledges this certification and the compliance measures described herein.
- This certification is limited to the sections referenced in the Spill Prevention, Control, and Countermeasure Plan (40 CFR 112) cross reference.
- This Plan is valid only to the extent that the Facility Owner or Operator maintains, tests, and inspects equipment, containment, and other devices as prescribed in this Plan and completes any Implementation Requirements.

STATE OF LOUISIANA
ALLISON MARIE GRAY
REG. No. 27976
REGISTERED PROFESSIONAL ENGINEER
MECHANICAL ENGINEERING

Allison Marie Gray

Registered Professional Engineer
Allison Gray, P.E.
State of Louisiana Registration No: 27976

Date of Seal/Signature: 1/26/24

FIGURE A. 10 (Cont'd)

MANAGEMENT APPROVAL

Owner/Operator responsible for Facility: LLOX, LLC

- Facility Name: South Pass 7 Facility
  Latitude: 29° 07' 11" N
  Longitude: 89° 04' 17" W

- By Signature below, the Manager approves this Plan, has the authority to commit the necessary resources to implement this Plan, and acknowledges that the elements identified within this Plan will be implemented.

- This page may be used for the initial Management Approval or for subsequent change of management and/or change of designated person accountable.

- This SPCC Plan will be implemented as herein described.

Signature: _____

Designated person accountable for oil spill prevention at the Facility:

Name: Ron Harvey, Jr.
Date: _____
Title: Operations Manager

Name: Brock Dubroc
Title: Production Superintendent

- This SPCC Plan will be implemented as herein described.

Signature: _____

Designated person accountable for oil spill prevention at the Facility:

Name: _____
Date: _____
Title: _____

Name: _____
Title: _____

- This SPCC Plan will be implemented as herein described.

Signature: _____

Designated person accountable for oil spill prevention at the Facility:

Name: _____
Date: _____
Title: _____

Name: _____
Title: _____

FIGURE A. 10 (Cont'd)

LLOX, LLC – SOUTH PASS 7 FACILITY
FIVE (5) YEAR MANAGEMENT REVIEW

The function of this log is to document Management's five (5) year review of the Plan as required under 40 CFR 112.5.

Acknowledgment of Five (5) Year SPCC Plan Review Completion

- As required by 40 CFR 112.5, Management will review this SPCC Plan at least each five (5) years and document the review on the form below.
- This review includes an evaluation of more effective prevention and control technology that would significantly reduce the likelihood of a spill event from the Facility.
- By signature below, management confirms that a review and evaluation of this SPCC Plan has been completed.
- As a result of this review and evaluation, technical changes in Facility design, construction, operation or maintenance that would materially affect the Facility's potential for discharge into navigable waters of the United States or adjoining shorelines will be recertified by a registered Professional Engineer. Documentation of such revisions will be recorded in the Revision Record.
- If no amendment is required, date, sign, and indicate the Plan "will not" be amended using the appropriate column.

Review Date	Signature	Title	Amend Plan (will/will not)

FIGURE A. 10 (Cont'd)

LLOX, LLC – SOUTH PASS 7 FACILITY
EPA APPLICABILITY OF SUBSTANTIAL HARM CRITERIA

1. Does the facility transfer oil over water to or from vessels ***and*** does the facility have a total oil storage capacity greater than or equal to 42,000 gallons?

   YES ✓ NO _____

2. Does the facility have a total oil storage capacity greater than or equal to 1 million gallons ***and*** does the facility lack secondary containment that is sufficiently large to contain the capacity of the largest aboveground oil storage tank plus sufficient freeboard to allow for precipitation within any aboveground oil storage tank area?

   YES _____ NO ✓

3. Does the facility have a total oil storage capacity greater than or equal to 1 million gallons ***and*** is the facility located at a distance (as calculated using the appropriate formula in Attachment C-III to 40 CFR Part 112 or a comparable formula[19]) such that a discharge from the facility could cause injury to fish and wildlife and sensitive environments? For further description of fish and wildlife and sensitive environments, see Appendices I, II, and III to DOC/NOAA's "Guidance for Facility and Vessel Response Plans: Fish and Wildlife and Sensitive Environments" (59 FR 14713, March 29, 1994) and the applicable Area Contingency Plan.

   YES _____ NO ✓

4. Does the facility have a total oil storage capacity greater than or equal to 1 million gallons ***and*** is the facility located at a distance (as calculated using the appropriate formula in Attachment C-III to 40 CFR Part 112 or a comparable formula[1]) such that a discharge from the facility would shut down a public drinking water intake[20]?

   YES _____ NO ✓

5. Does the facility have a total oil storage capacity greater than or equal to 1 million gallons ***and*** has the facility experienced a reportable oil spill in an amount greater than or equal to 10,000 gallons within the last 5 years?

   YES _____ NO ✓

Certification

I certify under penalty of law that I have personally examined and am familiar with the information submitted in this document, and that based on my inquiry of those individuals responsible for obtaining information, I believe that the submitted information is true, accurate, and complete.

Signature: _____

(please type or print): Name: Ron Harvey, Jr.

Title: Operations Manager

Date: _____

19 If a comparable formula is used, documentation of the reliability and analytical soundness of the comparable formula must be attached to this form.

20 For the purposes of 40 CFR part 112, public drinking water intakes are analogous to public water systems as described at 40 CFR 143.2(c).

FIGURE A. 10 (Cont'd)

POTENTIAL SPILL SOURCES AND HAZARD IDENTIFICATION CONTAINERS
ABOVEGROUND STORAGE CONTAINERS

(Tank - Any container that stores oil)

Container I.D (Plot Plan Equipment Number)	Substance Stored *(Oil & Haz. Substance)*	Maximum Capacity *(Gallons)*	Potential Failure	Rate of Flow *(gpm)*	Failure/Cause *(Record cause and date of any Tank failure which has resulted in a loss of tank contents)*	Direction of Flow	Secondary Containment Capacity *(Gallons)*
BULK STORAGE CONTAINERS							
Crude Oil Tank #1	Crude Oil	63,000	Leak/Rupture/Overflow	Note 3	-----	Mississippi River	Note 1
Crude Oil Tank #2	Crude Oil	63,000	Leak/Rupture/Overflow	Note 3	-----	Mississippi River	Note 1
Crude Oil Tank #3	Crude Oil	63,000	Leak/Rupture/Overflow	Note 3	-----	Mississippi River	Note 1
Crude Oil Tank #4	Crude Oil	21,000	Leak/Rupture/Overflow	Note 3	-----	Mississippi River	Note 1
Crude Oil Tank #5	Crude Oil	21,000	Leak/Rupture/Overflow	Note 3	-----	Mississippi River	Note 1
Water Tank #6	Oil & Water	63,000	Leak/Rupture/Overflow	Note 3	-----	Mississippi River	Note 1
Saltwater Tank #7	Oil & Water	12,600	Leak/Rupture/Overflow	Note 3	-----	Mississippi River	Note 2
Gun Barrel Tank #8	Oil & Water	12,600	Leak/Rupture/Overflow	Note 3	-----	Mississippi River	Note 2
Crude Oil Barge	Crude Oil	420,000	Leak/Rupture/Overflow	Note 3	-----	Mississippi River	Double-Walled
Lube Oil Tank	Lube Oil	500	Leak/Rupture/Overflow	Note 3	-----	Mississippi River	Note 1
Diesel Tank	Diesel	550	Leak/Rupture/Overflow	Note 3	-----	Mississippi River	Note 1
	Total	**824,250**					

Note 1: Tanks are located on the oil tank barge with curbing with a volume of 135,977 gallons (30' x 167' x 4' 11"). Curbed area drains to the sumps #3 and #4.

Note 2: Tanks are located on the production barge with curbing with a volume of 106,883 gallons (30' x 190' x 2' 8"). Curbed area drains to the sumps #1 and #2.

Note 3: Rate of flow on tanks due to failure range from pin hole leaks with several gallons of oil released over a given time period to catastrophic failures resulting in complete loss of product.

Portable oil containers, *e.g.*, drums/totes, the volume of the containers, and locations on site vary based on production needs, and as such, may not be listed here. Per SPCC regulations they will be stored in appropriately sized secondary containment systems or within existing curbed areas.

FIGURE A. 10 (Cont'd)

FLOW-THROUGH PROCESS VESSELS						
Source ID	**Location**	**Substance Stored** *(Oil & Haz. Substance)*	**Maximum Capacity** *(Gallons)*	**Potential Failure**	**Direction of Flow**	**Containment Capacity** *(Gallons)*
FLOW-THROUGH PROCESS VESSELS						
Test Separator, 3 Phase	Production Barge	Oil & Water	940	Leak/Rupture	Mississippi River	Note 2
HP Separator, 3 Phase	Production Barge	Oil & Water	1,128	Leak/Rupture	Mississippi River	Note 2
LP Separator, 3 Phase	Production Barge	Oil & Water	529	Leak/Rupture/Overfill	Mississippi River	Note 2
Heater Treater	Production Barge	Oil & Water	6,035	Leak/Rupture/Overfill	Mississippi River	Note 2
Contactor	Production Barge	Oil & Water	564	Leak/Rupture/Overfill	Mississippi River	Note 2
Flare Scrubber	Production Barge	Oil & Water	392	Leak/Rupture/Overfill	Mississippi River	Note 2

Note 1: Equipment listed as Flow-Through Process Vessels do not have oil containing reservoirs, however oil does pass through them during normal operations. Visual inspections are performed regularly, corrective action initiated, and cleanup performed as required per 40 CFR 112.11; if a leak/spill were to happen, oil would more likely spray out due to the working pressures of the system rather than pool on the ground. Facility process systems contain alarms that would alert personnel in the area to a change in working conditions and the system would be shut in place. Sizes very on the equipment, and a worst-case release could range from less than a gallon up to 6,035 gallons as affected system drained out. If this were to happen, Facility would enact their Facility Response Plan.

Note 2: Vessels are located on the production barge with curbing with a volume of 106,883 gallons (30' x 190' x 2' 8"). Curbed area drains to the sumps #1 and #2.

FIGURE A. 10 (Cont'd)

POTENTIAL SPILL SOURCES AND HAZARD IDENTIFICATION CONTAINERS ABOVEGROUND STORAGE CONTAINERS *(Tank - Any container that stores oil)*							
Container I.D (Plot Plan Equipment Number)	**Substance Stored** *(Oil & Haz. Substance)*	**Maximum Capacity** *(Gallons)*	**Potential Failure**	**Rate of Flow** *(gpm)*	**Failure/Cause** *(Record cause and date of any Tank failure which has resulted in a loss of tank contents)*	**Direction of Flow**	**Secondary Containment Capacity** *(Gallons)*
OIL-FILLED OPERATIONAL EQUIPMENT							
SWD Pump	Lube Oil	25	Leak/Rupture	Note 2	-----	Mississippi River	Note 1
Compressor	Lube Oil	60	Leak/Rupture	Note 2	-----	Mississippi River	Note 1

Note 1: Pump and Compressor are located on the production barge with curbing with a volume of 106,883 gallons (30' x 190' x 2' 8"). Curbed area drains to the sumps #1 and #2.

Note 2: Rate of flow on tanks due to failure range from pin hole leaks with several gallons of oil released over a given time period to catastrophic failures resulting in complete loss of product.

POTENTIAL SPILL SOURCES AND HAZARD IDENTIFICATION CONTAINERS ABOVEGROUND STORAGE CONTAINERS							
Container I.D (Plot Plan Equipment Number)	**Substance Stored** *(Oil & Haz. Substance)*	**Maximum Capacity** *(Gallons)*	**Potential Failure**	**Rate of Flow** *(gpm)*	**Failure/Cause** *(Record cause and date of any Tank failure which has resulted in a loss of tank contents)*	**Direction of Flow**	**Secondary Containment Capacity** *(Gallons)*
OTHER POTENTIAL SPILL SOURCES							
Oil Transfer Area	Crude Oil	TBD	Leak/Rupture	Note 1	-----	Mississippi River	1,147

Note 1: Rate of flow on tanks due to failure range from pin hole leaks with several gallons of oil released over a given time period to catastrophic failures resulting in complete loss of product.

Chemicals stored, the volume of the containers, and locations on site vary based on production needs, and as such, may not be listed here. Chemical containers per LA SPC regulations will be stored in appropriately sized secondary containment systems.

FIGURE A. 10 (Cont'd)

SECONDARY CONTAINMENT CALCULATIONS

1) The primary secondary containment for the Facility is the use of sump tanks equipped with automatic level controllers that activate sump pumps to direct oil back to the production system while allowing water/rainwater to flow or be pumped overboard.

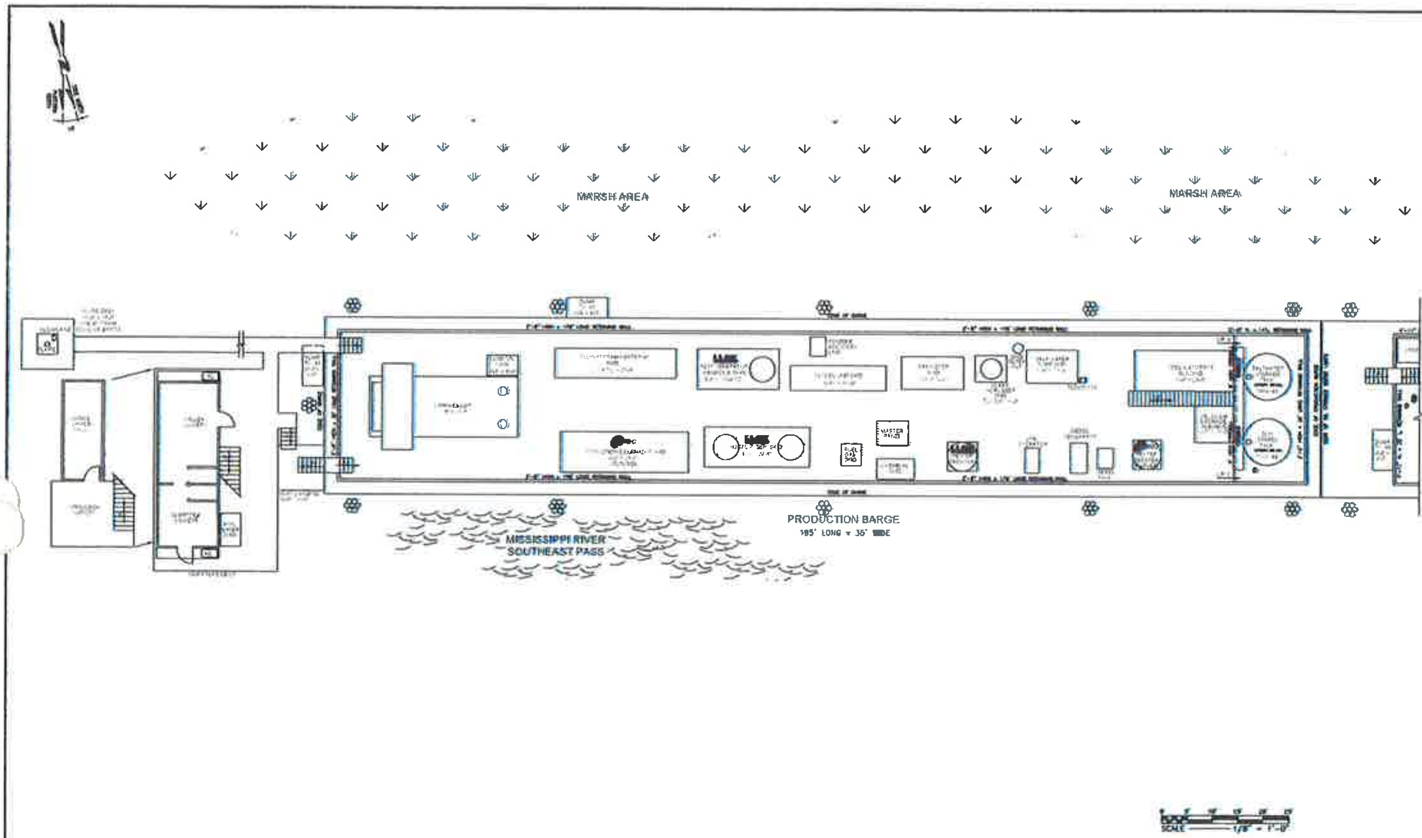
2) Crude Oil Tanks #1 - #5 and the Water Tank #6 are located on the Oil Tank Barge with curbing with a volume of 135,977 gallons (30' x 167' x 4' 11"), but all accumulated rainwater and spilled fluids will drain to sumps #3 and #4.

3) The Saltwater (#7) and Gun Barrel (#8) Tanks are located on the Production Barge with curbing with a volume of 106,883 gallons (30' x 190' x 2' 8"), but all accumulated rainwater and spilled fluids will drain to sumps #1 and #2.

4) The Sump Tanks #1 - #4 are 4' x 4' x 8' with a volume capacity of 958 gallons each.

5) The oil transfer area on the Oil Storage Barge has curbing with a volume of 1,147 gallons (16' x 32' x 4" minus 2' x 26' cut-out) to catch any spills that would occur associated with a transfer. When not in use, the end of the transfer hose is also kept inside a 4' X 4' X 2' hose storage box, which has a capacity greater than two (2) bbls as required.

FIGURE A. 10 (Cont'd)
FACILITY DIAGRAMS



GENERAL NOTES:

1. REFER TO THE FRP/SPCC PLAN FOR ADDITIONAL DETAILS ON REGULATED CONTAINER VOLUMES, CONTAINMENT VOLUMES, SUBSTANCES, ETC.
2. THERE ARE NO ADDITIONAL REGULATED OIL FILLED OPERATIONAL PIECES OF EQUIPMENT THAN THOSE LISTED ON THIS DIAGRAM.
3. ALL DRAINS ON-SITE DRAIN TO THE FACILITY SUMPS.
4. RESPONSE PERSONNEL INGRESS AND EGRESS WILL BE THROUGH THE BOAT LANDING.
5. THERE ARE NO OTHER UTILITIES ON SITE THAN THOSE LISTED.
6. FACILITY DOES NOT UTILIZE WEIRS.
7. THERE ARE NO ADDITIONAL MAJOR SANITARY, STORM SEWERS, MANHOLES OR DRAINS ON SITE OTHER THAN THOSE LISTED.
8. SHUT-OFF VALVES ARE LOCATED AT EACH TANK AND PUMP.
9. ALL MANUAL VALVES ARE KEPT IN A CLOSED POSITION.

REVISIONS

No.	BY	REVISION DESCRIPTION	DATE	CHK.	APP.
1	[illegible]	ADDED COMPRESSOR, QUARTERS DECK & FUTURE KNOCK EQUIPMENT	[illegible]	[illegible]	[illegible]
0	[illegible]	ISSUED FOR USE	[illegible]	[illegible]	[illegible]

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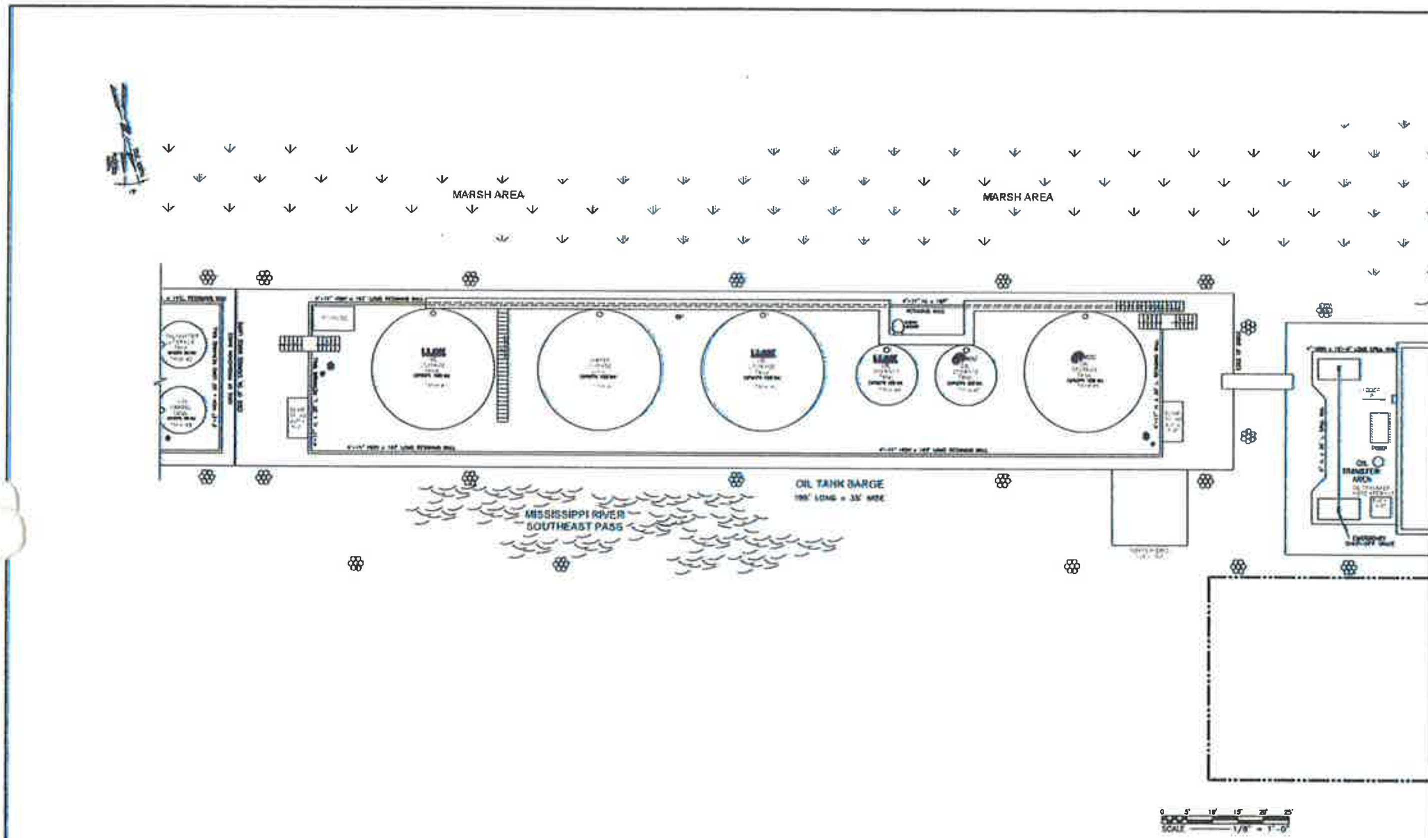
LLOX

SOUTH PASS BLOCK 7
EQUIPMENT LOCATION PLAN
PRODUCTION BARGE



GENERAL NOTES

1. REFER TO THE FRP/SPCC PLAN FOR ADDITIONAL DETAILS ON REGULATED CONTAINER VOLUMES, CONTAINMENT VOLUMES, SUBSTANCES, ETC.
2. THERE ARE NO ADDITIONAL REGULATED OIL FILLED OPERATIONAL PIECES OF EQUIPMENT THAN THOSE LISTED ON THIS DIAGRAM.
3. ALL DRAINS ON-SITE DRAIN TO THE FACILITY SUMPS.
4. RESPONSE PERSONNEL INGRESS AND EGRESS WILL BE THROUGH THE BOAT LANDING
5. THERE ARE NO OTHER UTILITIES ON SITE THAN THOSE LISTED
6. FACILITY DOES NOT UTILIZE WEIRS.
7. THERE ARE NO ADDITIONAL MAJOR SANITARY, STORM SEWERS, MANHOLES OR DRAINS ON SITE OTHER THAN THOSE LISTED.
8. SHUT-OFF VALVES ARE LOCATED AT EACH TANK AND PUMP.
9. ALL MANUAL VALVES ARE KEPT IN A CLOSED POSITION.

REVISIONS

NO.	BY	REVISION DESCRIPTION	DATE	CHK.	APP.
1	[illegible]	ADDED COMPRESSOR, QUARTERS [illegible] & FUTURE [illegible] EQUIPMENT	[illegible]	[illegible]	[illegible]
0	JDE	ISSUED FOR USE	[illegible]	[illegible]	[illegible]

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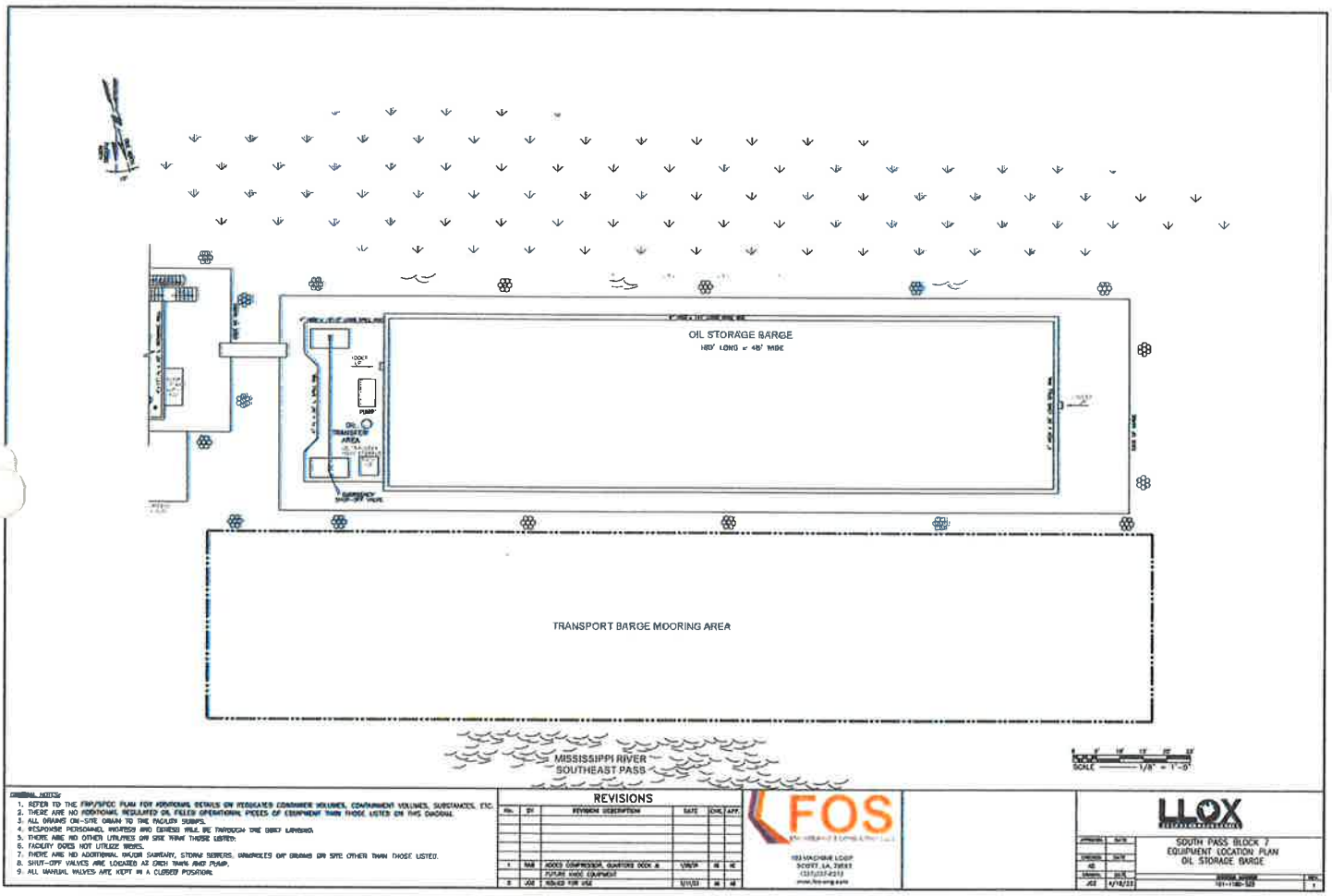
LLOX

SOUTH PASS BLOCK 7
EQUIPMENT LOCATION PLAN
OIL STORAGE BARGE

DRAWN: JDE DATE: 4/14/22
DRAWING NUMBER: [illegible]
REV. 1



GENERAL NOTES:

1. REFER TO THE FRP/SPCC PLAN FOR ADDITIONAL DETAILS ON DESIGNATED CONTAINER VOLUMES, CONTAINMENT VOLUMES, SUBSTANCES, ETC.
2. THERE ARE NO ADDITIONAL REQUIRED OIL FIELD OPERATIONAL PIECES OF EQUIPMENT THAN THOSE LISTED ON THIS DIAGRAM.
3. ALL DRAINS ON-SITE DRAIN TO THE FACILITY SUMPS.
4. RESPONSE PERSONNEL ANSWERS AND DEFENSE WILL BE THROUGH THE DOCK LANDING.
5. THERE ARE NO OTHER UTILITIES OR SITE THAN THOSE LISTED.
6. FACILITY DOES NOT UTILIZE WELLS.
7. THERE ARE NO ADDITIONAL MAJOR SANITARY, STORM SEWERS, DRAINAGES OR DRAINS ON SITE OTHER THAN THOSE LISTED.
8. SHUT-OFF VALVES ARE LOCATED AS EACH TANK AND PUMP.
9. ALL MANUAL VALVES ARE KEPT IN A CLOSED POSITION.

REVISIONS

NO.	BY	REVISION DESCRIPTION	DATE	CHK.	APP.
1	MAB	ADDED COMPRESSOR, QUARTERS DOCK &	1/28/19	AE	AE
		FUTURE WELL EQUIPMENT			
0	JDE	RELEASED FOR USE	8/11/22	AE	AE

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LLOX

APPROVED	DATE
CHECKED	DATE
AE	
DRAWN	DATE
JDE	8/18/22

SOUTH PASS BLOCK 7
EQUIPMENT LOCATION PLAN
OIL STORAGE BARGE

DRAWING NUMBER: 101-1180-S03 REV. 1

FIGURE A. 10 (Cont'd)

SOIL SURVEY

This Facility is located atop a steel and concrete platform, specifically designed to be impervious to oil and produced water releases.