BAYOU SALE RIDGE PROTECTION PROJECT (TV-20)
MAGNETOMETER AND GRADIOMETER
SURVEY RESULTS,
ST. MARY PARISH, LOUISIANA

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EQUIPMENT SPECIFICATIONS

GEOMETRICS MARINE CESIUM MAGNETOMETER MODEL 881
ASHTEAD TECHNOLOGY TSS CMS-25 MOTION SENSOR
SEATRONICS SCHONSTEDT GAU-30 GRADIOMETER

Bayou Sale Ridge Protection Project (TV-20)
Magnetometer and Gradiometer Survey Results

Introduction

This report is the evaluation of survey data collected on May 3 - 6, 16 - 21 and 23 - 27, 2005 by BFM Corporation, LLC, Kenner, Louisiana, with crewmembers from Eric G. Ryals, Inc., Mandeville, Louisiana. The evaluation includes magnetometer and gradiometer data. These data sets were examined in order to identify associations between recorded pipelines, wells, or structures that are in our current databases or that are shown on existing historical maps and aerial photos in our possession. Two aerial images (DOQQ c2909128_sej_20 and nej_20, 2004) approximately two years old were taken at an historically low tide in winter and helped with the data associations.

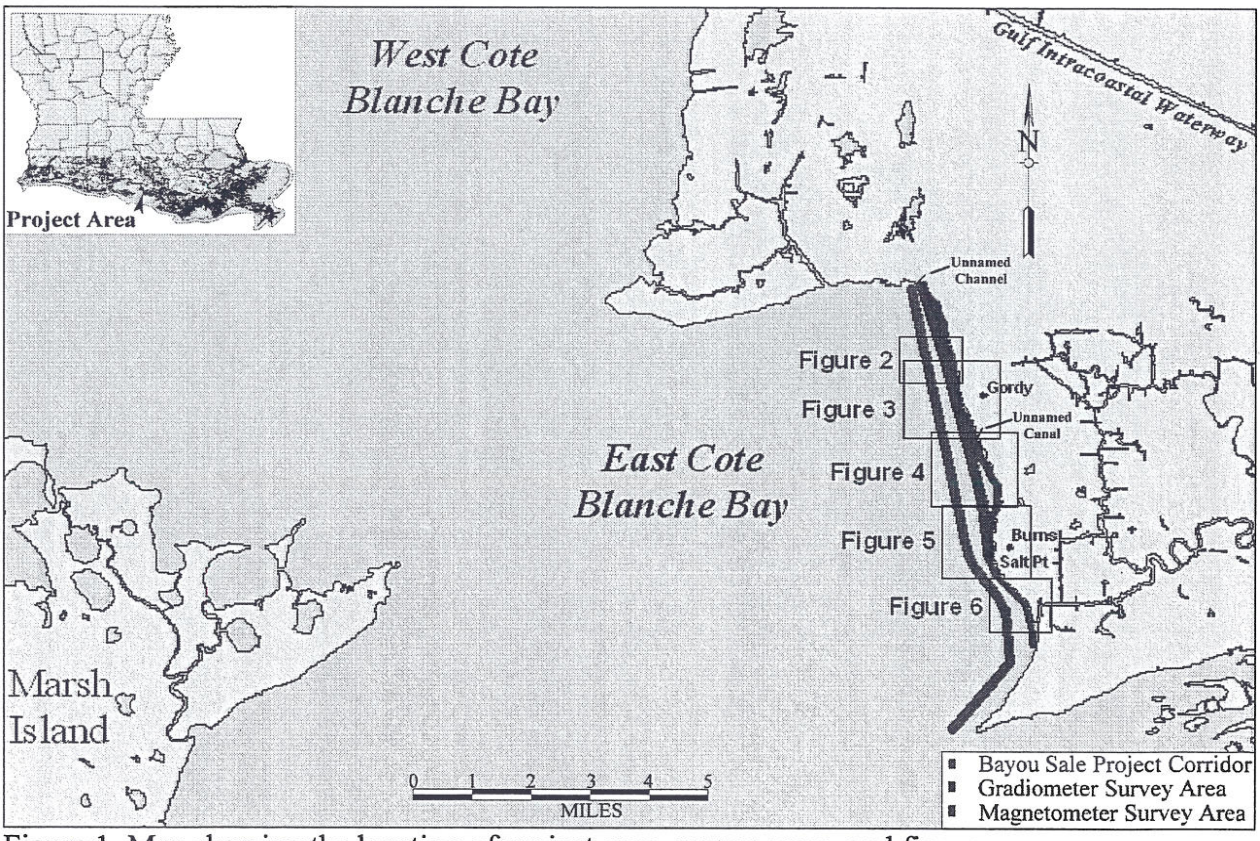


Figure 1. Map showing the location of project area, survey areas, and figures.

Project Description And The Bayou Sale Area

The project is located along the eastern shoreline of East Cote Blanche Bay from the British-American Canal to the mouth of Bayou Sale in St. Mary Parish, Louisiana. Project plans

include the construction of a 35,776 linear feet (6.8 miles) foreshore rock dike parallel to and approximately 150 feet out from the existing eastern shoreline of East Cote Blanche Bay as shown on Figure 1. The rock dike will be tied into the banks of all substantial channels. Smaller channels and sloughs will have provisions for adequate drainage and aquatic organism access via openings through the dredge material and gaps in the dike. It is anticipated that approximately 123 acres of marsh will be created with the fill material from the dredging of an access channel to accommodate construction equipment.

MMS Visual No. 5 (1986) indicates that the northern portion of the study area lies along the western portion of a salt diapir, which most likely explains the intensive oil and gas activity in the area. The 1957 and 1973 USGS quadrangle maps show a network of docks, catwalks, wells, and oilfield structures (e.g. storage facilities) in the north-central study area. Shoreline erosion in the East Cote Blanche Bay area is at an estimated rate of 13.5 feet per year; being caused by the open water fetch and resulting wave energy from the bay.

Equipment And Description Of Magnetic Study Areas

A GeoMetrics 881 marine cesium magnetometer system was used with survey control established and route positioning performed utilizing a Trimble Global Positioning System with a Micronet Differential Signal Receiver. Horizontal accuracy of this positioning system as stated by the manufacturer is ± 3 meters. The cesium magnetometer records the earth's magnetic field and detects any variations within this field attributed to the area or items with their own magnetic qualities such as ferrous material (i.e., pipelines, wells, structures, shipwrecks, etc.). The magnetometer records the duration and intensity of these magnetic fields within the earth's magnetic field. Units of measurements are in gamma. The magnetometer survey was performed while the survey craft navigated along three lines preplotted survey lines spaced approximately 130 feet (40 meters) apart. The survey was designed to determine the recorded locations of wells and pipelines. The survey corridor averaged 260 feet wide and was placed 1,200 to 3,800 feet from the shoreline, depending upon various conditions such as water depth and obstructions. The survey corridor averaged approximately 2,250 feet from the shore as shown on Figure 1 and is

available for map projections from the Magnetic Survey shape file provided in the enclosed DVD-ROM.

A Schonstedt GAU-30 gradiometer was used with survey control established and route positioning performed utilizing a Trimble Global Positioning System. The Schonstedt GAU-30 gradiometer utilizes two magnetic sensors, providing the magnetic variation between them. This instrument, unlike the cesium magnetometer that can provide the magnetic area and total inflection of the magnetic source, allows only the location over the magnetic source to be established. Due to shallow water and obstacles (i.e., pilings, tree stumps, etc.), the width of the survey corridor was composed of multiple lines that varied from 270 to over 800 feet wide and were placed 250 to 1,850 feet from the shoreline as shown on Figure 1 and is available for map projections from the Gradiometric Survey shape file provided in the enclosed DVD-ROM.

The gradiometer detected and recorded ferrous locations within this corridor. Four small areas, or less than five per cent of the 35,776 linear feet rock construction area, was investigated by the gradiometer survey.

Results of Surveys

Cesium Magnetometer Survey

Three hundred and eighty (380) magnetic anomalies with five or more gamma inflection with three or more readings were recorded using the cesium magnetometer. These anomalies are recorded as anomaly number, line number, shot point, inflection, type, duration, sensor depth, X location value, Y location value, and comments on the Magnetometer Data Table (Appendix 2). The anomaly is described by its inflection in gamma, the intensity or "weight" of the magnetic source and type is given as monopolar recording a single pole of the magnetic field; dipolar records both poles and/or complex multiple polarity changes. The duration is recorded as feet and refers to the area that is affected by the magnetic source along the survey line, a spatial dimension of the magnetic field. Location data is provided in State Plane Coordinate System, Louisiana South (feet), NAD 1983. A total of ninety-seven (97) of the anomalies were associated with wells or pipelines reported to be in the surveyed area. These consisted of 9 wells and 22 pipelines. None of the wells were found at their reported locations. Eleven (11) of the pipelines were verified at or near their reported locations, with the other 11 pipelines not seen in the magnetic data at their reported locations. In addition, 20 linear features were noted. These linear features could reflect unknown pipelines, flowlines, cable, or chain. The remainder of the anomalies (283) are from unknown sources. Three (3) of these anomalies could very well represent wells. A majority of the unassociated anomalies were located in areas of former catwalks and in congested areas where several pipelines cross the study area. The complex nature of these areas and number of survey lines prohibit determination of magnetic sources.

Gradiometer Survey

The gradiometer survey produced 442 locations of various ferrous sources. These locations have been tabled on the Gradiometer Data Table (Appendix 2). They reflect the location of wells, pipeline risers, a stationary barge, etc., as well as unknown objects.

Aerial Photos, Quadrangle Maps And Construction Corridor Magnetic Data

Using the 2004 aerial data, the well sites at or just below the water surface were clearly visible. These locations were confirmed by several gradiometric survey locations and magnetic data. In addition, the wells depicted on the 1973 USGS quadrangle more closely match the real

world locations of these features than does well data from the Louisiana Oil Spill Coordinator's Office (LOSCO 2004). The reported LOSCO well locations lie between 5 to 315 feet from the visible locations represented on the 2004 aerial. Generally the discrepancy is between 100 and 200 feet as seen on Figure 2 (Appendix 1). The 2004 image at low low tide is so detailed that the anchor and trawl scars can be seen on the seafloor. A stationary barge can be seen in the lower right hand corner of this graphic.

A complex series of catwalks, docks, and storage facilities extending approximately 2.4 miles north to south were once located just offshore from northwest of Gordy extending to northwest of Burns (Figures 3 and 4; Appendix 1). A second series of catwalks covering approximately .54 miles once lay due west of Burns, or north of Salt Point (Figure 5; Appendix 1). These features were mostly seaward of the proposed construction except for those areas where they extended landward, connecting the catwalk complex to the land. The longer of these catwalks is depicted on both the 1957 and 1973 USGS quadrangles, with the smaller catwalk only shown on the 1957 map. Figures 3 through 5 utilize the 1957 USGS quadrangle to show these features, magnetic data, and the proposed construction area. In Figure 3 (Appendix 1) several pipelines are shown paralleling the proposed construction area. Wrecks and wreckage could occur in areas such as Luke's Landing at the mouth of an unnamed canal and at the mouth of an unnamed channel at the northern end of the proposed construction area.

As noted in the cesium magnetometer discussion, only half of the pipeline locations could be verified. These verified pipelines were at or near their reported location. Eleven (11) reported pipelines that cross the cesium magnetic survey area, according to reported locational data, were not apparent in the magnetic record. However, twenty (20) recorded linear features suggest the presence of unknown flowlines, pipelines, cable, or chain. The problem in the survey area is threefold. First, numerous reported pipeline locations could not be verified by the data. Second, several of the reported pipeline locations deviate from their actual locations. An example is Linear Feature 4, a pipeline-like feature that is located 290 feet away from a reported pipeline. This is the nearest possible linear feature that could be the pipeline. The location deviation is too far to confirm an association and illustrates the possible error factor in the pipeline databases. Third, the presence of undocumented pipelines or flowlines as illustrated by Linear Feature 19.

The alignment of the cesium magnetic anomalies for this feature precisely project landward to a possible linear pipeline berm and trench on land as shown on Figure 6 (Appendix 1).

Conclusions and Recommendations

1.) Almost all of the proposed construction area lies within the landmass above the 1957 low tide line except for some 130 feet near Burns, Louisiana, and the area at the mouth of Bayou Sale. None of the wells in the investigated area were at their reported locations, half of the recorded pipelines were not apparent in the data and 20 linear features, possibly flowlines or pipelines, were recorded. The USGS quadrangle map (1973) shows the only known recorded well site within the construction area at X = 3,216381 and Y = 386,995 (LA South, NAD83 [feet]). While the exact location can not be verified, the 2004 aerial confirms the presence of a well channel, which also appears on the 1973 quadrangle. Additional field surveying and research is needed in order to accurately locate all pipelines, wells, or structures within the 35,776 linear feet (6.8 miles) long proposed foreshore rock dike, as less than five percent (in four areas) of this project area has been investigated.

2.) The location of the historic channels acquired from the quadrangle maps can be viewed and/or plotted from the shape files provided in the enclosed DVD-ROM from the 1937, 1957 and 1973 USGS 15-minute series topographic quadrangles. Typically, filled channels represent areas whose original sediments were eroded by rapidly moving bodies of water and were later filled in with less consolidated materials. These areas possibly will not have the geotechnical properties necessary to support the weight of a rock dike, with the rock percolating downward in the channel fill. Delineation of these areas could be done through probing and soil coring if these areas are not in the access areas of the rock dike. Additionally, faulting around salt dipiars is common. The nature, depth, age and sediment cover in this area possibly need to be investigated as to their potential affects to this project.

3.) The exact locations of most of the pipelines and wells are either not known or not located as recorded. A mile long shell deposit near the mouth of Bayou Sale is designated as a prehistoric site (16SMY17). Numerous human remains reportedly have been found washing out of the shoreline at this site with "tremendous amount of redeposited *Rangia* shell" (Brown, Fuller and Rodgers Survey 4/9/79 in the updated 1952 State of Louisiana Site Record Form 16SMY17). Intact site deposits have been found in areas after land loss and

subsidence processes (Godzinski, 2001; Saltus et al., 2003). The sediment variation seen on Figure 6 could well define the underwater extent of this site.

At least five lines should be run within the planned corridor to gather data germane to the project and to develop better magnetic trends. This could be accomplished using a shallow-draft boat with the magnetometer sensor boomed out in front of the bow. At the same time gradiometric data collection with systematic probing of pipeline features and channel areas would provide needed information as to hazards and impediments to the project. In addition, any construction equipment routes into the area should be investigated for hazards. Be advised that the exact location of existing infrastructure should be determined for hazard considerations.

The following digital data is provided in the enclosed DVD-ROM for data management as required or needed regarding specific examinations or general knowledge of this area.

Geo-referenced 15' Quadrangles:
- 227x9376, Bayou Sale 1937 edition
- 227x9576, Bayou Sale 1957 edition
- 227x9736, Bayou Sale 1973 edition

Geo-referenced 7.5' Quadrangle:
- 1970 Ellerslie

Aerial images:
- DOQQ c2909128_sej_20 aerial image
- DOQQ c2909128_nej_20 aerial image

Shape Files:
- 1973 catwalks
- 1957 south catwalk
- 1957 low tide
- 1937 streams
- 1957 streams
- 1973 streams
- 1973 streams2
- 2004 LOSCO state wells

Digital AutoCAD Drawing includes:
- Reported pipeline locations
- Reported well locations
- Magnetic anomalies
- Magnetic contour data
- Magnetic survey lines
- Gradiometer locations

References

Godzinski, Michael, Benjamin D. Maygarden, Allen Saltus, Paul Heinrich, Ryan Gray, Eads Poitevent, Jeffrey Clary, Jill-Karen Yakubik, Barry South, and Rhonda Smith

2001 *Cultural Resource Investigations on Grand Terre Island, Jefferson Parish, Louisiana*. Draft report submitted to the New Orleans District, U.S. Army Corps of Engineers, New Orleans.

Louisiana Coastal Wetlands Conservation and Restoration Task Force

2006 Bayou Sale Ridge Protection Project (TV-20). Downloaded from *http://www.lacoast.gov/reports/display.asp?projectNumber=TV-20&reportType=general.*

Louisiana Oil Spill Coordinator's Office (LOSCO)

2004 Louisiana Oil & Gas Wells from LDNR source data, Geographic NAD83, LOSCO (2004) [OIL_GAS_WELLS]:, Louisiana Oil Spill Coordinator's Office (LOSCO), Baton Rouge, LA.

Louisiana State University CADGIS Research Laboratory

2004 Digital Orthographic Quarter Quadrangle (DOQQ) c2909128_sej_20.jp2. Downloaded from *www.atlas.lsu.edu.*

2004 Digital Orthographic Quarter Quadrangle (DOQQ) c2909128_ nej_20. Downloaded from *www.atlas.lsu.edu.*

Saltus, Allen R., Jr., James Allen Green, S. Dean El Darragi, and Ben Maygarden

2003 *Phase IA Submerged Cultural Resources Survey and Hazard Assessment Along the Proposed BP Amoco Mardi Gras Transportation System Inc., Endymion Oil Pipeline Company, LLC Project Corridor, Louisiana's State Waters to Clovelly LOOP Facility, Jefferson and Lafourche Parishes, Louisiana.*. T. Baker Smith and Son, Inc., Houma, Louisiana.

U.S. Geological Survey

1937 Bayou Sale, Louisiana 15-minute series topographic quadrangle. U.S. Department of the Interior, U.S. Geological Survey, Washington, D.C.

1957 Bayou Sale, Louisiana 15-minute series topographic quadrangle. U.S. Department of the Interior, U.S. Geological Survey, Washington, D.C.

1973 Bayou Sale, Louisiana 15-minute series topographic quadrangle. U.S. Department of the Interior, U.S. Geological Survey, Washington, D.C.

U.S. Department of the Interior, Minerals Management Service (USDI MMS).

1986 *Geologic and Geomorphic Features. Visual No. 5.* U.S. Department of Interior, Minerals Management Service, Gulf of Mexico OCS Regional Office, New Orleans.

APPENDIX 1:

Figures 2 through 6

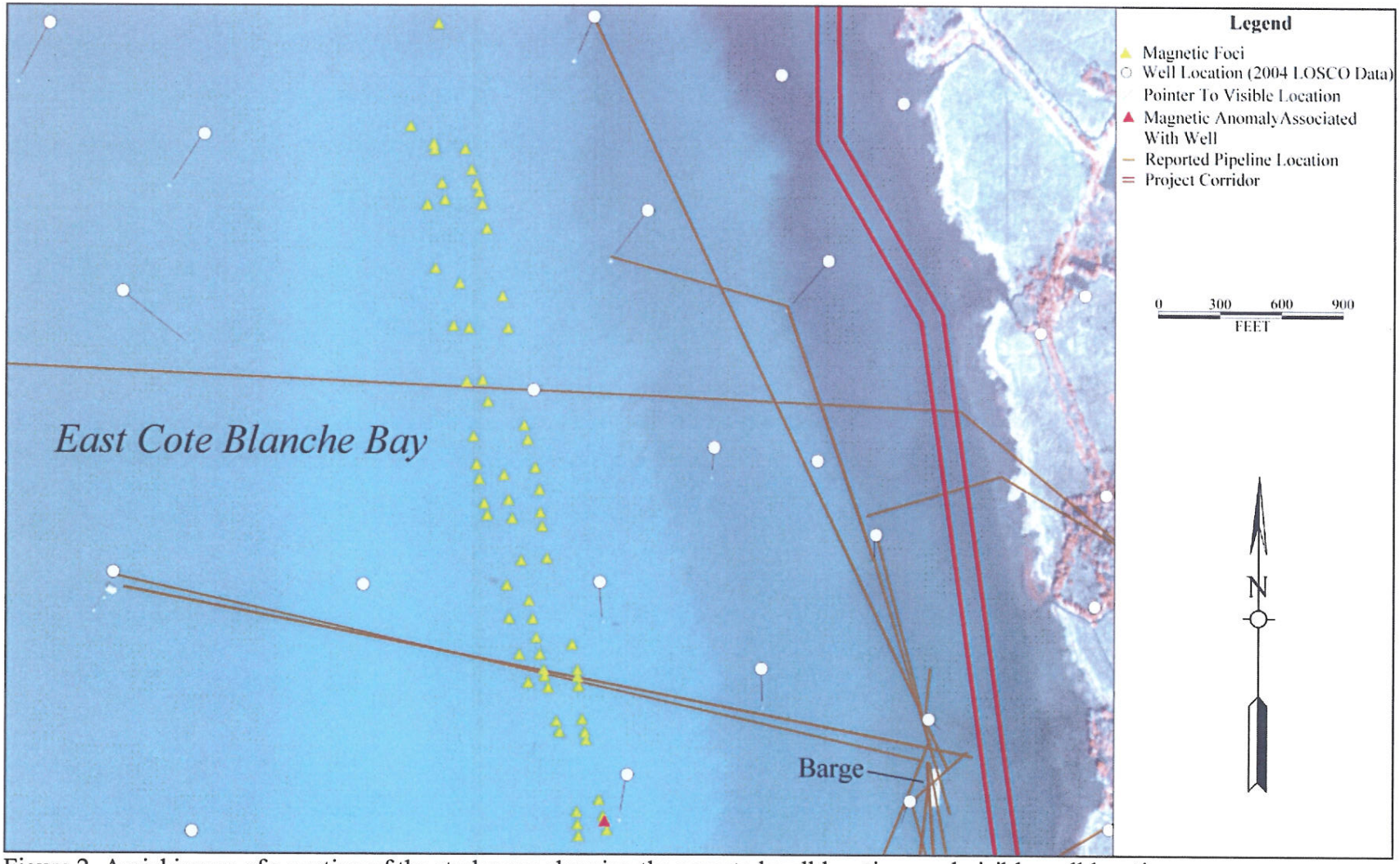


Figure 2. Aerial image of a portion of the study area showing the reported well locations and visible well locations.

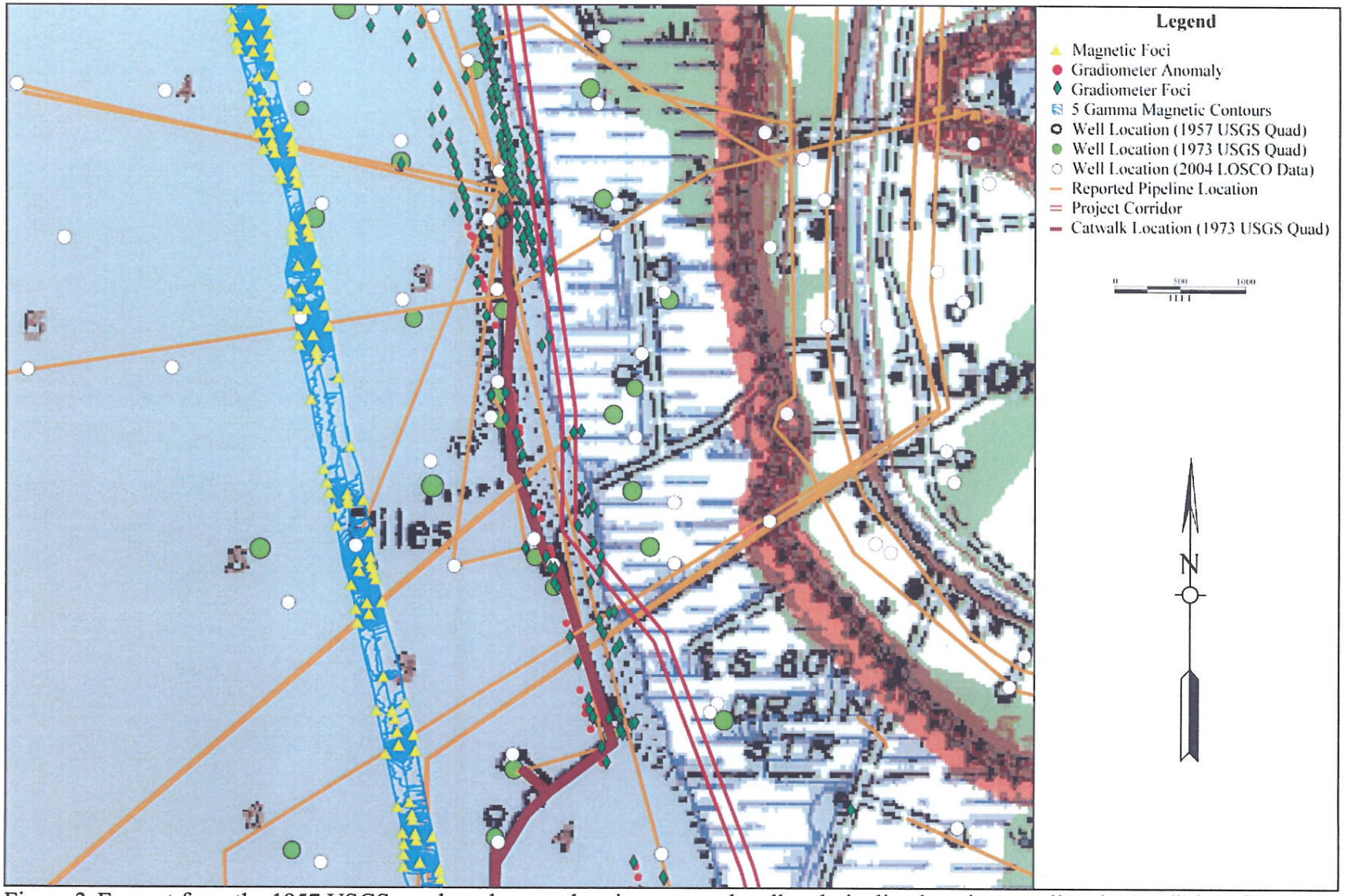


Figure 3. Excerpt from the 1957 USGS quadrangle map showing reported well and pipeline locations, well and catwalk location as per the 1973 USGS quadrangle, magnetometer contour data, magnetometer anomaly foci, and gradiometer anomaly foci.

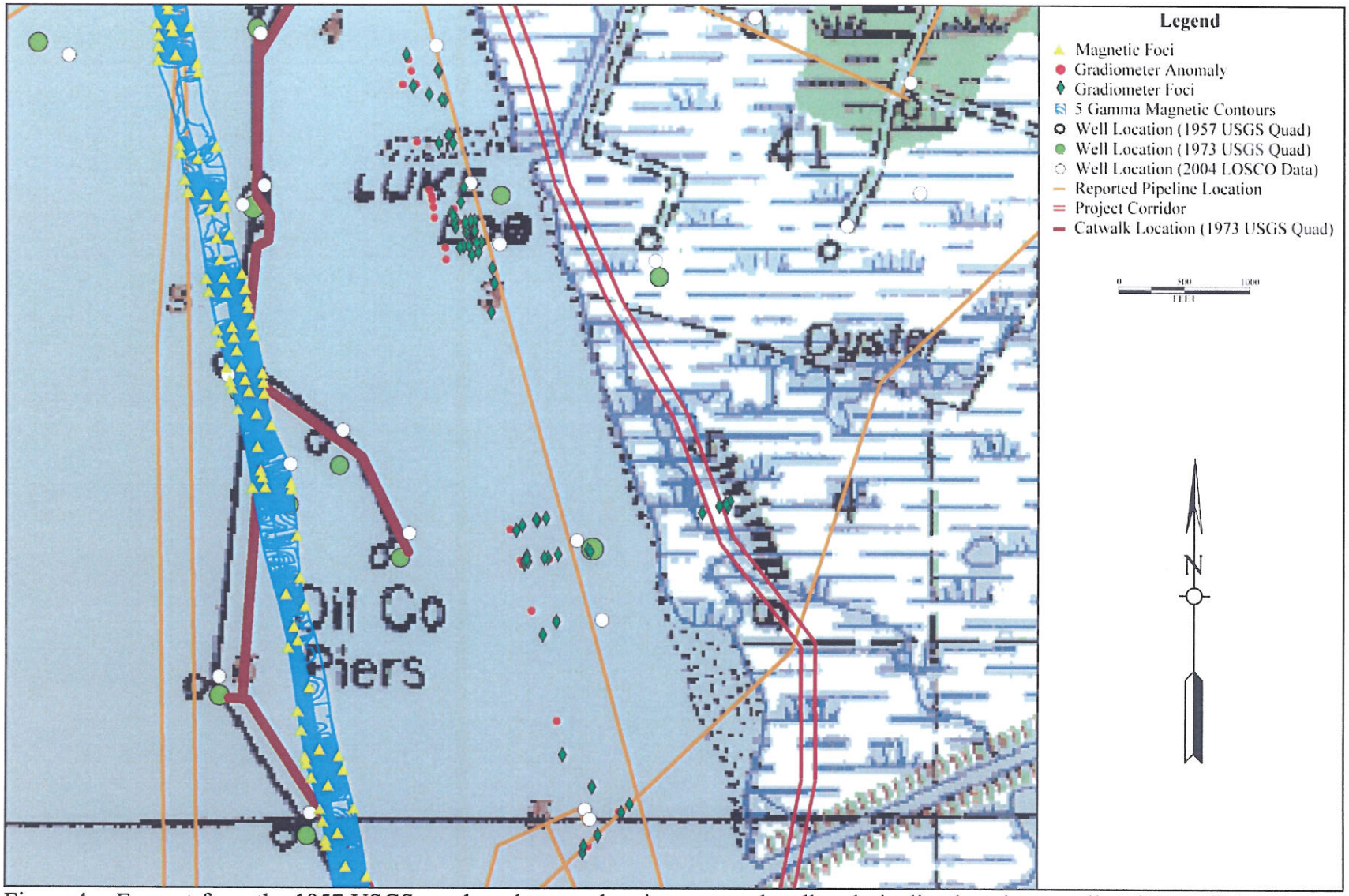


Figure 4. Excerpt from the 1957 USGS quadrangle map showing reported well and pipeline locations, well and catwalk location as per the 1973 USGS quadrangle, magnetometer contour data, magnetometer anomaly foci, and gradiometer anomaly foci.

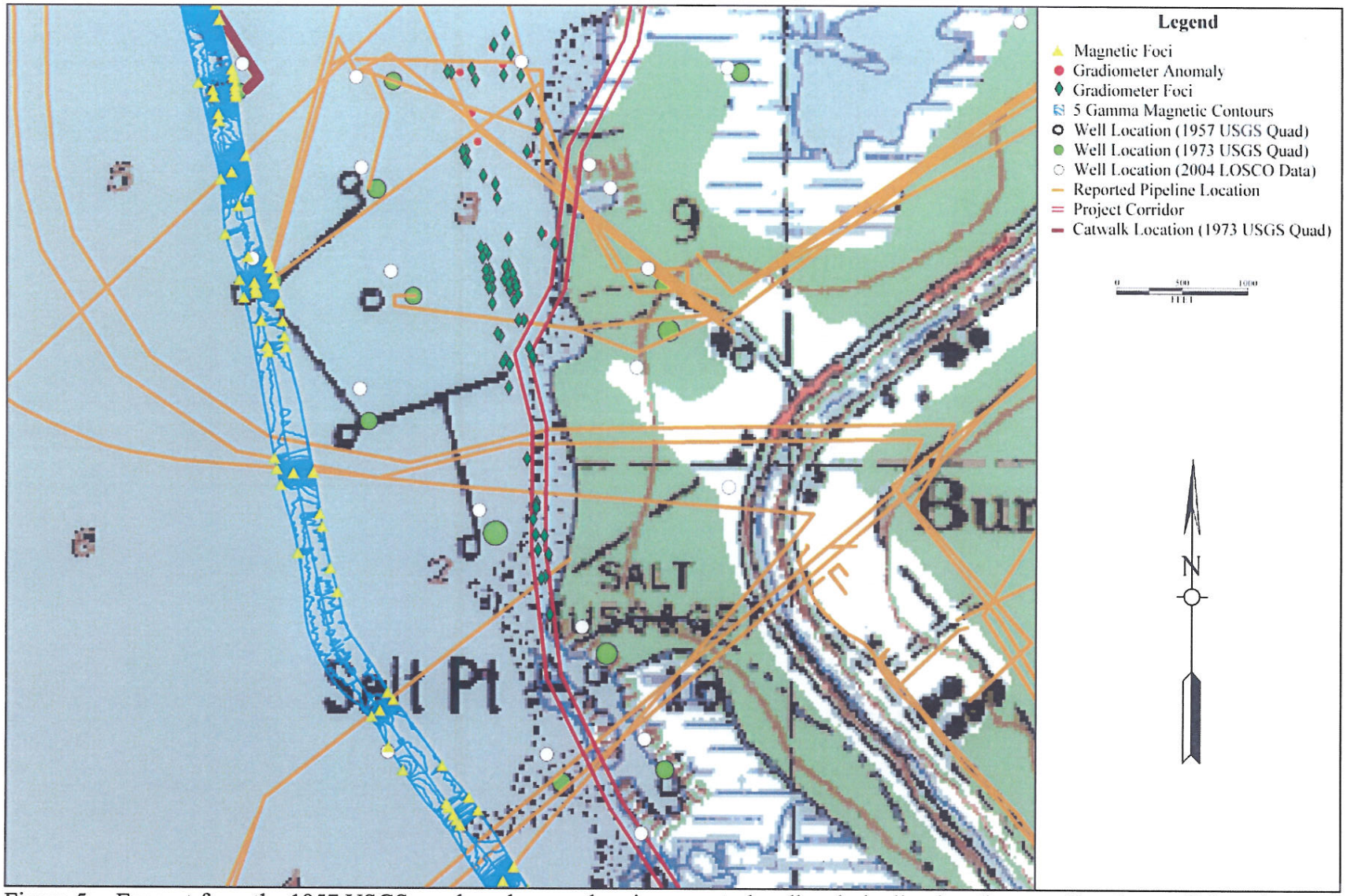


Figure 5. Excerpt from the 1957 USGS quadrangle map showing reported well and pipeline locations, well and catwalk location as per the 1973 USGS quadrangle, magnetometer contour data, magnetometer anomaly foci, and gradiometer anomaly foci.

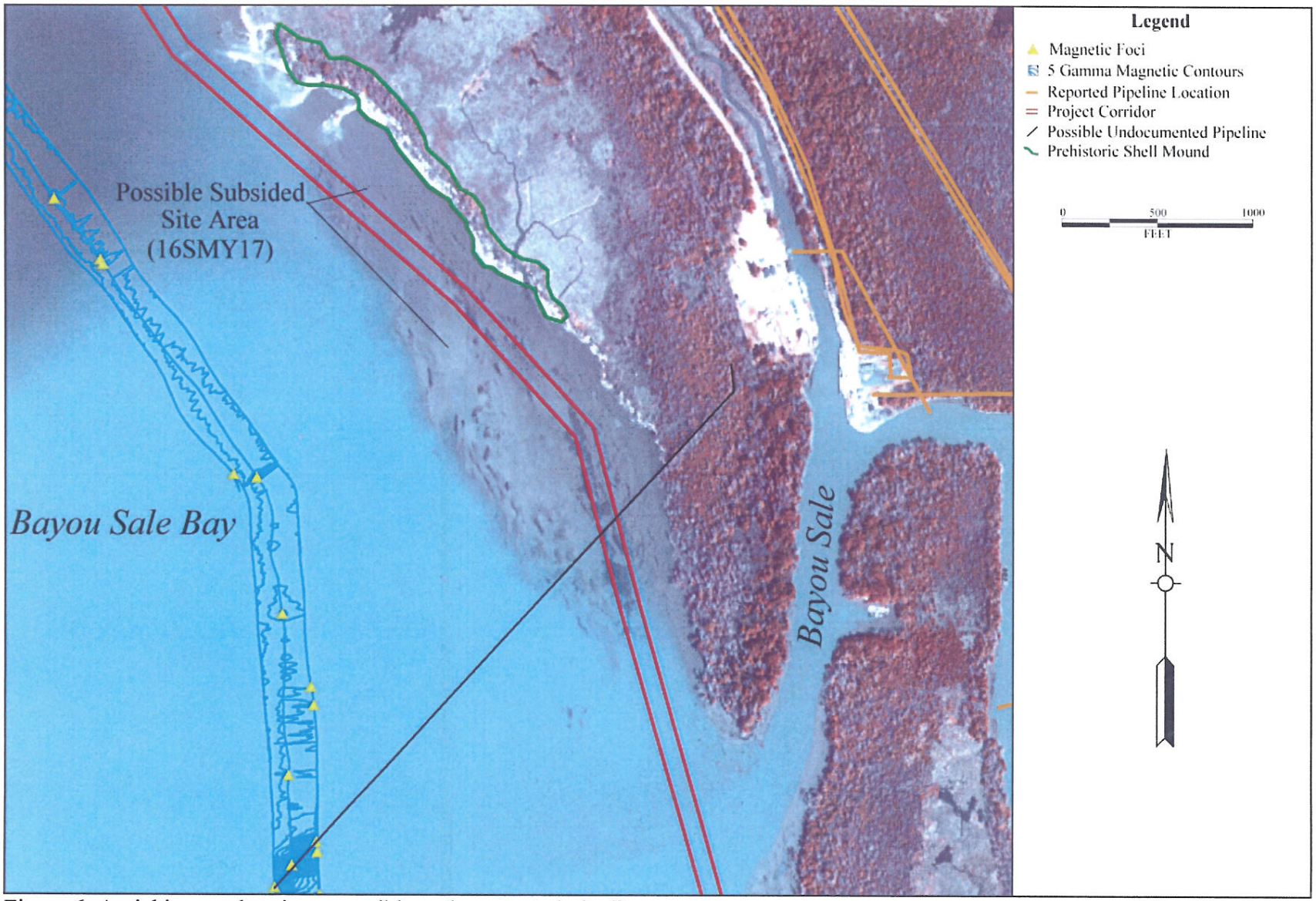


Figure 6. Aerial image showing a possible undocumented pipeline.

APPENDIX 2:

Magnetometer Data Table
And
Gradiometer Data Table

Magnetometer Data Table.

Anomaly	Line	SP	Inflection	Type	Duration	Sensor Depth	X	Y	Comments
1	1	21.00	1569	dc	1200	0.79	3213170	374793	Possible well
2	1	45.05	15	m	65	0.85	3216378	378366	Unknown
3	1	45.30	41	m	75	0.70	3216418	378404	Unknown
4	1	45.70	34	m	50	0.79	3216463	378447	Unknown
5	1	48.95	30	d	45	0.79	3216895	378951	Unknown
6	1	49.70	22	d	60	0.79	3216982	379064	Unknown
7	1	50.70	5	m	115	0.85	3217089	379189	Unknown
8	1	51.15	33	m	90	0.91	3217127	379261	Unknown
9	1	52.00	7	m	85	0.85	3217164	379413	Unknown
10	1	52.85	5	d	90	0.85	3217169	379579	Unknown
11	1	53.05	31	mc	90	0.79	3217170	379620	Unknown
12	1	56.75	5	m	100	0.91	3217144	380351	Unknown
13	1	57.30	216	m	25	0.79	3217131	380472	Unknown
14	1	57.65	7	dc	100	0.85	3217119	380552	Unknown
15	1	58.50	9	d	95	0.91	3217083	380706	Unknown
16	1	59.00	6	m	40	0.91	3217068	380803	Unknown
17	1	59.70	7	m	60	0.85	3217093	380932	Unknown
18	1	60.35	10	d	65	0.85	3217106	381077	Unknown
19	1	61.70	14	d	75	0.79	3217095	381330	Unknown
20	1	62.00	7	m	25	0.70	3217092	381394	Unknown
21	1	62.15	8	d	45	0.79	3217090	381429	Unknown
22	1	62.45	17	mc	55	0.79	3217087	381499	Unknown
23	1	63.65	42	d	45	0.85	3217075	381715	Linear Feature 20
24	1	63.80	8	m	25	0.85	3217073	381744	Unknown
25	1	65.45	869	m	200	0.79	3217040	382087	Linear Feature 19
26	1	77.20	5	m	75	0.85	3216841	384339	Unknown
27	1	90.15	9	d	25	1.51	3215316	386427	Unknown
28	1	90.45	21	m	55	1.00	3215280	386465	Unknown
29	1	91.50	156	d	200	0.79	3215175	386642	Unknown
30	1	92.90	2124	m	400	0.79	3215031	386868	Pipeline, Shell Gas Gathering Co. 30-in gas (Seg. 11217)
31	1	98.75	33	m	350	0.79	3214349	387824	Unknown
32	1	99.80	7	m	35	0.70	3214238	388004	Unknown
33	1	101.10	657	m	275	0.70	3214110	388239	Pipeline
34	1	108.80	58	d	95	0.70	3213550	389509	Unknown
35	1	111.45	31	dc	55	0.79	3213419	390035	Unknown
36	1	112.10	791	m	375	0.79	3213391	390157	Pipeline, Shell Gas Gathering Co. 30-in gas (Seg. 11217)
37	1	112.60	63	d	30	0.79	3213373	390240	Unknown
38	1	118.90	27	m	40	0.79	3213151	391487	Linear Feature 18
39	1	120.20	19	m	85	0.79	3213116	391623	Unknown
40	1	121.40	99	d	40	0.79	3213013	391980	Linear Feature 17
41	1	123.50	1065	m	300	0.79	3212981	392397	Pipeline
42	1	127.30	65	d	75	0.79	3212820	393140	Unknown
43	1	131.60	10579	m	500	0.79	3212651	393969	Linear Feature 16
44	1	131.80	2524	dc	120	0.79	3212646	394011	Unknown
45	1	132.55	367	m	30	0.79	3212624	394154	Unknown
46	1	133.00	143	m	135	0.79	3212605	394249	Unknown

47	1	134.25	269	m	200	0.79	3212539	394497	Unknown
48	1	134.85	343	m	50	0.70	3212502	394607	Unknown
49	1	135.10	469	m	70	0.70	3212493	394656	Unknown
50	1	136.15	5768	m	50	0.70	3212466	394860	Linear Feature 15
51	1	136.85	1109	dc	235	0.79	3212439	395011	Unknown
52	1	139.30	3800	dc	1300	0.85	3212371	395499	Unknown
53	1	145.80	1294	dc	600	1.15	3212107	396737	Unknown
54	1	148.75	2446	dc	125	1.15	3212000	397337	Unknown
55	1	149.70	212	mc	75	1.21	3211958	397505	Unknown
56	1	149.90	147	d	30	1.21	3211945	397558	Unknown
57	1	150.35	9	m	20	0.85	3211919	397665	Unknown
58	1	151.45	29	m	60	0.85	3211867	397864	Unknown
59	1	151.95	6	m	20	0.79	3211846	397959	Unknown
60	1	153.35	376	m	55	0.79	3211787	398255	Linear Feature 14
61	1	154.00	1243	m	95	0.79	3211770	398352	Linear Feature 13
62	1	157.30	521	m	125	0.79	3211638	399021	Linear Feature 12
63	1	157.90	3145	d	85	0.70	3211616	399115	Unknown
64	1	158.90	64	d	30	0.79	3211586	399320	Unknown
65	1	159.20	172	m	185	0.70	3211578	399383	Unknown
66	1	162.50	5	m	20	0.79	3211423	400035	Unknown
67	1	163.10	225	m	45	0.70	3211425	400136	Linear Feature 11
68	1	163.50	705	m	60	0.85	3211425	400220	Linear Feature 10
69	1	163.95	3764	m	165	0.79	3211414	400311	Possible well
70	1	165.05	5	m	25	0.79	3211376	400524	Unknown
71	1	167.40	408	m	175	0.70	3211283	400970	Pipeline, Shell Gas Gathering Co. 30-in gas (Seg. 11217)
72	1	193.10	703	m	50	0.70	3210317	405991	Congested Area 1; Multiple pipelines reported in area
73	1	193.70	1345	dc	160	0.70	3210274	406129	Congested Area 1; Multiple pipelines reported in area
74	1	194.60	46	d	25	0.79	3210225	406307	Unknown
75	1	195.30	270	m	85	0.79	3210215	406471	Unknown
76	1	197.20	458	m	50	0.79	3210121	406818	Unknown
77	1	197.50	395	m	55	0.79	3210107	406874	Linear Feature 7
78	1	198.05	2564	d	80	0.79	3210083	406993	Linear Feature 6
79	1	198.45	1337	m	70	0.79	3210072	407066	Linear Feature 5
80	1	199.15	713	m	60	0.79	3210058	407203	Unknown
81	1	200.50	23	d	30	0.79	3210027	407472	Unknown
82	1	201.95	1069	m	200	0.79	3209965	407747	Linear Feature 4
83	1	203.30	356	m	70	0.79	3209879	408033	Linear Feature 3
84	1	204.95	274	d	235	0.79	3209842	408343	Linear Feature 2
85	1	206.95	1237	mc	165	0.79	3209765	408727	Linear Feature 1
86	1	21.15	9	d	75	0.79	3209584	409550	Unknown
87	1	214.55	153	d	40	0.70	3209463	410214	Unknown
88	1	214.80	10	m	15	0.70	3209449	410275	Unknown
89	1	216.00	4080	mc	175	0.79	3209400	410506	Unknown
90	1	219.00	129	m	20	0.70	3209284	411101	Unknown
91	1	219.80	511	m	125	0.79	3209262	411250	Unknown
92	1	221.70	108	m	95	0.79	3209186	411623	Unknown
93	1	222.20	21	m	25	0.70	3209162	411725	Unknown
94	1	225.00	458	m	180	0.79	3209058	412282	Unknown
95	1	227.15	24	mc	75	0.70	3208973	412708	Unknown
96	1	230.20	10	m	25	0.79	3208856	413295	Unknown
97	1	231.80	51	dc	550	0.79	3208758	413599	Unknown; near mouth of historic bayou. Wreck/Camp?
98	2	260.25	728	m	15	0.70	3209879	408641	Unknown

99	2	260.30	1907	m	65	0.79	3209883	408612	Linear Feature 1
100	2	261.00	162	m	15	0.70	3209916	408446	Unknown
101	2	261.35	351	d	250	0.70	3209930	408365	Linear Feature 2
102	2	263.50	540	m	75	0.79	3209999	407957	Linear Feature 3
103	2	264.65	863	m	135	0.70	3210043	407735	Linear Feature 4
104	2	265.95	7	m	15	0.79	3210106	407479	Unknown
105	2	266.45	91	mc	100	0.79	3210131	407373	Unknown
106	2	268.30	3679	dc	100	0.79	3210207	407011	Linear Feature 5
107	2	268.95	2428	m	100	0.79	3210228	406891	Linear Feature 6
108	2	269.35	1523	m	40	0.79	3210246	406798	Linear Feature 7
109	2	270.50	7	d	50	0.79	3210286	406591	Unknown
110	2	271.45	7	d	30	0.64	3210324	406392	Unknown
111	2	271.90	98	d	100	0.70	3210341	406303	Unknown
112	2	272.30	13	d	55	0.70	3210357	406210	Unknown
113	2	272.85	4671	m	75	0.85	3210374	406130	Congested Area 1; Multiple pipelines reported in area
114	2	273.20	677	m	20	0.70	3210393	406053	Congested Area 1; Multiple pipelines reported in area
115	2	273.40	1690	m	30	0.70	3210398	406021	Congested Area 1; Multiple pipelines reported in area
116	2	273.70	1658	m	30	0.85	3210415	405964	Congested Area 1; Multiple pipelines reported in area
117	2	274.50	2576	m	25	0.79	3210454	405801	Congested Area 2; Multiple pipelines reported in area
118	2	274.80	8338	m	60	0.70	3210467	405748	Congested Area 2; Multiple pipelines reported in area
119	2	276.80	353	m	80	0.79	3210549	405356	Unknown
120	2	277.10	819	mc	60	0.70	3210554	405295	Well, SL-340 Well 31
121	2	277.35	468	m	45	0.70	3210557	405236	Unknown
122	2	278.50	534	dc	100	0.79	3210598	405025	Unknown
123	2	279.30	384	m	105	0.79	3210627	404835	Linear Feature 8
124	2	280.25	408	m	105	0.79	3210662	404662	Linear Feature 9
125	2	281.35	1088	mc	200	0.79	3210716	404449	Well, SL-340 Well 37
126	2	282.00	177	m	45	0.70	3210741	404328	Unknown
127	2	282.20	48	d	20	0.70	3210744	404298	Unknown
128	2	282.45	8	m	15	0.79	3210750	404246	Unknown
129	2	288.20	8	m	25	0.79	3210984	403128	Unknown
130	2	288.40	11	m	20	0.70	3210989	403083	Unknown
131	2	288.55	12	m	20	0.79	3210990	403051	Unknown
132	2	291.00	97	d	40	0.70	3211063	402565	Unknown
133	2	291.40	2766	dc	420	0.70	3211077	402487	Well, SL-340 Well 34 & Structures
134	2	292.85	106	d	100	0.70	3211138	402215	Unknown
135	2	293.20	669	m	130	0.85	3211156	402127	Pipeline
136	2	295.90	26	m	95	0.70	3211270	401608	Unknown
137	2	297.30	6	d	90	0.79	3211340	401323	Unknown
138	2	297.70	5	m	20	0.70	3211362	401257	Unknown
139	2	298.30	13	mc	75	0.70	3211383	401146	Unknown
140	2	298.85	287	m	200	0.79	3211393	401037	Pipeline, Shell Gas Gathering Co. 30-in gas (Seg. 11217)
141	2	301.20	15	d	25	0.64	3211478	400565	Unknown
142	2	301.75	111	d	45	0.64	3211497	400460	Unknown
143	2	302.00	323	m	20	0.70	3211505	400418	Unknown
144	2	302.60	180	m	20	0.91	3211525	400300	Unknown
145	2	302.85	578	dc	185	0.85	3211535	400252	Linear Feature 10
146	2	303.80	178	d	170	0.85	3211561	400068	Linear Feature 11
147	2	307.80	20	m	100	0.91	3211720	399275	Unknown
148	2	309.20	1363	mc	200	0.91	3211778	398998	Linear Feature 12
149	2	309.80	26	d	40	1.00	3211808	398882	Unknown
150	2	311.40	42	d	40	0.79	3211855	398664	Unknown

151	2	311.80	206	m	35	0.85	3211881	398499	Unknown
152	2	312.50	1259	m	125	0.85	3211905	398363	Linear Feature 13
153	2	313.05	534	mc	75	0.91	3211923	398248	Linear Feature 14
154	2	314.30	262	m	60	0.91	3211964	397980	Unknown
155	2	314.80	68	m	30	0.91	3211979	397899	Unknown
156	2	315.35	284	dc	85	0.85	3212002	397796	Unknown
157	2	316.00	2752	dc	140	0.79	3212033	397670	Well, SL-329 Well B-4
158	2	316.50	92	m	40	0.85	3212062	397568	Unknown
159	2	317.00	187	m	30	0.85	3212089	397477	Unknown
160	2	317.95	5849	dc	200	0.91	3212150	397302	Unknown
161	2	319.20	1144	dc	195	1.00	3212154	397047	Unknown
162	2	320.20	15	m	15	0.85	3212172	396867	Unknown
163	2	320.35	54	m	30	0.91	3212186	396818	Unknown
164	2	320.80	1626	m	110	0.85	3212210	396737	Unknown
165	2	325.00	88	dc	1000	0.85	3212358	395908	Unknown
166	2	326.30	36	d	60	0.91	3212418	395658	Unknown
167	2	326.90	28	d	75	0.85	3212450	395554	Unknown
168	2	328.70	18	m	215	0.85	3212534	395189	Unknown
169	2	331.10	3576	m	120	1.00	3212606	394713	Linear Feature 15
170	2	333.00	4568	m	125	0.91	3212669	394435	Unknown
171	2	334.40	7083	d	150	1.00	3212740	394064	Unknown
172	2	335.70	8471	dc	220	0.85	3212797	393807	Linear Feature 16
173	2	339.45	5	d	10	1.00	3212930	393079	Unknown
174	2	339.70	53	d	45	0.91	3212942	393031	Unknown
175	2	340.40	439	m	110	0.91	3212973	392894	Possible well
176	2	340.70	10	m	10	0.79	3212980	392840	Unknown
177	2	342.70	1380	m	300	0.85	3213069	392451	Pipeline
178	2	344.00	154	m	35	0.85	3213121	392193	Linear Feature 17
179	2	346.00	10	d	50	0.79	3213190	391800	Unknown
180	2	347.00	15	m	40	0.91	3213234	391601	Unknown
181	2	347.20	33	m	400	0.91	3213243	391560	Well, SL-329 Well 10B-Alt
182	2	347.30	106	m	25	0.85	3213248	391540	Unknown
183	2	347.40	8	m	10	0.85	3213250	391520	Unknown
184	2	348.60	23	m	30	1.00	3213283	391303	Linear Feature 18
185	2	349.55	16	mc	70	0.91	3213327	391109	Unknown
186	2	349.80	5	dc	45	0.85	3213340	391060	Unknown
187	2	354.55	812	d	200	0.91	3213520	390123	Pipeline, Shell Gas Gathering Co. 30-in gas (Seg. 11217)
188	2	364.70	604	m	210	0.85	3214174	388282	Pipeline
189	2	369.10	30	m	20	0.91	3214686	387560	Unknown
190	2	369.30	5	m	20	0.79	3214708	387526	Unknown
191	2	369.70	56	d	25	0.91	3214740	387469	Unknown
192	2	369.85	57	m	15	0.91	3214765	387428	Unknown
193	2	370.15	138	m	45	1.06	3214793	387388	Unknown
194	2	372.85	1304	dc	200	0.79	3215124	386961	Pipeline, Shell Gas Gathering Co. 30-in gas (Seg. 11217)
195	2	374.85	169	m	25	0.79	3215357	386636	Unknown
196	2	379.80	26	m	15	0.85	3215872	385860	Unknown
197	2	381.70	7	m	10	0.85	3216123	385522	Unknown
198	2	381.80	8	m	10	0.79	3216139	385497	Unknown
199	2	389.00	166	m	40	1.00	3216971	384320	Unknown
200	2	393.40	10	m	195	0.85	3217101	383567	Unknown
201	2	397.85	13	d	40	0.79	3217124	382691	Unknown
202	2	400.20	865	m	125	0.85	3217137	382203	Linear Feature 19

203	2	401.70	6	dc	25	0.85	3217156	381956	Unknown
204	2	402.70	122	m	25	0.79	3217162	381742	Linear Feature 20
205	2	403.30	66	m	35	0.91	3217152	381588	Unknown
206	2	403.70	84	m	40	0.79	3217161	381509	Unknown
207	2	404.05	15	m	45	0.70	3217175	381443	Unknown
208	2	405.80	75	m	40	0.85	3217202	381093	Unknown
209	2	406.30	247	m	75	0.91	3217208	380991	Unknown
210	2	406.65	7	m	35	0.85	3217208	380943	Unknown
211	2	412.25	5	m	65	0.85	3217291	379803	Unknown
212	2	413.15	111	m	20	0.85	3217268	379632	Unknown
213	2	416.05	121	d	40	0.79	3217262	379239	Unknown
214	2	425.10	170	m	35	0.64	3216110	377867	Unknown
215	2	432.30	10	m	10	0.64	3215182	376755	Unknown
216	2	433.35	28	m	110	0.64	3215025	376629	Unknown
217	2	441.20	12	d	15	0.70	3213985	375470	Unknown
218	2	442.30	11	m	20	0.91	3213832	375311	Unknown
219	2	449.00	277	dc	1000	0.64	3212960	374321	Unknown
220	2	455.35	9	dc	60	0.64	3212081	373416	Unknown
221	3	462.95	6	d	100	0.55	3212233	373372	Unknown
222	3	465.80	46	dc	415	0.79	3212621	373785	Unknown
223	3	466.80	189	mc	200	0.79	3212738	373942	Unknown
224	3	467.45	32	m	40	0.79	3212824	374065	Unknown
225	3	468.00	32	d	240	0.85	3212890	374136	Unknown
226	3	470.80	190	m	35	0.79	3213269	374555	Unknown
227	3	474.90	242	m	30	0.85	3213814	375151	Unknown
228	3	480.00	18	m	65	1.00	3214495	375918	Unknown
229	3	485.15	48	mc	95	0.85	3215186	376681	Unknown
230	3	490.35	14	m	25	1.00	3215891	377446	Unknown
231	3	493.00	123	d	35	0.91	3216228	377840	Unknown
232	3	493.35	9	m	20	0.91	3216285	377896	Unknown
233	3	496.30	15	d	110	0.91	3216701	378319	Unknown, possibly part of oscillation
234	3	501.40	173	dc	75	0.91	3217335	379066	Unknown
235	3	503.85	9	m	10	1.00	3217415	379476	Unknown
236	3	509.25	10	m	30	0.91	3217358	380562	Unknown
237	3	510.15	5	m	10	0.91	3217351	380739	Unknown
238	3	511.20	5	m	15	1.00	3217345	380950	Unknown
239	3	512.30	5	d	30	1.00	3217339	381166	Unknown
240	3	512.45	9	d	15	0.91	3217339	381199	Unknown
241	3	512.65	216	d	40	0.85	3217339	381229	Unknown
242	3	512.90	241	d	20	0.91	3217333	381288	Unknown
243	3	513.55	8	dc	40	0.85	3217322	381412	Unknown
244	3	514.10	8	dc	200	0.85	3217311	381529	Unknown, possibly oscillations
245	3	515.60	268	m	55	0.91	3217297	381828	Linear Feature 20
246	3	516.70	12	d	15	0.91	3217288	382045	Unknown
247	3	517.85	19	m	10	1.00	3217280	382273	Unknown
248	3	518.10	317	d	150	0.85	3217276	382328	Linear Feature 19
249	3	521.85	22	m	35	0.91	3217269	383069	Unknown
250	3	522.30	5	dc	40	0.91	3217256	383171	Unknown
251	3	543.00	75	m	45	0.85	3215474	386676	Unknown
252	3	543.60	7	d	10	0.85	3215403	386769	Unknown
253	3	544.30	8	m	50	0.79	3215320	386895	Unknown
254	3	545.35	719	dc	150	0.85	3215209	387066	Pipeline, Shell Gas Gathering Co. 30-in gas (Seg. 11217)

255	3	548.00	5	mc	40	0.85	3214936	387502	Unknown
256	3	548.60	7	m	40	0.85	3214864	387605	Unknown
257	3	550.15	17	m	50	0.85	3214657	387852	Unknown
258	3	553.60	1642	m	155	0.85	3214280	388365	Pipeline
259	3	553.75	7	dc	50	0.79	3214238	388423	Unknown
260	3	558.70	6	m	50	0.85	3213854	389200	Unknown
261	3	559.70	8	m	25	0.85	3213802	389387	Unknown
262	3	561.25	8	m	50	0.85	3213740	389709	Unknown
263	3	561.80	132	m	50	0.85	3213724	389806	Unknown
264	3	563.35	909	d	215	0.79	3213675	390127	Pipeline, Shell Gas Gathering Co. 30-in gas (Seg. 11217)
265	3	568.30	6	m	50	0.85	3213475	391097	Linear Feature 18
266	3	568.80	8	d	65	0.85	3213464	391182	Unknown
267	3	569.30	10	d	75	0.85	3213451	391297	Unknown
268	3	570.10	11	d	60	0.85	3213430	391438	Unknown
269	3	570.90	2476	dc	125	0.85	3213396	391592	Well, SL-329 Well 10B-Alt
270	3	571.10	1747	m	75	0.85	3213383	391637	Pipeline
271	3	571.55	3730	mc	60	0.79	3213357	391714	Pipeline
272	3	571.80	177	dc	75	0.79	3213342	391760	Pipeline
273	3	574.70	49	m	30	0.85	3213220	392316	Linear Feature 17
274	3	575.90	2225	d	235	0.85	3213180	392572	Pipeline
275	3	578.50	50	m	100	0.85	3213111	393028	Unknown
276	3	578.65	51	m	10	0.85	3213111	393052	Unknown
277	3	578.70	67	dc	30	0.91	3213110	393084	Unknown
278	3	578.80	152	m	25	0.85	3213107	393117	Unknown
279	3	578.95	29	m	15	0.79	3213098	393173	Unknown
280	3	579.10	19	d	25	0.79	3213094	393197	Unknown
281	3	579.25	30	m	20	0.85	3213084	393237	Unknown
282	3	581.20	13493	dc	450	0.85	3212986	393612	Linear Feature 16
283	3	581.85	14106	dc	200	0.85	3212963	393731	Unknown
284	3	584.45	6	d	25	0.79	3212867	394252	Unknown
285	3	586.00	5826	m	55	0.79	3212790	394553	Linear Feature 15
286	3	586.65	839	mc	60	0.85	3212756	394662	Unknown
287	3	592.50	42	m	95	0.85	3212508	395813	Unknown
288	3	593.70	9	m	45	0.79	3212469	396034	Unknown
289	3	595.20	7	d	45	0.85	3212451	396358	Unknown
290	3	597.05	5349	mc	235	0.85	3212413	396720	Well, SL-329 Well B23
291	3	597.30	91	d	25	0.85	3212410	396769	Unknown
292	3	599.70	551	mc	70	0.85	3212261	397212	Unknown
293	3	600.95	412	dc	80	0.85	3212212	397462	Unknown
294	3	601.75	1007	mc	200	0.85	3212204	397545	Unknown
295	3	602.15	3356	dc	120	0.85	3212198	397618	Unknown
296	3	603.20	669	dc	60	0.85	3212145	397908	Unknown
297	3	603.65	3181	mc	140	0.85	3212125	397994	Unknown
298	3	604.30	2176	dc	100	0.91	3212094	398125	Unknown
299	3	604.60	407	m	25	0.91	3212085	398175	Unknown
300	3	605.05	521	m	50	0.85	3212073	398273	Linear Feature 14
301	3	605.70	166	m	35	0.79	3212047	398387	Linear Feature 13
302	3	607.20	1383	d	90	0.85	3211958	398686	Unknown
303	3	608.30	9	m	25	0.91	3211929	398897	Unknown
304	3	608.75	1392	m	105	0.91	3211927	398990	Linear Feature 12
305	3	610.70	38	mc	130	0.91	3211864	399364	Unknown
306	3	613.60	6	d	40	0.85	3211734	399936	Unknown

307	3	613.95	122	m	45	0.79	3211726	400007	Linear Feature 11
308	3	615.30	473	dc	165	0.79	3211668	400279	Linear Feature 10
309	3	618.95	43	d	30	0.85	3211534	400988	Unknown
310	3	619.70	454	d	200	0.85	3211518	401118	Pipeline, Shell Gas Gathering Co. 30-in gas (Seg. 11217)
311	3	621.00	6	d	80	0.85	3211448	401384	Unknown
312	3	626.05	676	m	130	0.85	3211261	402223	Pipeline
313	3	626.65	107	d	30	0.85	3211211	402415	Unknown
314	3	626.75	57	m	30	0.91	3211197	402462	Unknown
315	3	626.85	499	dc	45	0.91	3211183	402516	Well, SL-340 Well 34 & Structures
316	3	627.00	404	m	235	0.85	3211176	402546	Well, SL-340 Well 34 & Structures
317	3	627.25	40	m	25	0.91	3211170	402603	Pipeline
318	3	628.25	103	d	35	0.85	3211174	402814	Unknown
319	3	629.65	332	m	100	0.85	3211117	403074	Unknown
320	3	631.95	6	dc	200	0.85	3211014	403522	Unknown
321	3	634.85	14	m	25	0.85	3210921	404092	Unknown
322	3	637.00	790	dc	275	0.85	3210847	404518	Well, SL-340 Well 37
323	3	637.90	372	m	70	0.85	3210817	404698	Linear Feature 9
324	3	638.95	312	m	70	0.85	3210779	404901	Linear Feature 8
325	3	639.70	1509	mc	115	0.85	3210757	405045	Unknown
326	3	640.80	401	m	25	0.85	3210700	405263	Unknown
327	3	641.05	2397	m	300	0.85	3210687	405310	Well, SL-340 Well 31
328	3	641.20	149	m	25	0.85	3210681	405335	Unknown
329	3	641.75	27	m	25	0.85	3210661	405412	Unknown
330	3	643.05	619	m	25	1.00	3210601	405706	Congested Area 2; Multiple pipelines reported in area
331	3	643.25	790	mc	190	0.79	3210593	405745	Congested Area 2; Multiple pipelines reported in area
332	3	643.55	216	dc	25	0.79	3210582	405806	Congested Area 2; Multiple pipelines reported in area
333	3	644.40	1827	m	55	0.85	3210565	405968	Congested Area 1; Multiple pipelines reported in area
334	3	644.60	764	m	30	0.85	3210562	406014	Congested Area 1; Multiple pipelines reported in area
335	3	644.75	130	m	10	0.85	3210559	406049	Congested Area 1; Multiple pipelines reported in area
336	3	645.40	277	dc	80	0.85	3210535	406173	Congested Area 1; Multiple pipelines reported in area
337	3	647.65	1256	m	65	0.85	3210416	406601	Unknown
338	3	648.70	677	mc	80	0.79	3210392	406757	Linear Feature 7
339	3	649.05	2434	m	50	0.79	3210385	406826	Linear Feature 6
340	3	649.50	1654	m	70	0.79	3210382	406938	Linear Feature 5
341	3	649.90	80	mc	65	0.79	3210364	407046	Unknown
342	3	650.65	389	m	500	0.85	3210326	407184	Well, SL-340 Well 33
343	3	650.95	31	d	25	0.85	3210309	407252	Unknown
344	3	653.30	745	m	90	0.91	3210235	407732	Linear Feature 4
345	3	654.20	451	d	100	0.85	3210212	407891	Linear Feature 3
346	3	655.90	34	m	85	0.85	3210138	408222	Unknown
347	3	656.45	258	m	50	0.85	3210116	408340	Unknown
348	3	656.80	1592	m	30	0.85	3210103	408402	Linear Feature 1
349	3	657.00	564	dc	100	0.85	3210090	408443	Linear Feature 2
350	3	657.30	272	d	65	0.79	3210065	408509	Unknown
351	3	657.95	12	m	15	0.79	3210036	408612	Unknown
352	3	661.00	151	d	55	0.70	3209912	409222	Unknown
353	3	662.10	8	d	75	0.79	3209882	409436	Unknown
354	3	663.30	31	mc	225	0.79	3209808	409681	Unknown
355	3	663.95	53	m	25	0.79	3209778	409787	Unknown
356	3	665.15	583	dc	625	0.91	3209749	410031	Well, BS ROB-7 RL SU Well 24
357	3	667.00	20	m	35	0.79	3209694	410391	Unknown
358	3	669.90	15	d	115	0.85	3209598	410957	Unknown
359	3	670.15	5	m	25	0.85	3209591	411019	Unknown

360	3	670.90	441	dc	125	0.79	3209577	411156	Unknown
361	3	674.00	631	m	165	0.79	3209444	411770	Unknown
362	3	675.30	62	m	25	0.85	3209403	412036	Unknown
363	3	677.80	397	dc	400	0.91	3209297	412509	Well, BS ROB-6 RL SU Well 36
364	3	680.45	7	mc	60	0.85	3209152	413032	Unknown
365	3	681.90	414	m	30	0.79	3209094	413304	Unknown
366	3	684.00	9	m	40	0.85	3209031	413723	Unknown
367	1	169.15	9	m	45	0.70	3211211	401326	Unknown
368	1	172.90	530	m	180	0.70	3211058	402054	Pipeline
369	1	173.35	229	m	70	0.70	3211042	402171	Unknown
370	1	174.45	259	m	95	0.79	3211005	402370	Unknown
371	1	177.00	8	dc	45	0.70	3210890	402868	Unknown
372	1	177.75	27	m	20	0.70	3210866	403017	Unknown
373	1	178.40	535	dc	115	0.70	3210835	403139	Unknown
374	1	178.85	30	m	30	0.70	3210813	403223	Unknown
375	1	179.40	15	d	25	0.70	3210793	403337	Unknown
376	1	182.30	6	dcc	300	0.70	3210692	403917	Unknown, oscillation
377	1	184.70	22	m	15	0.79	3210599	404367	Unknown
378	1	185.05	127	m	250	0.64	3210589	404451	Well, SL-340 Well 37
379	1	186.15	497	m	95	0.70	3210550	404660	Linear Feature 9
380	1	186.90	314	m	85	0.70	3210521	404804	Linear Feature 8

(m=monopolar, d=dipolar, c=complex) Coordinate system: Louisiana State Plane South (Feet), NAD83.

Gradiometer Data Table.

No.	Y	X	Reading	Comment
100	400450.9529	3215176.0078	3.10110	ck_1
101	396540.8718	3215738.6063	0.42910	1a
102	396576.4866	3215823.9953	0.29460	1b
103	396531.2005	3215802.0849	0.43150	1c
104	396561.1311	3215788.9775	6.40750	1d
105	396555.1232	3215792.2096	6.40740	1e
106	396489.2096	3215607.2767	0.15170	1f
107	389293.2838	3215474.7723	2.65510	2a
108	400995.1090	3213091.0289	0.86820	mag
109	400871.5088	3213131.8473	1.08640	mag
110	400045.0369	3213351.9694	0.76360	mag
111	399799.3875	3213401.1053	0.90720	mag
112	398827.4310	3213688.6609	1.02040	mag
113	398774.6139	3213722.4179	1.28690	mag
114	398570.9971	3213779.2125	1.20120	mag
115	396448.0320	3214324.0236	1.20490	mag
116	396157.8254	3214403.6022	0.68760	mag
117	394191.0673	3214947.3629	1.26870	mag
118	393392.9373	3215128.0148	0.58400	mag
119	393159.7401	3215202.1131	0.82280	mag
120	392873.9531	3215308.0821	0.74920	mag
121	392575.7017	3215373.9824	0.50140	mag
122	391951.8037	3215477.5390	0.37000	mag
123	400450.9643	3215176.0778	3.18750	ck_1
124	401245.0057	3213024.4972	1.27740	mag
125	401304.6903	3212990.8583	1.33340	mag
126	401390.9605	3212988.9286	1.42020	mag
127	401700.7217	3212903.3818	1.45710	mag
128	401908.5577	3212835.7967	1.23440	mag
129	402322.3251	3212735.1994	1.26840	mag
130	402360.3381	3212711.2329	1.21000	mag
131	402486.1272	3212677.9407	1.53410	mag
132	402578.1846	3212644.7329	1.33780	mag
133	402958.3598	3212542.2891	1.30160	mag
134	403206.1748	3212479.5923	1.22090	mag
135	403427.2259	3212457.3511	1.30810	mag
136	403528.9184	3212431.8265	1.47770	mag
137	398764.6510	3213865.2315	2.17460	mag
138	398595.7422	3213916.4338	1.13160	mag
139	398400.2258	3213997.4100	1.18310	mag
140	398283.1056	3214010.9024	1.23570	mag
141	396465.9355	3214391.1985	1.59670	mag
142	396184.2552	3214479.9639	1.23360	mag
143	394252.9376	3215012.7276	1.06450	mag
144	393480.0877	3215222.0713	1.09270	mag
145	393322.3184	3215262.0809	0.95610	mag
146	393157.3737	3215334.0091	1.01100	mag

No.	Y	X	Reading	Comment
147	392969.5169	3215404.1840	0.84340	mag
148	392761.4285	3215470.2825	0.95110	mag
149	392756.0162	3215466.5890	0.68310	mag
150	391863.8330	3215581.3895	1.20910	mag
154	400450.9873	3215175.9884	3.11000	ck100
155	409764.5576	3210792.2379	1.56330	mag
156	409103.4628	3210934.4975	1.71310	mag
157	408945.4494	3210997.2507	1.64010	mag
158	408754.0201	3211058.9657	1.92020	mag
159	408006.2873	3211235.4396	1.42640	mag
160	407894.3062	3211312.6203	1.56790	mag
161	407802.6354	3211323.1718	2.34400	mag
162	407650.7134	3211357.4057	1.58100	mag
163	407361.2222	3211416.8479	1.58860	mag
164	407215.6290	3211461.7103	1.78150	mag
165	407131.7002	3211466.2278	1.66970	mag
166	406886.8841	3211534.6105	1.70040	mag
167	406703.9408	3211573.5951	1.34800	mag
168	406215.0602	3211734.3500	2.00950	mag
169	405998.7806	3211773.8072	0.69450	mag
170	405467.5699	3211908.4311	1.76950	mag
171	405042.9557	3212043.1158	2.20100	mag
172	404858.3838	3212094.7307	1.96840	mag
173	404586.5671	3212169.3242	1.51290	mag
174	404354.5066	3212211.5979	1.43540	mag
175	404201.1478	3212238.8915	1.59650	mag
176	403946.7505	3212322.4106	1.80110	mag
177	403605.6041	3212407.5442	1.18990	mag
178	400450.9717	3215175.9956	3.11470	ck100
179	410064.1494	3210654.7940	3.86710	mag
180	410202.6699	3210614.9125	2.04020	mag
181	410337.4847	3210586.3091	2.04580	mag
182	410583.0690	3210518.4586	1.34180	mag
183	410658.2182	3210484.8225	1.75650	mag
184	411283.5272	3210336.5900	1.88860	mag
185	411515.3445	3210291.1697	1.87710	mag
186	411795.6269	3210194.9991	1.89020	mag
187	412406.3174	3210044.1206	0.70230	mag
188	414048.7274	3209594.5740	1.86440	mag
189	412412.3588	3210409.7805	1.60820	mag
190	411755.1984	3210570.1569	1.21480	mag
191	411538.9199	3210602.9251	0.96170	mag
192	411362.4193	3210643.5516	1.23480	mag
193	411315.5827	3210667.2528	1.29170	mag
194	411158.9684	3210703.9566	1.77580	mag
195	410962.8781	3210760.2740	1.61500	mag
196	410572.9230	3210849.7591	2.34230	mag

No.	Y	X	Reading	Comment
197	410390.9529	3210890.1956	1.63760	mag
198	409856.7521	3210978.9046	2.03620	mag
199	409686.6262	3211061.0285	0.89410	mag
200	409631.4619	3211086.2923	1.95740	mag
201	409388.9224	3211117.8050	1.91930	mag
202	409075.4019	3211197.8404	1.61180	mag
203	409078.3228	3211199.6556	2.10370	mag
204	408997.6302	3211203.7147	1.40230	mag
205	408901.6918	3211221.4247	1.16390	mag
206	408784.2996	3211240.5644	1.64160	mag
207	408172.4871	3211392.1243	2.22300	mag
208	408090.2289	3211408.3708	1.23380	mag
209	407850.1048	3211463.0725	1.99160	mag
210	407777.1615	3211470.1335	2.31200	mag
211	407658.5826	3211507.6121	2.25500	mag
212	407627.6161	3211518.7836	2.32700	mag
213	407353.5462	3211575.0233	2.23520	mag
214	407263.4912	3211590.9354	2.52960	mag
215	407199.1602	3211608.9506	1.27090	mag
216	407014.4400	3211655.1883	2.38470	mag
217	406467.2568	3211788.1941	2.23930	mag
218	406267.1401	3211824.4666	3.31950	mag
219	406087.4246	3211879.7464	1.70490	mag
220	405965.2127	3211890.3073	1.43910	mag
221	405929.3379	3211907.1595	1.63150	mag
222	405845.2647	3211929.5059	2.83700	mag
223	405765.2788	3211952.6500	1.45400	mag
224	405634.6806	3211979.4945	1.09350	mag
225	405569.0303	3212003.9858	2.36280	mag
226	405488.2033	3212018.0427	2.90610	mag
227	405413.2375	3212034.6218	2.22990	mag
282	400450.9534	3215175.9762	3.19890	ck100
283	405399.9458	3212507.9994	1.61690	mag
284	405337.0489	3212536.5150	1.45710	mag
285	405279.3009	3212533.3029	1.58730	mag
286	405186.7752	3212554.8896	1.83920	mag
287	405221.2426	3212547.9757	1.79750	mag
288	405091.0443	3212572.6140	3.73010	mag
289	405010.1417	3212569.8313	3.61080	mag
290	404396.2310	3212692.2482	3.40560	mag
291	403608.3881	3212887.0940	3.40610	mag
292	403139.3796	3212948.6626	3.47710	mag
293	402951.5845	3212998.0426	3.53180	mag
294	402683.5736	3213038.8335	3.33470	mag
295	402450.0241	3213090.4648	3.55680	mag
296	402101.6744	3213163.1613	3.44140	mag
297	401797.7180	3213216.6219	3.35630	mag

No.	Y	X	Reading	Comment
298	401187.6151	3213348.3733	3.35960	mag
299	399909.4098	3213606.1339	3.52120	mag
300	399920.7922	3213597.6361	3.49120	mag
301	399691.6776	3213647.1376	3.51190	mag
302	399361.5538	3213707.9125	3.37640	mag
303	399023.8760	3213785.4452	3.36900	mag
304	398763.8910	3213835.2545	3.34990	mag
305	398688.0839	3213868.6757	3.28000	mag
306	398593.2595	3213880.6264	3.29070	mag
307	398521.0639	3213890.5628	3.25840	mag
308	398061.1429	3213986.4418	3.28980	mag
309	396453.0861	3214314.4857	3.36440	mag
310	396159.6924	3214374.4321	3.38680	mag
311	395664.4589	3214462.4267	3.44200	mag
312	394392.0969	3214723.6954	3.31530	mag
313	394019.5790	3214764.1028	3.25890	mag
314	393209.5704	3214950.9107	3.27090	mag
315	393127.3217	3214981.9622	3.20750	mag
316	392331.3185	3215125.7153	3.29020	mag
317	392221.2982	3215138.0979	3.23990	mag
318	391910.4282	3215220.8801	3.23340	mag
319	391699.8847	3215222.4471	3.29250	mag
320	391642.0102	3215251.3193	3.30010	mag
321	391575.7484	3215272.0342	3.26360	mag
322	391537.3545	3215282.0214	3.30830	mag
323	391476.6821	3215292.7498	3.45320	mag
324	391279.7893	3215333.2292	3.39500	mag
325	391043.9429	3215383.2547	3.33670	mag
326	390980.9305	3215406.0545	3.39930	mag
327	391002.7586	3215393.2763	3.33560	mag
328	391061.4008	3215371.6666	3.24560	mag
329	391279.7770	3215290.8034	2.93170	mag
330	391434.2124	3215261.9674	3.29120	mag
331	391515.3577	3215228.4706	3.26310	mag
332	391563.2005	3215222.1439	2.98820	mag
333	391599.8414	3215187.8858	3.17190	mag
334	391634.2794	3215210.6792	3.18130	mag
335	391695.3775	3215196.2868	3.40290	mag
336	392393.9975	3215032.3204	3.33060	mag
337	400450.9813	3215175.9888	3.17520	ck100
338	405534.9535	3212493.5829	2.98810	
339	405577.5319	3212486.1518	2.97530	mag
340	405601.8521	3212453.0434	2.96910	mag
341	405703.0260	3212431.5120	2.88900	mag
342	405731.5863	3212411.2577	2.94480	mag
343	405769.6663	3212401.0673	2.83680	mag
344	405803.7553	3212416.0624	2.85180	mag

No.	Y	X	Reading	Comment
345	405856.8305	3212409.4381	2.87880	mag
346	405911.3537	3212379.5387	2.79450	mag
347	405945.5927	3212402.7890	2.84540	mag
348	406010.9339	3212377.5109	2.81250	mag
349	406066.2856	3212371.9155	2.82830	mag
350	406118.6278	3212352.4722	2.92490	mag
351	406121.7385	3212354.6358	2.90680	mag
352	406164.9972	3212338.0566	2.87220	mag
353	406224.1160	3212333.6056	2.87430	mag
354	406251.7246	3212326.6991	2.93210	mag
355	406296.8841	3212317.0175	2.94870	mag
356	406386.7825	3212296.4128	3.02610	mag
357	406427.5790	3212287.5629	2.96190	mag
358	406482.6422	3212270.7487	2.93140	mag
359	406540.2518	3212258.4154	3.03030	mag
360	406579.0053	3212266.1444	2.85780	mag
361	406609.6969	3212251.8741	3.01560	mag
362	406627.4642	3212253.7222	3.09280	mag
363	406659.8294	3212251.4755	2.96140	mag
364	406755.8887	3212235.8698	3.02540	mag
365	406782.7646	3212234.0456	2.94520	mag
366	406827.4053	3212222.9484	2.83150	mag
367	406837.0841	3212223.1816	3.06400	mag
368	406870.3706	3212216.7690	3.08390	mag
369	406934.3609	3212193.8126	3.01950	mag
370	406944.6182	3212186.3664	2.98780	mag
371	407062.6220	3212163.2010	2.89460	mag
372	407301.2466	3212111.4733	3.05190	mag
373	407362.2907	3212098.6533	2.96270	mag
374	407402.2621	3212088.9247	2.93210	mag
375	407450.1360	3212082.9070	2.86290	mag
376	407513.5298	3212073.7103	2.96990	mag
377	405362.0832	3212335.0015	6.32220	barge
378	405364.5303	3212296.1215	5.56490	barge
379	405541.0213	3212307.5812	5.44610	barge
380	405538.7865	3212346.4793	6.03580	barge
381	405383.0930	3212355.3180	9.92440	50
382	405385.4879	3212354.9666	8.48490	50
383	405383.3414	3212355.2950	9.85070	3_150
384	405384.0137	3212350.7806	10.79970	3_150
385	405385.7974	3212355.4233	8.53540	4 300
386	405385.7070	3212351.7524	8.98590	4 300
387	405389.0333	3212355.4187	8.69120	6 150
388	405388.8586	3212353.0192	9.12950	6 150
389	405363.4575	3212337.1639	5.71360	2 150
390	405369.4609	3212337.0730	6.87890	2 150
391	405369.0374	3212337.5171	6.77200	2 150

No.	Y	X	Reading	Comment
392	405362.8370	3212337.4409	6.44400	3 600
393	405405.3377	3212340.3387	6.81110	3 600
394	405363.6029	3212339.3334	6.56030	3 150
395	405385.6806	3212340.8897	7.16630	3 150
396	405364.5020	3212339.8602	6.67470	2 150
397	405377.9309	3212341.4414	6.68860	2 150
398	405365.5647	3212340.2083	7.15440	2 150
399	405369.8227	3212341.2319	6.15040	2 150
400	405360.6148	3212318.9308	8.23630	3 600
401	405361.3437	3212318.6058	8.34230	3 600
402	405361.3351	3212314.4426	8.89740	3 600
403	405361.8072	3212314.5194	9.21920	3 600
404	405360.2765	3212311.2761	9.28110	3 600
405	405360.9711	3212310.8910	9.60230	3 600
406	405717.2194	3212357.8348	5.50490	10 600
407	406554.3131	3212025.3096	10.28790	10 600
408	407799.8485	3211609.3127	9.16770	12 600
409	405251.2162	3212143.9827	9.40230	12 600
410	405259.3765	3212147.2109	4.97740	3 300
411	405258.4119	3212146.2926	5.23800	3 300
412	405257.9122	3212150.5390	5.70420	3 300
413	405257.3027	3212150.2906	6.02640	3 150
414	400450.9875	3215175.9863	-	ck100
415	409029.8059	3210571.8444	-	12 600
416	414048.7198	3209740.6000	-	12 600
417	414049.1177	3209732.9525	-	6 150
418	414055.9320	3209740.5233	-	6 150
419	414048.7135	3209744.1431	-	3 150
420	414054.4182	3209744.5123	-	3 150
421	408049.8824	3210743.9632	-	6_300
422	406983.6301	3211231.2447	-	well
423	400450.9471	3215175.9366	-	ck100
424	405847.6032	3211469.7419	-	well23
425	403936.6825	3212198.6571	-	well24
426	403935.3385	3212200.4474	-	2 150
427	403923.2193	3212200.7455	-	2 150
428	403922.2739	3212199.8550	-	2 150
429	403926.4514	3212199.4211	-	2 150
430	403736.2973	3212319.4043	-	well04
431	402649.7519	3212474.2617	-	well
432	402652.7346	3212475.1943	-	2 150
433	402653.7378	3212471.0610	-	2 150
434	402478.3256	3212715.3939	-	12 600
435	401232.7880	3213156.6423	-	well6
436	396216.2628	3214712.3859	-	4 300
437	396201.4586	3214732.4168	-	2 150
438	400450.9793	3215175.9657	-	ck100

No.	Y	X	Reading	Comment
439	407536.5840	3212080.0056	-	mag
440	407564.9469	3212092.0396	-	mag
441	407577.5930	3212075.3669	-	mag
442	407597.5535	3212046.1087	-	mag
443	407616.0898	3212049.8737	-	mag
444	407655.4392	3212053.4986	-	mag
445	407705.0117	3212028.7792	-	mag
446	407750.6847	3212034.1270	-	mag
447	407779.7548	3212016.2925	-	mag
448	407810.1886	3212018.7441	-	mag
449	407864.1994	3212000.7611	-	mag
450	407922.8607	3212000.3968	-	mag
451	407994.3116	3211988.6258	-	mag
452	408055.5919	3211972.5588	-	mag
453	408443.3153	3211903.3410	-	mag
454	408466.0651	3211884.6705	-	mag
455	408550.1550	3211882.3065	-	mag
456	408689.3455	3211855.3593	-	mag
457	408947.5925	3211783.8111	-	mag
458	410450.6846	3211484.5608	-	mag
459	411478.3341	3211264.2076	-	mag
460	412178.4583	3211105.0933	-	mag
461	400450.9335	3215175.9743	-	ck100
462	391797.5297	3215061.4767	-	mag
463	391824.9455	3215041.6262	-	mag
464	392507.2281	3214914.1561	-	mag
465	392587.9069	3214900.7144	-	mag
466	393188.0275	3214792.3897	-	mag
467	393888.0240	3214646.2475	-	mag
468	394641.1260	3214497.0047	-	mag
469	396110.7391	3214218.6234	-	mag
470	396140.5630	3214220.2711	-	mag
471	396371.9336	3214157.9618	-	mag
472	398558.3568	3213747.1466	-	mag
473	398717.6823	3213716.5562	-	mag
474	398760.4746	3213703.7881	-	mag
475	398807.6895	3213699.8295	-	mag
476	399360.9782	3213595.0704	-	mag
477	399737.7213	3213524.8621	-	mag
478	401107.4432	3213269.2449	-	mag
479	401130.5359	3213254.0428	-	mag
480	401246.7107	3213245.4428	-	mag
481	401263.7828	3213231.5068	-	mag
482	401288.5763	3213227.4634	-	mag
483	401681.2970	3213162.6995	-	mag
484	401937.8386	3213116.3147	-	mag
485	401979.5554	3213094.0056	-	mag

No.	Y	X	Reading	Comment
486	402040.8351	3213083.3072	-	mag
487	402363.9363	3213014.6179	-	mag
488	402833.3713	3212914.2364	-	mag
489	403507.3393	3212814.6375	-	mag
490	404331.2274	3212630.0776	-	mag
491	405123.4482	3212491.1979	-	mag
492	405168.9828	3212481.0941	-	mag
493	405231.6967	3212483.1329	-	mag
494	405319.9020	3212439.5615	-	mag
495	405424.2569	3212431.6683	-	mag
496	405614.5698	3212398.6207	-	mag
497	405672.3567	3212385.0481	-	mag
498	405741.6706	3212370.7531	-	mag
499	405787.2271	3212358.5832	-	mag
500	405904.2284	3212339.9468	-	mag
501	405963.2423	3212324.9456	-	mag
502	406027.9886	3212310.2128	-	mag
503	406067.0338	3212303.3635	-	mag
504	406218.4722	3212264.1440	-	mag
505	406345.8837	3212245.5901	-	mag
506	406396.1758	3212235.3191	-	mag
507	406432.0413	3212234.0524	-	mag
508	406656.8147	3212196.1348	-	mag
509	406733.4566	3212196.5117	-	mag
510	406763.9845	3212182.2337	-	mag
511	406789.2596	3212173.9202	-	mag
512	406865.2479	3212169.5008	-	mag
513	406908.2790	3212154.7337	-	mag
514	406991.0839	3212133.4648	-	mag
515	407047.6861	3212124.6261	-	mag
516	407152.1062	3212108.0540	-	mag
517	407194.1053	3212096.3849	-	mag
518	407245.8550	3212083.0838	-	mag
519	407407.3200	3212058.2063	-	mag
520	407607.5898	3212014.2169	-	mag
521	407654.6739	3211994.7565	-	mag
522	407824.5522	3211981.7621	-	mag
523	407892.5812	3211959.3135	-	mag
524	407934.8941	3211958.7129	-	mag
525	407993.6791	3211936.2144	-	mag
526	408051.4849	3211924.6433	-	mag
527	408168.2640	3211907.7925	-	mag
528	408195.8544	3211901.3074	-	mag
529	408250.8679	3211897.3164	-	mag
530	408283.9938	3211890.4456	-	mag
531	408338.1224	3211870.2496	-	mag
532	408414.5421	3211860.9260	-	mag

No.	Y	X	Reading	Comment
533	408486.1081	3211852.2678	-	mag
534	408688.6892	3211807.3255	-	mag
535	408927.9338	3211754.2458	-	mag
536	409341.5538	3211649.1118	-	mag
537	400450.9884	3215175.9507	-	ck100
538	400450.9593	3215175.9886	-	ck100
539	391673.4077	3215064.9600	-	mag
540	391648.2754	3215076.2655	-	mag
541	391601.2319	3215089.9325	-	mag
542	391533.6282	3215089.3628	-	mag
543	391162.2049	3215151.4000	-	mag
544	390987.2827	3215186.5369	-	mag
545	390937.7617	3215218.7072	-	mag
546	390207.8294	3215345.1244	-	mag
547	389872.0086	3215414.9134	-	mag
548	389848.0354	3215406.5386	-	mag
549	389828.0054	3215411.6379	-	mag
550	389610.3052	3215473.7700	-	mag
551	389468.6471	3215503.6329	-	mag
552	389000.5561	3215507.3025	-	mag
553	389282.4824	3215446.5440	-	mag
554	389504.5239	3215421.7661	-	mag
555	389621.8353	3215405.6039	-	mag
556	389741.7228	3215386.7225	-	mag
557	390759.2974	3215206.9976	-	mag
558	390951.4940	3215167.0340	-	mag
559	391180.5980	3215126.0256	-	mag
560	391414.4614	3215089.3234	-	mag
561	391537.8132	3215064.4501	-	mag
562	391614.6869	3215046.2179	-	mag
563	391670.1294	3215044.6978	-	mag
564	391773.1640	3215019.4827	-	mag
565	391847.5239	3215003.6587	-	mag
566	392536.0439	3214886.1062	-	mag
567	392588.2590	3214873.8327	-	mag
568	393192.7862	3214762.3200	-	mag
569	393936.7785	3214655.1770	-	mag
570	395562.4799	3214353.8606	-	mag
571	396174.1446	3214239.8344	-	mag
572	396128.4178	3214245.4396	-	mag
573	396149.3705	3214236.0538	-	mag
574	396408.3729	3214205.5655	-	mag
575	398500.6462	3213841.4440	-	mag
576	398573.8674	3213819.3602	-	mag
577	398680.1207	3213800.7043	-	mag
578	398721.4541	3213794.1789	-	mag
579	398753.9774	3213793.7520	-	mag

No.	Y	X	Reading	Comment
580	398908.7233	3213761.9996	-	mag
581	399425.3919	3213672.4376	-	mag
582	399695.3988	3213624.8749	-	mag
583	401200.1012	3213374.8216	-	mag
584	401846.1687	3213253.7649	-	mag
585	402114.8752	3213209.4364	-	mag
586	402577.8776	3213100.9475	-	mag
587	402996.4619	3213042.1462	-	mag
588	403618.8686	3212951.5116	-	mag
589	404966.0634	3212710.3211	-	mag
590	405028.4369	3212707.9464	-	mag
591	405248.3378	3212652.2619	-	mag
592	405552.6284	3212610.3070	-	mag
593	405687.0267	3212580.5194	-	mag
594	405728.5667	3212561.2917	-	mag
595	405847.0818	3212550.0912	-	mag
596	405963.0978	3212538.1567	-	mag
597	406020.9492	3212509.6528	-	mag
598	406081.0855	3212496.9511	-	mag

Coordinate system: Louisiana State Plane South (Feet), NAD83.

APPENDIX 3:

Equipment Specifications

GEOMETRICS MARINE CESIUM MAGNETOMETER, MODEL 881

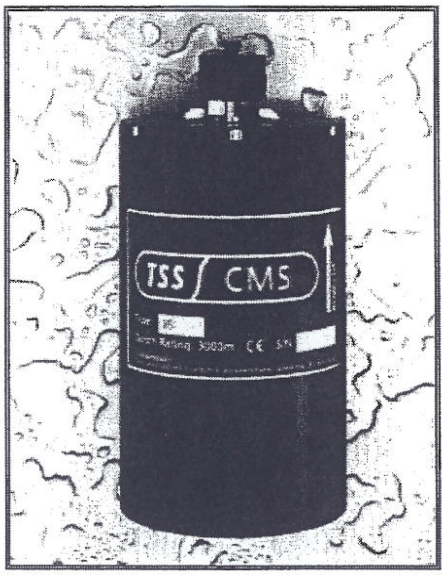
The Geometrics Marine Cesium Magnetometer Model 881 is used to measure the earth's ambient magnetic field. Through the utilization of this system, ferrous objects, such as pipelines, wellheads, debris, etc., can be detected.

The cesium magnetometer utilizes cesium vapor stimulated by a cesium lamp and a RF frequency to measure the total magnetic field intensity.

Magnetic field values are graphically displayed in 1 gamma increments on a dual channel recorder. This recorded signature is then evaluated and compared to file data to make a comprehensive interpretation of conditions in a particular study area.

TSS CMS-25

COMPACT MOTION SENSOR



GENERAL DESCRIPTION

The new TSS Compact Motion Sensor (CMS) incorporates the latest Silicon Gyro technology and is designed specifically to meet the motion measurement requirements of a diverse spectrum of marine users from the Single-beam echo-sounders to Dynamic positioning systems. The CMS can accept external velocity aiding for enhanced performance in all weather conditions and during dynamic vessel manoeuvres.

Small, light and with low power consumption the new CMS offers a family of sensors.

In addition to configurable outputs via the all new DMSView for Windows™ the CMS provides real-time Heave, Pitch, Roll in digital and analogue formats.

Requiring no additional housing the compact CMS can operate on ROVs/AUVs or tow-fish to 3000m water depth. Alternatively the unique design of the single chassis allows for integration into existing housings.

FEATURES

- Enables survey to IHO standards in all weather conditions
- Compact depth rated design for sub-sea vehicles
- Low power consumption enable offshore buoy operation
- Depth rated to 3000m as standard
- Incorporates new silicon gyro technology
- Compact size and light weight
- Flexible mounting orientation
- EMC and CE rated
- User configurable
- No data latency

TSS CMS-25

COMPACT MOTION SENSOR

- DMSView for MS Windows™ Operating system

APPLICATIONS

- Shallow Water Multi-beam
- Single Beam Echo-sounders
- Offshore Data Buoys
- Acoustic Positioning
- Dynamic Positioning
- ROV / AUV Control
- Heli-deck Monitoring
- Vessel Monitoring and Control
- ADCP
- Platform Monitoring
- Tow-Fish Applications

TECHNICAL SPECIFICATIONS

Technical Specifications	Heave	Roll & Pitch for ±30 Vessel Motion
Accuracy	±5cm or 5% whichever is greater	CMS-25
		±0.25°
Range	±10cm	±30°
Resolution	1cm	Digital – 0.01° Analogue – 12 bit
Bandwidth	0.05 to > 10Hz	0 to > 10 Hz
Update Rate	Digital - Up to 200Hz	Analogue – Up to 500Hz
Temperature Range	0° to +55°C operating	-20° to +70°C storage
Power Requirement	10 – 36V dc, <6.5W	
Velocity input packet formats	NMEA 0183 (requires VTG & GLL or GGA); TSIP: Doppler Speed Log	
Heading input packet formats	NMEA 0183; SGB; Robertson, Sperry LR40/60	
Depth Rating	3000m standard	Up to 6000m optional
Shock (survival)	30g peak	40ms half-sine
Vibration (operating)	Lloyds Register ENVZ (1996), ABS Table 4/11.1 (1996) No12 – IEC pub.68-2-6 (1995) Test F.	
Environmental	EMC-CE approved BSEN50081-1;1992, BS EN50082-2;1997, BS EN60945;1997 (sections 9 and 10)	
Tilt	Operating ±45° any plane	Transit – No limit
Yaw Immunity	10° per second with 30° roll & pitch	
Available outputs formats	Standard TSS and other manufacturer's data strings in addition to a user configurable menu can be viewed and selected with DMSView for Windows™	
Software Interface	Digital; RS232 or RS422 (software selectable) Analogue (Via optional remote interface)	

WEIGHT

<2.3 Kg
(3.5Kg with 5m length of sensor cable)

DIMENSIONS

1722mm by 99mm diameter
(excluding connector and mounting plate)

SEATRONICS SCHONSTEDT GAU-30 GRADIOMETER

The Schonstedt GAU-30 Gradiometer is a single axis magnetic gradiometer that uses the patented Schonstedt HeliFlux sensor assembly. The GAU-30 is enclosed in a waterproof case, enabling it to be towed behind a boat or diver.

The GAU-30 produces both audible and visible signals when a magnetic target is encountered. In addition to the audible signal and visible meter, the GAU-30 also has the ability to record the data for later download. The audible output ranges from 50 Hz at 0 signal to a maximum of 5 kHz when a magnetic target is encountered. Small magnetic fields of ± 3 milligauss, such as would be present from any ferrous materials in the towing package or diver, can be neutralized with the zero adjustment control.

LATEST NEWS

Multi-million Dollar Environmental Contract

Marine survey equipment rental and sales specialists Seatronics Limited and OSIL (Ocean Scientific I

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Thank you for visiting the new Seatronics Group web site, we hope you find the layout pleasing and e

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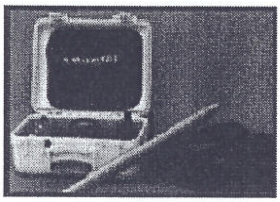
EQUIPMENT RENTAL

Schonstedt GAU-30 Gradiometer



- Gradient Ranges 0.3 to 100 Milligauss
- (0.18 to 60 Milligauss per Foot)
- Audio and Visual Indications
- HELIFLUX® Magnetometer Sensor
- Lightweight PVC Tow Body (weightable)
- Power from 12-V mini wet cell battery

Description

The GAU-30 is a single axis magnetic gradiometer used to provide a fast and accurate method for locating underwater ferrous objects. Search and salvage operations may be conducted at depths up to 1000 feet. The sensitive axis of the sensors is parallel with the long axis of the sensor unit case. The instrument consists of Schonstedt Instrument Company's patented HeliFlux sensor assembly and a topside electronic unit, which are interconnected by a six-conductor cable up to a thousand feet in length.

The sensor assembly in normally horizontally operated on natural bottom and, with the appropriate range (milligauss) setting, will produce a visual and audio indication of signatures resulting from magnetic targets within the search area. The sensor assembly is usually secured within a PVC or Aluminum body for towing by boat, or dragged by Diver. Small inherent magnetic fields up to ± 3.0 milligauss from the sled assembly or Diver, can be neutralized using the zero adjust control. The sensor assembly, cable, and electronic unit are detachable and interchangeable for easy on site trouble shooting or repair. Sensor assemblies are preset and sealed to provide guaranteed performance and repeatability of measurements.

The electronic unit provides a meter indication of magnetic gradient and a variable audio output whose frequency is proportional to the gradient being detected. With a zero indication on the scale, idling frequency is approximately 50 Hz. The frequency increases linearly to a maximum of 5 kHz as the gradient deflects the meter from zero to full scale. An output connector is also provided to drive an external strip chart recorder.

Specifications

SENSOR SIZE:	1.75 in (4.4 cm) O.D. x 50.50 in(128.3 cm) Long
SENSOR WEIGHT:	«3 lbs.(1.4 kg)
Operating DEPTH:	1000 ft (304.8 m) maximum
SENSOR SPACING:	20 in (50.8 cm)
ALIGNMENT ERROR:	10 gammas peak to peak maximum
ELECTRONICS SIZE:	9.5 in (24.1 cm)L x 9.0 in (22.9 cm)W x 6.5 in (16.5 cm)H
ELECTRONICS WEIGHT:	«6.5 lbs. (2.95 kg)
CONTROLS:	Range — OFF, Battery Test, 100, 30, 0,3,10, 3, 1, 0.3 Milligauss Gradient (Corresponding to 60,18, 6,1.8, 0.6, 0.18 milligauss per foot) Speaker - Volume, Meter Zero
OUTPUTS:	Analog Meter, Speaker, Recorder
CABLE:	6 conductor, #12 kevlar armoured, waterproof
CABLE RESISTANCE:	80 ohms per conductor maximum
INPUT POWER:	12Vdc Nominal (9-18Vdc) @ 400mA

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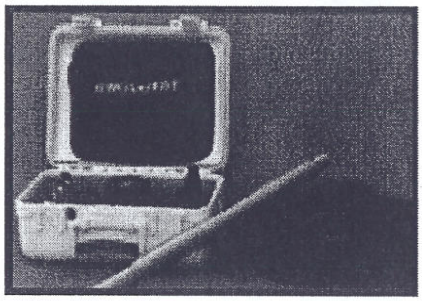
Diving & NDT

Schonstedt

GAU-30 Gradiometer



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OUTPUTS:	Analog Meter, Speaker, Recorder
CABLE:	6 conductor, #12 kevlar armoured, waterproof
CABLE RESISTANCE:	80 ohms per conductor maximum
INPUT POWER:	12Vdc Nominal (9-18Vdc) @ 400mA