NOAA FORM 76-35A

U.S. DEPARTMENT OF COMMERCE
NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION
NATIONAL OCEAN SERVICE

DESCRIPTIVE REPORT

Type of Survey. *Side-Scan Sonar, Singlebeam Sonar and Interferometric Sonar*

Field No. *B*

Registry No. *H11613*

LOCALITY

State *Louisiana*

General Locality *Lake Borgne*

Sublocality *East*

2007

CHIEF OF PARTY

Paul L. Donaldson

Science Applications International Corporation

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NOAA FORM 77-28 (11-72) U.S. DEPARTMENT OF COMMERCE NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION

REGISTRY NO.

H11613

HYDROGRAPHIC TITLE SHEET

INSTRUCTIONS - The Hydrographic Sheet should be accompanied by this form, filled in as completely as possible, when the sheet is forwarded to the Office.

FIELD NO.

B

State Louisiana

General Locality Lake Borgne

Sublocality *East*

Scale 1:20,000 Date of survey 20 February 2007 – 02 June 2007

Instructions Dated October 18, 2006 Project No. S-J977-KR-SAIC

Vessel *M/V Thomas R Dowell* AL1534AH and *F/V Lacey Marie* LA6708FC

Chief of Party *Paul L. Donaldson*

Surveyed by: *Brian Biggert, Louie Cust, Gary Davis, Kevin Davis, Rick Davis, Travis Daniel, Paul Donaldson, Sean Halpin, Karen Hart, Chuck Holloway, Jason Infantino, Fred Jordon, John Kiernan, Meme Lobecker, Rick Nadeau, Chris Pinero, Gary Parker, Evan Robertson, Jeremy Shambaugh, Deb Smith, Mike Tappia and Justin West*

Soundings taken by **echo sounder**, hand lead, pole Odom Echotrac CV, GeoAcoustics GeoSwath Plus

Graphic record scaled by

Graphic record checked by

Protracted by Automated plot by

Verification by ***Atlantic Hydrographic Branch Personnel. Bold, Italic, Red notes in Descriptive Report were made during office processing. Charted depths in feet at MLLW. Compiler comments in blue, bold font.***

Soundings in fathoms, feet, **meters** at MLW, **MLLW**

REMARKS: **Contract** DG-133C-05-CQ-1088

Contractor: Science Applications International Corp., 221 Third Street; Newport, RI 02840 USA

Subcontractors: Williamson & Associates, 1124 NW 53rd Street, Seattle WA 98107; Rotator Staffing Services, PO Box 366, 557 Cranbury Rd., E. Brunswick, NJ 08116; Lowe Engineers 2000 RiverEdge Parkway, Suite 400, Atlanta, GA 30328; John Oswald & Associates, LLC. 2000 E. Dowling Rd, Suite 10, Anchorage, AK 99507

Times: All times are recorded in UTC

UTM Zone: Zone 16

Purpose: To provide NOAA with accurate hydrographic survey data suitable for item detection

and debris mapping in the assigned area: Sheet B (H11613) in Lake Borgne, Louisiana.

NOAA FORM 77-28 SUPERSEDES FORM C&GS-537. ☆ U.S. GOVERNMENT PRINTING OFFICE: 1976—665-661/1222 REGION NO. 6

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Descriptive Report to Accompany
Hydrographic Survey H 11613
Scale 1:20,000, Surveyed 2007
M/V Thomas R. Dowell* and *F/V Lacey Marie
Science Applications International Corporation (SAIC)
Paul L. Donaldson, Lead Hydrographer

PROJECT
Project Number: S-J977-KR-SAIC
Dates of Instructions: October 18, 2006 **Task Order#:** T0002

Dates of Supplemental Instructions: 25 October 2006, 30 May 2007, 16 November 2006, 09 January 2007 and 03 October 2007
Sheet Letter: B
Registry Number: H11613
Purpose: To provide NOAA with accurate hydrographic survey data suitable for item detection and debris mapping in the assigned area: Sheet B (H11613) in Lake Borgne, Louisiana.

A. AREA SURVEYED

The area surveyed was the eastern section of Lake Borgne Louisiana, which covered 28.01 square nautical miles (Figure A-1). The line nautical miles, bottom samples, and other survey parameters are located in Table A-1 entitled "Hydrographic Survey Statistics". The area was surveyed at 40m line spacing with interferometric, singlebeam, and side-scan sonar from 20 February 2007 – 02 June 2007 (Table A-2). The depth range encountered in H11613 was from 0.74 to 4.66 meters (2 to 15 feet). The depth range for singlebeam sonar data was 0.74 to 4.48 meters (2 to 14 feet) based on a minimum grid. The depth range for interferometric sonar data was 1.51 to 4.66 meters (5 to 15 feet) based on the CUBE depth. ***Concur.***

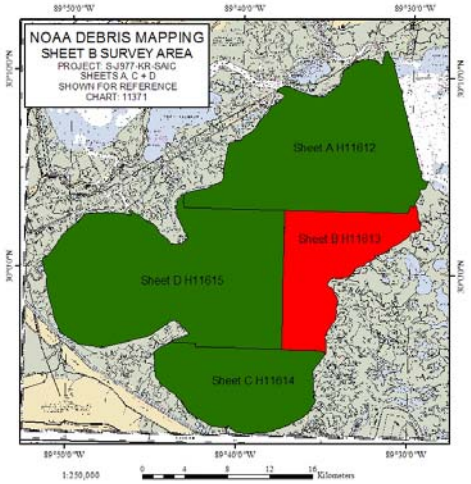

Figure A-1. NOAA Debris Mapping Survey Bounds

Table A-1. Hydrographic Survey Statistics

***M/V Thomas R. Dowell* and *F/V Lacey Marie*, Sheet B H11613**	
LNM Side-Scan only	1514.63
LNM Interferometric, Bathy	914.36
LNM Singlebeam	600.27
Lineal nautical miles of any combination of the above techniques (specify methods)	1515
LNM shoreline/nearshore investigations	N/A
Number of Bottom Samples	31
Number of items investigated that required additional time/effort in the field beyond the above survey operations	0
Total number of square nautical miles	28.01

Table A-2. Dates of Data Acquisition in Calendar and Julian Days

Calendar Date	Julian Day
20-February-2007	51
23-February-2007	54
5-March-2007	64
13-March-2007	72
14-March-2007	73
22-March-2007	81
23-March-2007	82
27-March-2007	86
29-March-2007	88
30-March-2007	89
12-April-2007	102
13-April-2007	103
20-April-2007	110
21-April-2007	111
22-April-2007	112
23-April-2007	113
24-April-2007	114
27-April-2007	117
28-April-2007	118

Calendar Date	Julian Day
29-April-2007	119
30-April-2007	120
1-May-2007	121
3-May-2007	123
4-May-2007	124
5- May-2007	125
6-May-2007	126
8-May-2007	128
9- May-2007	129
10- May-2007	130
11- May-2007	131
12-May-2007	132
14-May-2007	134
19-May-2007	139
20-May-2007	140
27-May-2007	147
31-May-2007	151
1-June-2007	152
2-June-2007	153

B. DATA ACQUISITION AND PROCESSING

B.1 Equipment

A detailed description of the systems used to acquire and process these data has been included in the separate Data Acquisition and Processing Report for S-J977-KR-SAIC delivered with this sheet (SAIC document number 07-TR-005). There were no variations

from the equipment configuration described. Table B-1 and Table B-2 provide a summary of the major systems used. ***Concur.***

Table B-1. Major Systems (*M/V Thomas R. Dowell*)

	Manufacturer / Model Number
Singlebeam Sonar	Odom CV
Side-Scan Sonar	Klein 3000 Towfish
Vessel Attitude System	Applanix POS/MV 320 Inertial Navigation System
Positioning Systems	POS/MV 320 version 4
Sound Speed Systems	Sea-Bird Electronics, Inc. SBE 19-01 CTD Profiler

Table B-2. Major Systems (*F/V Lacey Marie*)

	Manufacturer / Model Number
Interferometric Sonar	GeoAcoustics GeoSwath Plus
Vessel Attitude System	Applanix POS/MV 320 Inertial Navigation System
Positioning Systems	POS/MV 320 version 4
Sound Speed Systems	Sea-Bird Electronics, Inc. SBE 19-01 CTD Profiler

Survey Vessels

The *M/V Thomas R. Dowell* and *F/V Lacey Marie* were the vessels used for all survey operations during the Lake Borgne survey project. Table B-3 lists vessel characteristics for the *M/V Thomas R. Dowell* and *F/V Lacey Marie*. Preliminary data processing took place on site at Shell Beach, LA and then data products were shipped to the Data Processing Center in the SAIC Newport, RI office for final processing.

Table B-3. Survey Vessel Characteristics

Vessel Name	LOA	Beam	Draft	Max Transit Speed	Max Survey Speed
M/V Thomas R. Dowell	32’	7’	2.5’	30 kts	8 kts
F/V Lacey Marie	41’	12’	2.5’	14 kts	7 kts

The *M/V Thomas R. Dowell* was the platform for the Odom CV singlebeam sonar, Klein 3000 side-scan sonar, and SBE 19-01 CTD data collection. The sensor configuration and offsets used for the survey are tabulated and depicted in the Data Acquisition and Processing Report. The reference point for the entire system is located at the top centerline of the POS/MV IMU. The Odom transducer was hull-mounted and the Klein 3000 Towfish was bow mounted. The POS/MV IMU was mounted 0.905 meters above, 2.080 meters forward, and 0.290 meters port of the transducer.

The *F/V Lacey Marie* was the platform for the GeoAcoustics GeoSwath Plus 250 kHz interferometric sonar, and SBE 19-01 CTD data collection. The sensor configuration and offsets used for the survey are tabulated and depicted in the Data Acquisition and Processing Report. The reference point for the entire system is located at the top centerline of the POS/MV IMU. The GeoSwath transducer was pole-mounted off the bow on the vessel centerline and 3.31 meters below the mounting plate. The POS/MV was mounted 0.330 meters directly above the transducer.

Major Systems

SAIC used their Integrated Survey System (**ISS-2000**) software on a Windows XP platform to acquire navigation and ancillary survey data on both vessels. Survey planning and data analysis were conducted using SAIC's **SABER** software on Red Hat Enterprise 4 Linux platforms.

On the *M/V Thomas R. Dowell*, Klein 3000 side-scan data were collected on a Windows XP platform using Klein's **SonarPro version 9.6** software. The Klein 3000 side-scan sonar data were collected in eXtended Triton Format (XTF) maintaining full resolution, with no conversion or down sampling techniques applied. All side-scan data were reviewed using Triton **Isis** software, while coverage mosaics were produced using **SABER.** Odom singlebeam sonar data were collected in Generic Sensor Format (GSF) using SAIC's **ISS-2000** software. The data were processed using SAIC's **SABER** software (edited and correctors applied).

On the *F/V Lacey Marie*, interferometric data were collected on a Windows XP platform using GeoAcoustics **GeoSwath Plus** (**GS+)** software. The GeoSwath system collected data in a proprietary Raw Data File (RDF) format, which stores all needed information for processing in one given file. The bathymetry data were then extracted from the RDF files within the **GS+** software into another proprietary intermediate file format CUBE File (CBF). The CBF file was then converted to Generic Sensor Format (GSF) using SAIC's **SABER** software. The data were then processed using SAIC's **SABER** software (edited and correctors applied). The side-scan imagery data were extracted from the RDF file into an intermediate **GS+** proprietary file as Swath Amplitude Files; pronounced swamp (SWP). The SWP file was then exported into an eXtended Triton Format (XTF) file using the GeoAcoustics **GS+** software where it was down sampled to 1,024 samples per channel. Once the GeoSwath imagery data were in XTF format, those data and the Klein 3000 data were treated the same for further data processing. All side-scan data were reviewed using Triton **Isis** software, while coverage mosaics were produced using **SABER.**

B.2 Quality Control

There were approximately 93 linear nautical miles of crosslines surveyed and approximately 1315 linear nautical miles of main scheme lines surveyed. This resulted in approximately 7 percent of linear nautical miles of crosslines compared to main scheme

survey lines. The crosslines were oriented at 0°/180° or 91.6°/271.6° and were spaced approximately 500 meters apart, while the main scheme lines were oriented at 96.6°/271.6° or 1°/181° and were spaced 40 meters apart. The range scale was set to 25 meters for the side-scan acquisition yielding a 50 meter swath.

A Seabird Electronics SBE-19 CTD was used on both the *F/V Lacey Marie* and on the *M/V Thomas R. Dowell* to collect sound speed profile (SSP) data. SSP data were obtained at intervals frequent enough to reduce sound speed errors. The frequency of casts was based on observed sound speed changes from previously collected profiles and time elapsed since the last cast. Multiple casts were taken along a survey line to identify the rate and location of sound speed changes. Subsequent casts were made based on the observed trend of sound speed changes. As the sound speed profiles changed, cast frequency and location were modified accordingly. A surface sound velocimeter was used in conjunction with the sound speed profiles for collection of interferometric data. A Velport surface sound velocimeter was co-located with the transducers. Speed of sound correctors were recorded and applied in real time by the GeoAcoustics **GS+** software. On Julian Day 124 (04 May 2007) at 15:25:05 the 25 mm stand off Velport SSV sensor was damaged and was replaced with a 50 mm Velport sensor on the evening of JD 132 (12 May 2007). From JD 124 (04 May 2007) through the evening of JD 132 (12 May 2007) the surface sound speed from the sound speed profile data collected with the Seabird SBE-19 CTD were applied to the data by using the **GS+** software during data collection. The value was updated with each new sound speed profile collected. The frequency of sound speed profile casts were increased during this time to reduce errors that could be introduced due to a change in the surface sound velocity. A review of the surface sound speed values between the currently applied cast and the next new sound speed cast was made as well to identify if there would be a cause for concern. There was little to no change in both the sound speed profile and the surface sound speed values during this time. And the sound speed data were nearly vertically profiled around the same sound speed value. Confidence checks of the sound speed profile casts were conducted weekly by comparing two consecutive casts taken with different Seabird SBE-19 CTD units.

Static draft measurements for the *F/V Lacey Marie* were taken from the bow, where the transducers were mounted, both before departure and after arrival. Dynamic draft was determined from a look up table using shaft RPM counters for the input. The dynamic draft table was constructed from measurements taken during the pre-survey Sea Acceptance Trials (SAT).

Static draft measurements for the *M/V Thomas R. Dowell* were taken from amid ship, where the transducer was mounted, both before departure and after arrival at the dock each day. Dynamic draft was determined from a look up table using manual entry of the RPM as read from the RPM gauge. The RPM value was updated with any change in RPM. The dynamic draft table was constructed from measurements taken during the pre-survey Sea Acceptance Trials.

Horizontal positioning of the bathymetry transducers by the POS/MV was verified by daily confidence checks against an independent Trimble DGPS system. In addition, this comparison was running full time with an alarm to alert the survey watch stander should the position differences exceed the maximum allowable distance.

Confidence checks of the interferometric depths were made using a bar check that was lowered to a known depth directly below the transducer. A sound speed profile was taken and the tide corrector was set to zero. A bar was lowered below the transducers to a depth of 2 meters. Data were recorded to a discrete raw data file. Depths displayed by the GeoSwath interferometric sonar were read and entered into a bar check log. Bar checks were taken approximately once per week during the survey.

Confidence checks of the singlebeam depths were made using a bar that was lowered to a known depth directly below the transducer. A sound speed profile was taken, RPM value and the tide corrector was set to zero. A bar was lowered below the transducer to various depths in 1 meter increments. The GSF file for the Odom echo sounder, the Odom DTC, Odom video 32 display and Odom controller were examined for the reported values once the bar was in place. The depth for each source was recorded within the *M/V Thomas R. Dowell* bar check log.

All individual soundings that were applied to the Bathymetric Attributed Grid (BAG) meet the Horizontal Position Accuracy and Vertical Accuracy specified in the NOS Specifications and deliverables. There are, however, areas where the BAG node uncertainty exceeds the IHO Order 1 allowable value specified in the NOS Specifications and deliverables. The largest number of nodes which exceed the maximum allowable uncertainty occur along the edges of a swath where there is no additional overlapping coverage from adjoining lines or where there is a variation in adjoining swaths due to tidal or sound speed differences. In few cases elsewhere within the grid, uncertainty is exceeded where the node has a low number of soundings contributing to a node depth or areas along oyster beds where the standard deviation was high. Various tests were conducted to determine if there was an optimal swath cutoff angle to significantly reduce or eliminate nodes which exceed the specified uncertainty values. It was determined that by reducing the swath angle we were able to reduce or eliminate the number of nodes which exceeded the specified uncertainty levels. Various tests were conducted to determine if there was an optimal swath cutoff angle to significantly reduce or eliminate nodes which exceed the specified uncertainty values. It was determined that by reducing the swath angle we were able to reduce the number of high uncertainty nodes, however, this required flagging an excessive amount of low uncertainty data as invalid in the process. Therefore it was decided to retain the full swath data for production of the Bathymetric Attributed Grid. A SABER process called “Check PFM Uncertainty” flags nodes which exceed specified uncertainty limits. A text file which lists node position, depth and uncertainty value for nodes which failed the specified uncertainty limit is included in Appendix V, Supplemental Survey Records and Correspondence.

Comparisons of averaged main scheme data to averaged crossline data were done daily to ensure there were no systematic errors introduced and to identify potential problems with

the acquisition system configurations. Comparisons of crossing data in H11613 were conducted in several different iterations on averaged 5-m gridded data. Singlebeam main scheme data were compared to singlebeam crossline data which showed that 99.57% of comparisons are within 30 centimeters and 100.00% of comparisons are within 35 centimeters (Table B-4). The singlebeam main scheme data were then compared to the interferometric crossline data which showed that 96.42% of comparisons are within 50 centimeters and 99.36% of comparisons are within 60 centimeters (Table B-5). The main scheme interferometric data were compared to the interferometric crossline data which showed that 95.71% of comparisons are within 30 centimeters and 99.48% of comparisons are within 45 centimeters (Table B-6). The interferometric main scheme data were compared to the singlebeam crossline data which showed that 92.14% of comparisons are within 50 centimeters and 99.01% of comparisons are within 60 centimeters (Table B-7). A final comparison was made with all main scheme data compared to all crossline data which showed that 94.99% of comparisons are within 35 centimeters and 99.24% of comparisons are within 50 centimeters (Table B-8).

Table B-4. Junction Analysis Singlebeam Main Scheme vs. Singlebeam Crosslines Nadir, H11613

Depth Difference Range (cm)	All		Positive		Negative		Zero	
	Count	Percent	Count	Percent	Count	Percent	Count	Percent
0-5	78	33.91	32	45.71	42	26.92	4	
5-10	65	62.17	22	77.14	43	54.49		
10-15	34	76.96	3	81.43	31	74.36		
15-20	13	82.61	1	82.86	12	82.05		
20-25	23	92.61	4	88.57	19	94.23		
25-30	16	99.57	7	98.57	9	100		
30-35	1	100	1	100	0	100		
Total	230	100%	70	30.43%	156	67.83%	4	1.74%

Table B-5. Junction Analysis Singlebeam Main Scheme vs. Interferometric Crosslines, H11613

Depth Difference Range (cm)	All		Positive		Negative		Zero	
	Count	Percent	Count	Percent	Count	Percent	Count	Percent
0-5	367	3.56	187	1.88	144	42.11	36	
5-10	584	9.23	483	6.75	101	71.64		
10-15	1258	21.45	1189	18.74	69	91.81		
15-20	1236	33.45	1215	30.98	21	97.95		
20-25	1602	49	1598	47.09	4	99.12		
25-30	1741	65.91	1739	64.62	2	99.71		
30-35	1214	77.7	1214	76.86	0	99.71		
35-40	759	85.07	759	84.51	0	99.71		

Depth Difference Range (cm)	All		Positive		Negative		Zero	
	Count	Percent	Count	Percent	Count	Percent	Count	Percent
40-45	729	92.14	729	91.86	0	99.71		
45-50	440	96.42	440	96.29	0	99.71		
50-60	303	99.36	302	99.33	1	100		
60-70	51	99.85	51	99.85	0	100		
70-80	10	99.95	10	99.95	0	100		
80-90	2	99.97	2	99.97	0	100		
90-100	0	99.97	0	99.97	0	100		
100-110	3	100	3	100	0	100		
Total	10299	100%	9921	96.33%	342	3.32%	36	0.35%

Table B-6. Junction Analysis Interferometric Main Scheme vs. Interferometric Crosslines, H11613

Depth Difference Range (cm)	All		Positive		Negative		Zero	
	Count	Percent	Count	Percent	Count	Percent	Count	Percent
0-5	36318	26.37	15454	29.03	16758	20.85	4106	
5-10	35200	51.94	15428	58.02	19772	45.45		
10-15	30462	74.06	12152	80.85	18310	68.24		
15-20	12956	83.47	4585	89.46	8371	78.65		
20-25	10247	90.91	3185	95.45	7062	87.44		
25-30	6612	95.71	1602	98.46	5010	93.67		
30-35	2905	97.82	494	99.39	2411	96.67		
35-40	1376	98.82	171	99.71	1205	98.17		
40-45	910	99.48	91	99.88	819	99.19		
45-50	431	99.79	32	99.94	399	99.69		
50-60	244	99.97	18	99.97	226	99.97		
60-70	27	99.99	5	99.98	22	100		
70-80	4	99.99	3	99.99	1	100		
80-90	5	100	3	99.99	2	100		
90-100	2	100	1	99.99	1	100		
100-110	1	100	1	100	0	100		
120-130	1	100	1	100	0	100		
130-140	0	100	0	100	0	100		
Total	137702	100%	53227	38.65%	80369	58.36%	4106	2.98%

Table B-7. Junction Analysis Interferometric Main Scheme vs. Singlebeam Crosslines Nadir, H11613

Depth Difference Range (cm)	All		Positive		Negative		Zero	
	Count	Percent	Count	Percent	Count	Percent	Count	Percent
0-5	104	1.54	32	41.03	55	0.83	17	
5-10	172	4.09	27	75.64	145	3.01		
10-15	288	8.37	15	94.87	273	7.12		
15-20	376	13.95	4	100	372	12.72		
20-25	746	25.01	0	100	746	23.94		
25-30	1290	44.15	0	100	1290	43.36		
30-35	1148	61.19	0	100	1148	60.63		
35-40	783	72.8	0	100	783	72.42		
40-45	810	84.82	0	100	810	84.6		
45-50	493	92.14	0	100	493	92.02		
50-60	463	99.01	0	100	463	98.99		
60-70	60	99.9	0	100	60	99.89		
70-80	5	99.97	0	100	5	99.97		
80-90	2	100	0	100	2	100		
Total	6740	100%	78	1.57%	6645	98.59%	17	0. 25%

Table B-8. Junction Analysis All Main Scheme vs. All Crosslines, H11613

Depth Difference Range (cm)	All		Positive		Negative		Zero	
	Count	Percent	Count	Percent	Count	Percent	Count	Percent
0-5	36815	23.9	15692	25.09	16959	19.42	4164	
5-10	35984	47.26	15975	50.63	20009	42.34		
10-15	31949	68.01	13299	71.89	18650	63.7		
15-20	14443	77.38	5682	80.98	8761	73.73		
20-25	12450	85.47	4638	88.39	7812	82.68		
25-30	9498	91.63	3196	93.5	6302	89.9		
30-35	5163	94.99	1613	96.08	3550	93.96		
35-40	2832	96.82	847	97.43	1985	96.24		
40-45	2389	98.37	768	98.66	1621	98.09		
45-50	1340	99.24	449	99.38	891	99.11		
50-60	994	99.89	311	99.88	683	99.89		
60-70	137	99.98	56	99.97	81	99.99		
70-80	19	99.99	13	99.99	6	99.99		
80-90	8	100	4	99.99	4	100		
90-100	2	100	1	100	1	100		
100-110	1	100	1	100	0	100		
120-130	1	100	1	100	0	100		
130-140	0	100	0	100	0	100		
Total	154026	100%	62547	40.61%	87315	56.69%	4164	2.70%

Details of beam-by-beam comparison of 25 selected crossings for the interferometric data are presented in the Separates to this report. The crossings for detailed comparisons were randomly selected for spatial and temporal distribution over the entire survey area.

The junctions with H11612, H11614 and H11615 will be discussed with those surveys.

On days when the vessel was heading into steep seas, residual heave and pitch artifacts are seen in the CUBE Depth surface. These artifacts appear as a cross track ripple with a magnitude of approximately 10 cm. Analysis of crossings in these areas, as well as the final depth uncertainties, verify that the data meet the specified accuracies.

The **GS+** interferometric system provided both bathymetry as well as side-scan imagery data. The system was operated at a 25-meter range scale for 100% side-scan bottom coverage. Vessel speed was controlled so that there were more than three pings per meter along track for object detection. The bathymetry was used to determine least depths on identified objects. While the full swath data provided full bottom coverage, there were areas where the full swath was not used in the final BAG grids as a result of the total propagated error on the outer swath exceeding IHO Order 1 maximum allowed errors. This occurred for data collected from JD 124 15:25:05 UTC (04 May 2007) through JD 132 (12 May 2007) when the Velport SSV was not functioning and the Seabird CTD data were used for surface sound velocity.

The Klein 3000 side-scan sonar was operated using a 25-meter range scale to achieve 100% bottom coverage. Vessel speed was controlled so that there were more than three pings per meter along track for object detection. The Odom singlebeam was used for bathymetry in a fixed line spacing mode.

Multibeam Coverage Analysis

The Lake Borgne debris mapping survey operations were conducted at a line spacing to achieve 100% side-scan sonar coverage. Bathymetry coverage was comprised of a combination of singlebeam and interferometric multibeam. Coverage was resulting from the line spacing needed to achieve 100% side-scan coverage. The three 1-meter node BAGs (H11613_1_of_3.bag, H11613_2_of_3.bag, and H11613_3_of_3.bag) made from the separate 1-meter node **PFM CUBED Surfaces** were used for the demonstration of coverage. The **SABER Gapchecker** routine flagged nodes exceeding the allowable gap limit. In addition the entire surface was visually scanned for holidays. Additional survey lines were run to fill any detected holidays. There were no remaining holidays identified.

Survey Systems Error Model

The Total Propagated Error (TPE) model that SAIC has adopted had its genesis at the Naval Oceanographic Office (NAVOCEANO), and is based on years of work by Rob Hare and others. The fidelity of any error model is coupled to the applicability of the equations that are used to estimate each of the components that contribute to the overall

error that is inherent in each sounding. SAIC's approach to quantifying the TPE is to decompose the cumulative errors into individual components and then further decompose those into a horizontal and vertical component. The model then combines the horizontal and vertical error components to yield an estimate of the system error as a whole. This cumulative system error is the TPE. By using this approach, SAIC can more easily incorporate future error information provided by sensor manufacturers into the model. This also allows SAIC to continuously improve the fidelity of the model as our understanding of the sensors increases or as more sophisticated sensors are added to a system.

The data needed to drive the error model are captured as parameters taken from the Error Parameters File (EPF), which is an ASCII text file typically created during survey system installation and integration. The parameters are also obtained from values recorded in the GSF file(s) during data collection and processing. While the input units vary, all error values that contribute to the cumulative TPE estimate are converted to meters by **SABER's errors** program or have units of meters from the beginning. The cumulative TPE estimates are separated into a horizontal and vertical component, and are recorded as the Horizontal Error and Vertical Error records for each beam in the GSF file. These error values are at the two sigma or 95% confidence level. The intent is to use these error estimates to gauge the accuracy of each sounding's coordinates and depth.

As part of the Lake Borgne surveys, SAIC developed an error model for the GeoAcoustics GeoSwath 250kHz interferometric sonar with guidance coming from the sonar manufacturer. This error model included an angle uncertainty of 0.02 degrees and a range uncertainty of 0.04 meters for each sounding. This model also included a footprint correction to the sonar related components that contribute to the Total Propagated Error. The resulting error values produced from this model, match both the magnitude and the shape of the error curve over the entire swath that was apparent in the real survey data as determined by SAIC's Accutest procedures. For more information see the Data Acquisition and Processing Report (SAIC Doc 07-TR-005).

Table B-9 and Table B-10 show the values entered in the EPF used for the **GS+** data. The only value that varied was the Surface Sound Speed Error (SSSV_measurement_error). When the 25-mm Velport SSV sensor was in use, a SSSV_measurement_error of 0.20 meters was used for the TPE calculation. When no SSV sensor was in use and values from the Seabird CTD were used a SSSV_measurement_error of 5.0 meters was used for the TPE calculation. When the 50-mm Velport SSV sensor was in use, a SSSV_measurement_error of 0.12 meters was used for the TPE calculation. All parameter uncertainties in this file are entered at the one sigma level of confidence, but the outputs from **SABER's errors** program are at the two sigma or 95% confidence level. Sign conventions are: X = positive forward, Y = positive starboard, Z = positive down.

Table B-9. 2007 *F/V Lacey Marie* Error Parameters

Parameter	Value	Units
static_draft	1.20	Meters
draft_error (uncertainty)	0.02	Meters
squat_error (uncertainty)	0.02	Meters
fixed_heave_error_component (uncertainty)	0.05	Meters
perc_swellheave_err_component (uncertainty)	5.00	Percent
roll_measurement_error (uncertainty)	0.02	Degrees
pitch_measurement_error (uncertainty)	0.02	Degrees
heading_measurement_error (uncertainty)	0.02	Degrees
speed_measurement_error (uncertainty)	0.056583999999999995	meters/second (m/s)
SSSV_measurement_error (uncertainty)	0.20, 0.12 or 5.00*	meters/second (m/s)
predicted_tide_measurement_error (uncertainty)	0.18	Meters
observed_tide_measurement_error (uncertainty)	0.12	Meters
tide_zone_error (uncertainty)	0.10	Meters
positioning_device_x_offset	-9.914	Meters
positioning_device_xoffset_err (uncertainty)	0.02	Meters
positioning_device_y_offset	-1.00	Meters
positioning_device_yoffset_err (uncertainty)	0.02	Meters
positioning_device_z_offset	-4.842	Meters
positioning_device_zoffset_err (uncertainty)	0.02	Meters
VRU_device_x_offset	-0.17	Meters
VRU_device_x_offset_error (uncertainty)	0.005	Meters
VRU_device_y_offset	0.09	Meters
VRU_device_y_offset_error (uncertainty)	0.005	Meters
VRU_device_z_offset	0.33	Meters
VRU_device_z_offset_error (uncertainty)	0.005	Meters
gps_latency	0.00	milliseconds (msec)
vru_latency	0.00	milliseconds (msec)
gps_latency_error (uncertainty)	1.00	milliseconds (msec)
vru_latency_error (uncertainty)	1.00	milliseconds (msec)
horizontal_navigation_error (uncertainty)	0.75	Meters
svp_measurement_error (uncertainty)	0.75	meters/second (m/s)

*** See explanation regarding SSSV_measurement_error in previous paragraph.**

Table B-10. Table B-10. SONAR Parameters GeoSwath Plus

Parameter	Value	Units
transducer_device_x_offset	0.00	Meters
transducer_device_xoffset_error (uncertainty)	0.02	Meters
transducer_device_y_offset	0.00	Meters
transducer_device_yoffset_error (uncertainty)	0.02	Meters
transducer_device_z_offset	0.00	Meters
transducer_device_zoffset_error (uncertainty)	0.02	Meters
roll_offset_error (uncertainty)	0.05	Degrees
pitch_offset_error (uncertainty)	0.05	Degrees

Parameter	Value	Units
heading_offset_error (uncertainty)	0.05	Degrees
sounder_latency	0.00	milliseconds (msec)
sounder_latency_error (uncertainty)	1.00	milliseconds (msec)
model_tuning Factor	-10	Unitless
amplitude_phase_transition	1	Unitless
sounder_installation_angle	60	Degrees
sounder_fore_aft_beamwidth	1.00	Degrees
sounder_athwartship_beamwidth	0.02	Degrees
range_sampling_res	0.017	Meters
pulse_length	0.064	Meters

B.3 Corrections to Echo Soundings

Please refer to the Data Acquisition and Processing Report, SAIC Doc 07-TR-005 for a description of all corrections applied to echo soundings. There were no deviations from the corrections described therein. GeoAcoustics interferometric GSF format data is fully compatible with Caris 6.1 with hot fix 6. ***Concur.***

B.4 Data Processing

The survey area of H11613 was broken into three separate BAG files because of the large volume of interferometric data. The areas were a southern (H11613_1_of_3.bag), a northwestern (H11613_2_of_3.bag), and a northeastern (H11613_3_of_3.bag). All three BAG files were made with a 1-meter node resolution. While the depths for this sheet were less than 15 meters which would indicate the need for 0.5-meter node resolution, the consistently flat bottom merits a larger node spacing. SAIC discussed this approach with the Atlantic Hydrographic Branch. The 1-meter BAG files serve for both the delivered bathymetric model and the demonstration of coverage for this survey. ***Concur.***

Throughout the survey effort side-scan data were reviewed and preliminary contacts identified. On a weekly basis newly identified preliminary side-scan contacts were uploaded to a NOAA share point web site. The upload of preliminary contacts allowed NOAA to assess progress and review contact densities and size to prioritize debris removal efforts. After final analysis of all available data, a final set of contacts were established for delivery. The list of preliminary contacts delivered via the share point web site was compared to the finalized side-scan contact list. Of the 91 preliminary contacts, 23 were disproved with additional data collected during item investigations and 3 more were removed after further data review. Nine additional contacts were created that were not part of the preliminary weekly deliveries.

C. HORIZONTAL AND VERTICAL CONTROL

A subordinate tide station (8761529 Martello Castle, LA) was installed by John Oswald and Associates and Lowe Engineers, under sub-contract to SAIC. Analysis of water levels obtained from tide station 8761529 and NOAA tide station 8747437 Bay Waveland Yacht Club, MS were performed to determine final water level zoning

parameters. Zone boundaries were provided by NOAA. Tide station 8761529 was the source of verified water level heights for corrections to soundings.

The primary means for analyzing the adequacy of zoning was to conduct a zone to zone analysis. In addition, adequacy of zoning was verified by observing zone boundary crossings in the navigated swath editor, SAIC's **MultiView Editor (MVE)**, and examination of the sun illuminated coverage plots at zone boundaries. Crossline comparisons were used to analyze zoning for the influence of wind and weather. The water level zoning parameters developed based on comparisons to NOAA tide station 8747437 and zone to zone analysis are presented in Table C-1.

Table C-1. Water Level Zoning Parameters Applied on Sheet H11613

Zone	Time Corrector (minutes)	Range Ratio	Reference Station
CGM82	-2.18	1.118	8761529
CGM83	-2.06	1.105	8761529
CGM84	-1.54	1.092	8761529
CGM85	-1.35	1.079	8761529
CGM86	-1.18	1.065	8761529
CGM87	-1.06	1.052	8761529
CGM88	-0.48	1.039	8761529

The survey data for sheet H11613 were collected in horizontal datum NAD-83, using geodetic coordinates, while data display and products used the UTM Zone 16 projection. The equipment used for positioning on the *F/V Lacey Marie* and the *M/V Thomas R. Dowell* are listed in Table C-2.

Table C-2. Positioning Equipment used for Sheet H11613

	POS/MV Serial No.	Hardware Firmware	Software Firmware	GPS Receivers
F/V Lacey Marie	2575	2.9-7	03.26	Trimble BD950
M/V Thomas R. Dowell	2579	2.9-7	03.26	Trimble BD950

Differential correctors used for H11613 online data were from the U.S. Coast Guard Stations at English Turn, LA and Mobile Point, AL. The differential receiver was set to only receive data from these two corrector stations. There was one occasion where differential correctors were lost for 13 seconds while on line, however in general any loss observed in differential correctors was less than 1 second in duration. There were no positional issues noted for times where the differential correctors were lost. This is consistent with what is expected from a POS/MV inertial system which has the ability to maintain accurate positions for several minutes after loss of differential correctors.

Please refer to the Horizontal and Vertical Control Report SAIC Doc 07-TR-006 for detailed descriptions of the procedures and systems used to attain hydrographic positioning. ***Concur.***

D. RESULTS AND RECOMMENDATIONS

D.1 Chart Comparison

H11613 was compared to the largest scale Raster Chart (11371, 1/80,000 scale) and to both of the Electronic Navigational Chart's (ENC) that covered the statement of work area (US4MS10M, US4LA35M). All positions are presented in horizontal datum NAD-83.

Chart 11371, 1/80,000 scale, 38th Edition 09/01/2007 corrected by NTM through 10/20/2007
ENC US4MS10M, 1/80,000, 4th Edition Issued 05/09/2007 Update 09/21/2007, area common to chart 11371
ENC US4LA35M, 1/80,000, 4th Edition Issued 05/25/2007 Update 10/25/2007, area common to chart 11364

The chart comparisons were conducted by using SAIC's **SABER** software to view the largest scale BSB Raster chart with overlain layers of H11613 data such as the CUBE gridded surface, selected soundings, and features. For comparisons between the two 80,000 scale ENC's to the results of this survey, the HydroService's **dKart Inspector** was used in conjunction with **SABER**. Results from the comparisons are described below. Recommend reconstruction of the common areas of all charts using data from this survey.

AWOIS Item Investigations

There were no AWOIS investigations assigned for H11613. However all charted wrecks, rocks and obstructions were to be verified during main-scheme survey operations and a 2nd 100% side-scan coverage for a radius of 100 meters around the charted position was required to verify or disprove the item.

The Statement of Work states that the 50 most significant items for the survey be investigated (SAIC assumed 50 per sheet). The fewer than expected significant items identified during survey operations led to somewhat less than 50 items per sheet. Therefore on H11613, only 14 items were deemed significant and investigated. This methodology was discussed with the COTR prior to item investigations being performed. See Appendix V Supplemental Survey Records and Correspondence for more information.

Chart 11371, 1/80,000 scale

There were three charted obstructions that were identified for additional side-scan coverage.

Charted dolphins in 30° 03’ 06.85”N 089° 36’ 19.38”W were not found during this survey. Recommend removing the charted dolphin symbol and label Dols. ***Concur.***

Charted dangerous wreck in 30° 03’ 02.51”N 089° 35’ 59.88”W was not found during this survey. Recommend removing the charted wreck symbol, danger circle, blue tint and label PA. ***Concur.***

Charted dangerous wreck in 30° 00’ 06.98”N 089° 33’ 38.24”W was not found during this survey. Recommend removing the charted wreck symbol danger circle, blue tint and label ED. ***Do not concur. Wreck sized object in position 30° 00’ 00.89”N 089° 33’ 33.41”W apparent in SS mosaic.***

There were additional obstructions charted very close to the charted shoreline where we did not anticipate being able to cover during this survey effort. We were able to obtain either 100%, partial 200% or full 200% side-scan coverage over 3 additional charted obstructions however, the additional coverage is not in the items imagery mosaic.

Charted pipe in 30° 02’ 14.57”N 089° 29’ 51.80”W was covered partially with 200% side-scan coverage and was not found during this survey. Recommend removing the charted pipe symbol and label Pipe. ***Concur.***

Dangerous obstruction charted in 30° 01’ 21.43”N 089° 31’ 17.88”W was covered with 200% side-scan and was not found during this survey. Recommend removal of the danger circle, blue tint and label Obstn PA. ***Concur.***

Charted pipe in 29° 59’ 57.86”N 089° 33’ 49.15”W was covered by 100% side-scan. A side-scan contact (112/21:26:07) was identified in 29° 59’ 56.75”N 089° 33’ 47.47”W (feature 23). Recommend removing pipe symbol and label Pipe in 29° 59’ 57.86”N 089° 33’ 49.15”W and charting pipe symbol and label Pipe in 29° 59’ 56.75”N 089° 33’ 47.47”W. ***Concur.***

The presence of a charted pipeline in approximately 30° 02’ 22.43”N 089° 37’ 05.62”W could not be confirmed by data from this survey. No recommended charting changes. ***Concur.***

The charted shoreline along H11613 has migrated east and north and is no longer accurate. The 4 foot depth curve is over the charted land. This is especially true along the north shore of Pointe aux Marchettes where the 4 foot depth curve extends up to 300 meters over charted land. The charted shoreline should be updated to depict an approximate shoreline landward of the current survey data. Charted depths should be updated based on the current survey data. ***Concur.***

Two yellow marker buoys in 30° 01’ 52.84”N 089° 35’ 31.16”W and 30° 02’ 07.51”N 089° 35’ 22.37”W (features 13 and 27 respectively) are not charted but are located along a charted exposed pipeline. The charted exposed pipeline was not observed as exposed however; a trench (features 14 and 15 in 29° 59’ 22.00”N 089° 37’ 01.34”W and in 30° 00’ 23.54”N 089° 36’ 24.75”W respectively) as well as the yellow marker buoys listed above verify that the pipeline is located where charted. ***Concur.***

Three dolphins which were not previously charted and were submitted as DTON #3 are now charted in 30° 01’ 48.30”N 089° 36’ 17.91”W, 30° 01’ 47.28”N 089° 36’ 15.49”W and 30° 01’ 46.20”N 089° 36’ 12.89”W (features 9, 10, and 11 respectively). ***Concur.***

The platform charted in 30° 01’ 37.96”N 089° 36’ 20.63”W was found in its charted position (feature 7) and is a satellite well for the primary platform 30° 01’ 36.73”N 089° 36’ 16.39”W (feature 8). Recommend keeping charted platform in 30° 01’ 37.96”N 089° 36’ 20.63”W and plotting additional platform symbol in 30° 01’ 36.73”N 089° 36’ 16.39”W. ***Concur.***

Navigational aid for Bayou Biloxi in 30° 00’ 26.18”N 089° 33’ 36.66”W was not present during this survey. ***Concur. Potential DtoN??***

A platform (feature 1, DTON # 1) located in 30° 00’ 43.30”N 089° 32’ 39.61”W is not currently charted. Recommend charting platform symbol in 30° 00’ 43.30”N 089° 32’ 39.61”W. ***Concur.***

A platform (feature 4, DTON # 1) located in 29° 58’ 39.93”N 089° 35’ 51.51”W is not currently charted. Recommend charting platform symbol in 29° 58’ 39.93”N 089° 35’ 51.51”W. ***Concur.***

A platform (feature 5, DTON # 2) located in 30° 00’ 03.15”N 089° 33’ 21.75”W is not currently charted. Recommend charting platform symbol in 30° 00’ 03.15”N 089° 33’ 21.75”W. ***Concur.***

A platform (feature 6, DTON # 2) located in 29° 59’ 02.68”N 089° 37’ 15.04”W is not currently charted. Recommend charting platform symbol in 29° 59’ 02.68”N 089° 37’ 15.04”W. ***Concur.***

Charted Submerged piles which were not previously charted and were submitted as DTON #2 are now charted in 29° 58’ 23.78”N 089° 34’ 13.85”W (feature 3). ***Concur.***

A platform (feature 2, DTON # 1) located in 29° 57’ 36.23”N 089° 34’ 29.92”W is not currently charted. Recommend charting platform symbol in 29° 57’ 36.23”N 089° 34’ 29.92”W. ***Concur.***

Wellhead platform and a wellhead located in 29° 58’ 06.38”N 089° 36’ 58.01”W and 29° 58’ 06.42”N 089° 36’ 58.90”W (features 12 and 28 respectively) are not currently

charted. Recommend charting platform symbol in 29° 58’ 06.38”N 089° 36’ 58.01”W. ***Concur.***

No uncharted wrecks were found in H11613. Table D-1 lists other uncharted obstructions found in H11613 that are recommended for charting in raster chart 11371 not previously discussed.

Table D-1. Uncharted Obstructions in Raster Chart 11371, 1/80,000 scale

Feature Number	Feature Position (NAD83)		Least Depth (Meters)	Uncertainty (Meters)	Charting Recommendations
	Latitude (N)	Longitude (W)			
16*	29° 56’ 44.27”	089° 35’ 05.53”	0.93	N/A	Plot sounding and label Obstr ***Concur*** ***Concur.***
18*	30° 02’ 59.82”	089° 32’ 16.69”	2.52	N/A	Plot sounding and symbol Obstr ***Concur*** ***Concur.***
19*	30° 02’ 48.54”	089° 35’ 43.26”	2.96	N/A	Plot sounding and symbol Obstr ***Concur*** ***Do not concur, LD insignificant.***
20*	30° 02’ 05.09”	089° 33’ 21.97”	2.71	N/A	Plot sounding and symbol Obstr ***Concur*** ***Do not concur, LD insignificant.***
21*	30° 02’ 57.85”	089° 31’ 25.22”	2.44	N/A	Plot sounding and symbol Obstr ***Concur*** ***Concur.***
22*	30° 02’ 59.61”	089° 31’ 45.54”	2.55	N/A	Plot sounding and symbol Obstr ***Concur*** ***Concur.***
24	29° 58’ 05.90”	089° 36’ 34.58”	2.39	0.330	Plot Pipe symbol and Label Subm Pipe ***Concur*** ***Concur.***
26	30° 00’ 02.16”	089° 36’ 40.85”	3.25	0.331	Plot sounding and symbol Obstr ***Concur*** ***Do not concur, LD insignificant.***

* Found by side-scan sonar only.

ENC US4MS10M, 1/80,000 scale

The charted shoreline along H11613 has migrated east and north and is no longer accurate. Charted depths tended to be 0.5 to 1 meter shoaler than surveyed. An example of this are surveyed depths in 30° 02’ 31.18”N 089° 30’ 26.19”W located just west of Bayou La Fee were found to be 2.8 meters as compared to charted depths of 2.1 meters. Charted depths of 1.8 meters near the shoreline in the general area of 30° 03’ 14.33”N 089° 29’ 50.23”W were surveyed as 2.8 meters. There are several places where the 1.8 meter depth curve is over the currently charted land. The charted shoreline should be updated to depict an approximate shoreline landward of the current survey data. Charted depths should be updated based on the current survey data. ***Concur.***

There were two charted obstructions that were identified for additional side-scan coverage.

Charted dolphins in 30° 03’ 06.92”N 089° 36’ 19.45”W were not found during this survey. Recommend removing the charted dolphin. ***Concur.***

Charted dangerous wreck in 30° 03’ 02.29”N 089° 36’ 00.14”W was not found during this survey. Recommend removing the charted wreck. ***Concur.***

There were additional obstructions charted very close to the charted shoreline where we did not anticipate being able to cover during this survey effort. We were able to obtain partial 200% or full 200% side-scan coverage over 2 additional charted obstructions on US4MS10M however the additional coverage is not in the items imagery mosaic.

Charted pipe in 30° 02’ 14.53”N 089° 29’ 51.92”W was covered partially with 200% side-scan coverage and was not found during this survey. Recommend removing the charted pipe. ***Concur.***

Dangerous obstruction charted in 30° 01’ 21.48”N 089° 31’ 17.84”W was covered with 200% side-scan and was not found during this survey. Recommend removal of the charted dangerous obstruction. ***Concur.***

The presence of a charted pipeline in approximately 30° 02’ 22.43”N 089° 37’ 05.62”W could not be confirmed by data from this survey. No recommended charting changes. ***Concur.***

Two yellow marker buoys in 30° 01’ 52.84”N 089° 35’ 31.16”W and 30° 02’ 07.51”N 089° 35’ 22.37”W (features 13 and 27 respectively) are not charted but are located along a charted exposed pipeline. The results of this survey did not show that the pipeline was exposed. See discussion of features 14 and 15 on ENC chart US2LA35m for more information. Recommend removal of the charted Exposed Pipeline label. ***Concur.***

Three dolphins which were not previously charted and were submitted as DTON #3 are now charted in 30° 01’ 48.30”N 089° 36’ 17.91”W, 30° 01’ 47.28”N 089° 36’ 15.49”W and 30° 01’ 46.20”N 089° 36’ 12.89”W (features 9, 10 and 11 respectively). ***Concur.***

The platform charted in 30° 01’ 38.00”N 089° 36’ 20.00”W was found in 30° 01’ 37.96”N 089° 36’ 20.63”W (feature 7) is a satellite well for the primary platform in 30° 01’ 36.73”N 089° 36’ 16.39”W (feature 8). Recommend updating charted position 30° 01’ 38.00”N 089° 36’ 20.00”W to surveyed position 30° 01’ 37.96”N 089° 36’ 20.63”W (feature 7). Recommend charting additional platform in 30° 01’ 36.73”N 089° 36’ 16.39”W (feature 8). ***Concur.***

ENC US4LA35M, 1/80,000 scale

The charted shoreline along H11613 has migrated east and north and is no longer accurate. The 1.8 meter depth curve is over the currently charted land. This is especially true between Pointe aux Marchettes and Bayou Biloxi where the 1.8 meter depth curve extends up to 300 meters over charted land. The charted shoreline should be updated to

depict an approximate shoreline landward of the current survey data. Charted depths should be updated based on the current survey data. ***Concur.***

There was one charted obstruction identified for additional side-scan coverage.

Charted dangerous wreck in 30° 00’ 06.00”N 089° 33’ 38.03”W was not found during this survey. Recommend removing the charted dangerous wreck. ***Do not concur. Wreck sized object in position 30°00’ 00.89”N 089°33’ 33.41”W apparent in SS mosaic.***

There were additional obstructions charted very close to the charted shoreline where we did not anticipate being able to cover during this survey effort. We were able to obtain 100% side-scan coverage over one additional charted obstruction on US4LA35M however, the additional coverage is not in the items imagery mosaic.

Charted pipe in 29° 59’ 57.80”N 089° 33’ 49.33”W was covered by 100% side-scan. A side-scan contact (112/21:26:07) was identified in 29° 59’ 56.75”N 089° 33’ 47.47”W (feature 23). Recommend removing pipe in 29° 59’ 57.80”N 089° 33’ 49.33”W and charting pipe in 29° 59’ 56.75”N 089° 33’ 47.47”W. ***Concur.***

The extents of a pipeline trench in 29° 59’ 22.00”N 089° 37’ 01.34”W and in 30° 00’ 23.54”N 089° 36’ 24.75”W (features 14 and 15 respectively) were found during this survey. The trench location is the same as an exposed pipeline object in the US4LA35M ENC however no exposed pipeline was identified. Recommend removal of the charted exposed pipeline polygon area centered around 29° 59’ 50.33”N 089° 36’ 44.47”W; extending approximately 680 meters in the northeast / southwest direction and 150 meters in the southeast / northwest direction. ***Concur.***

Charted navigational aid for Bayou Biloxi in 30° 00’ 25.97”N 089° 33’ 36.84”W was not present during this survey. Recommend removing charted pile beacon from this ENC. ***Concur. Potential DtoN??***

A platform (feature 1, DTON # 1) located in 30° 00’ 43.30”N 089° 32’ 39.61”W was found during this survey and is not currently charted. Recommend charting platform in 30° 00’ 43.30”N 089° 32’ 39.61”W. ***Concur.***

A platform (feature 5, DTON # 2) located in 30° 00’ 03.15”N 089° 33’ 21.75”W was found during this survey and is not currently charted. Recommend charting platform in 30° 00’ 03.15”N 089° 33’ 21.75”W. ***Concur.***

A platform (feature 6, DTON # 2) located in 29° 59’ 02.68”N 089° 37’ 15.04”W was found during this survey and is not currently charted. Recommend charting platform in 29° 59’ 02.68”N 089° 37’ 15.04”W. ***Concur.***

Submerged piles (feature 3, DTON # 2) located in 29° 58’ 23.78”N 089° 34’ 13.85”W were found during this survey and are not currently charted. Recommend charting submerged piles in 29° 58’ 23.78”N 089° 34’ 13.85”W. ***Concur.***

A platform (feature 4, DTON # 1) located in 29° 58’ 39.93”N 089° 35’ 51.51”W is ~~not~~ currently charted. Recommend charting platform in 29° 58’ 39.93”N 089° 35’ 51.51”W. ***Concur with clarification. Platform is charted in ENC USLA35M only.***

A platform (feature 2, DTON # 1) located in 29° 57’ 36.23”N 089° 34’ 29.92”W was found during this survey and is not currently charted. Recommend charting platform in 29° 57’ 36.23”N 089° 34’ 29.92”W. This feature is related to a group of satellite rigs charted in 29° 57’ 34.70”N 089° 34’ 31.20”W (EB 12-Well Protect Platform) and 29° 57’ 34.70”N 089° 34’ 29.90”W (ED 12-Heater Platform). ***Concur.***

There are two charted production platforms in 29° 58’ 05.70”N 089° 36’ 57.40”W (EB 12-17081-1 Heater Platform) and 29° 58’ 05.80”N 089° 36’ 58.80”W (EB 12-17081-1) that were found during this survey (features 12 and 28 respectively). Recommend removing the charted platforms in 29° 58’ 05.70”N 089° 36’ 57.40”W and 29° 58’ 05.80”N 089° 36’ 58.80”W and chart in the surveyed positions 29° 58’ 06.38”N 089° 36’ 58.01”W (feature 12) and 29° 58’ 06.42”N 089° 36’ 58.90”W (feature 28). ***Concur.***

Uncharted Wrecks and Obstructions

No uncharted wrecks were found in H11613. Table D-2 lists uncharted obstructions found in H11613 that are recommended for charting in ENC’s US4MS10M and US4LA35M not previously discussed.

Table D-2. Uncharted Obstructions in ENC’s US4MS10M, 1/80,000 scale and US4LA35M, 1/80,000 scale

Feature Number	ENC	Feature Position (NAD83)		Least Depth (Meters)	Uncertainty (Meters)	Charting Recommendations
		Latitude (N)	Longitude (W)			
16*	US4LA35M	29° 56’ 44.27”	089° 35’ 05.53”	0.93	N/A	Plot sounding and label Obstr ***Concur*** ***Concur.***
18*	US4MS10M	30° 02’ 59.82”	089° 32’ 16.69”	2.52	N/A	Plot sounding and symbol Obstr ***Concur*** ***Concur.***
19*	US4MS10M	30° 02’ 48.54”	089° 35’ 43.26”	2.96	N/A	Plot sounding and symbol Obstr ***Concur*** ***Do not concur, LD insignificant.***
20*	US4MS10M	30° 02’ 05.09”	089° 33’ 21.97”	2.71	N/A	Plot sounding and symbol Obstr ***Concur*** ***Do not concur, LD insignificant.***
21*	US4MS10M	30° 02’ 57.85”	089° 31’ 25.22”	2.44	N/A	Plot sounding and symbol Obstr ***Concur*** ***Concur.***
22*	US4MS10M	30° 02’ 59.61”	089° 31’ 45.54”	2.55	N/A	Plot sounding and symbol Obstr ***Concur*** ***Concur.***

Feature Number	ENC	Feature Position (NAD83)		Least Depth (Meters)	Uncertainty (Meters)	Charting Recommendations
		Latitude (N)	Longitude (W)			
24	US4LA35M	29° 58’ 05.90”	089° 36’ 34.58”	2.39	0.330	Plot Pipe symbol and Label Subm Pipe ***Concur*** ***Concur.***
26	US4LA35M	30° 00’ 02.16”	089° 36’ 40.85”	3.25	0.331	Plot sounding and symbol Obstr ***Concur*** ***Do not concur, LD insignificant.***

* Found by side-scan sonar only.

Navigational Aids

Bayou Biloxi Entrance Light charted as Fl G 4S 17ft 4M “1” in 30° 00’ 25.97”N 089° 33’ 36.84”W was the only charted navigational aid within H11613. This agreed with The USCG Light List, Volume 4, Gulfport Ship Channel, MS to Lakes Pontchartrain and Maurepas, LA. This charted navigational aid was not present during this survey of H11613. ***Concur.***

Danger to Navigation Reports

Three Danger to Navigation Reports were submitted during this survey and can be found in Appendix I. ***Concur.***

D.2 Additional Results

Comparison with prior surveys was not required under this task order. See Section D.1 for comparison to the nautical charts.

E. APPROVAL SHEET

09 November 2007

LETTER OF APPROVAL

REGISTRY NUMBER H11613

This report and the accompanying digital data for project S-J977-KR-SAIC, Lake Borgne, Louisiana are respectfully submitted.

Field operations and data processing contributing to the accomplishment of this survey, H11613, were conducted under supervision of myself and lead hydrographer Gary R. Davis with frequent personal checks of progress and adequacy. This Descriptive Report, digital data, and all accompanying records are approved, and are submitted as complete and adequate in compliance with the Statement of Work.

Reports concurrently submitted to NOAA for this project include:

Report	**Submission Date**
Data Acquisition and Processing Report, SAIC Doc 07-TR-005	09 November 2007

SCIENCE APPLICATIONS INTERNATIONAL CORPORATION

Paul L. Donaldson
Lead Hydrographer
Science Applications International Corporation
Friday, 09 November 2007

APPENDIX I. DANGER TO NAVIGATION REPORTS (AHB SUBMISSION TO MCD)

Registry Number: H11613
State: Louisiana
Locality: Lake Borgne
Sub-locality: East
Project Number: OPR-S-J977-KR-SAIC
Survey Dates: 03/27/2007 - 05/05/2007

Charts Affected

Number	Version	Date	Scale
11364	41st Ed.	12/01/2005	1:80000
11371	37th Ed.	10/01/2004	1:80000
11366	10th Ed.	05/01/2006	1:250000
1116A	71st Ed.	09/01/2006	1:458596
11340	71st Ed.	09/01/2006	1:458596
11006	32nd Ed.	08/01/2005	1:875000
411	51st Ed.	12/01/2006	1:2160000

Features

No.	Feature Type	Survey Depth	Survey Latitude	Survey Longitude	AWOIS Item
1.1	GP	[None]	029° 58' 39.928" N	89° 35' 51.506" W	---
1.2	GP	-0.31 m	029° 58' 23.775" N	89° 34' 13.854" W	---
1.3	GP	[None]	029° 59' 02.676" N	89° 37' 15.036" W	---
1.4	GP	-2.40 m	030° 01' 48.300" N	89° 36' 17.912" W	---
1.5	GP	-2.40 m	030° 01' 47.281" N	89° 36' 15.488" W	---
1.6	GP	-2.40 m	030° 01' 46.204" N	89° 36' 12.890" W	---

Generated by Pydro v7.3 (r2014_TCfix) on Mon May 21 17:15:57 2007 [UTC]

1 - DToNs

1.1) Platform

DANGER TO NAVIGATION

Survey Summary

Survey Position:	029° 58' 39.928" N, 89° 35' 51.506" W
Least Depth:	[None]
Timestamp:	2007-086.12:10:00.000 (03/27/2007)
GP Dataset:	DtoN1-3_H11613.txt
GP No.:	3
Charts Affected:	11364_1, 11371_1, 11366_1, 1116A_1, 11340_1, 11006_1, 411_1

Remarks:

A single platform was found during survey operations.There are several dolphins in close proximity (~20 meters) to the platform.The dolphin is equipped with a light. Light characteristics were not determined for the dolphin.

Feature Correlation

Address	Feature	Range	Azimuth	Status
DtoN1-3_H11613.txt	3	0.00	000.0	Primary

Hydrographer Recommendations

Chart platform at the reported location.

S-57 Data

Geo object 1:	Offshore platform (OFSPLF)
Attributes:	CATOFP - 1:oil derrick / rig
	CONVIS - 1:visual conspicuous
	NATCON - 7:metal
	SORDAT - 20070327
	SORIND - us,us,surve,H11613
	VERDAT - 12:Mean lower low water

Pydro Feature Report 1 - DToNs

Office Notes

Data submission is preliminary. No data have been submitted to nor verified by AHB. Feature will be reviewed and verified once the survey data have been submitted to AHB.

Feature Images

Figure 1.1.1

Figure 1.1.2

Pydro Feature Report 1 - DToNs

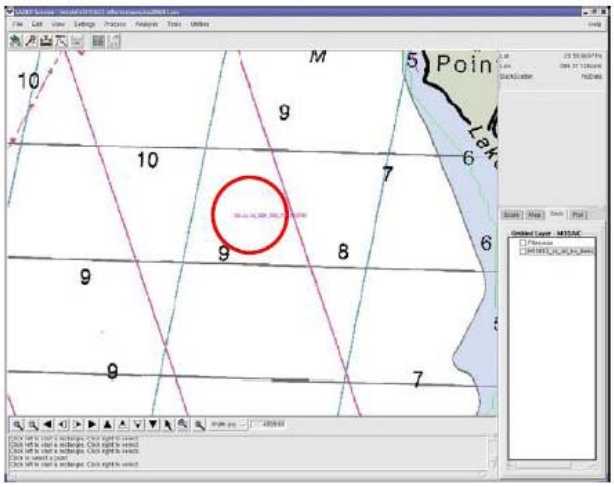

Figure 1.1.3

1.2) Pilings Awash

DANGER TO NAVIGATION

Survey Summary

Survey Position:	029° 58' 23.775" N, 89° 34' 13.854" W
Least Depth:	-0.31 m
Timestamp:	2007-113.20:38:00.000 (04/23/2007)
GP Dataset:	DtoN1-3_H11613.txt
GP No.:	5
Charts Affected:	11364_1, 11371_1, 11366_1, 1116A_1, 11340_1, 11006_1, 411_1

Remarks:

Several pilings (awash) were found during survey operations. The pilings are exposed 1 foot (.31 meters) above MLLW. The survey area currently has more water than indicating on the chart. Charted marsh delinination requires updating on the chart.

Feature Correlation

Address	Feature	Range	Azimuth	Status
DtoN1-3_H11613.txt	5	0.00	000.0	Primary

Hydrographer Recommendations

Chart as a Piles (Awash) reported at the reported location.

Cartographically-Rounded Depth (Affected Charts):

-1ft (11364_1, 11371_1)

0fm (1116A_1, 11340_1, 11006_1, 411_1)

0fm 1ft (11366_1)

S-57 Data

Geo object 1:	Obstruction (OBSTRN)
Attributes:	CATOBS - 1:snag / stump
	INFORM - exposed Piles awash (-0.3m above MLLW)
	NATCON - 6:wooden
	OBJNAM - Piles awash

QUASOU - 1,9:depth known,value reported (not confirmed)

SORDAT - 20070423

SORIND - US,US,survey, H11613

TECSOU - 2:found by side scan sonar

VALSOU - -0.31 m

VERDAT - 12:Mean lower low water

Office Notes

Data submission is preliminary. No data have been submitted to nor verified by AHB. Feature will be reviewed and verified once the survey data have been submitted to AHB.

Feature Images

Figure 1.2.1

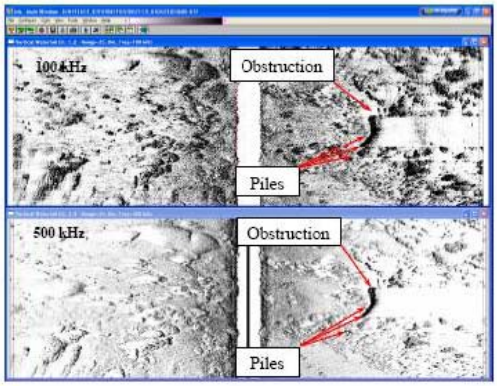

Figure 1.2.2

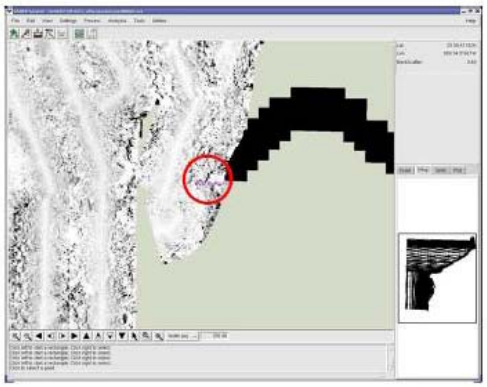

Figure 1.2.3

Pydro Feature Report 1 - DToNs

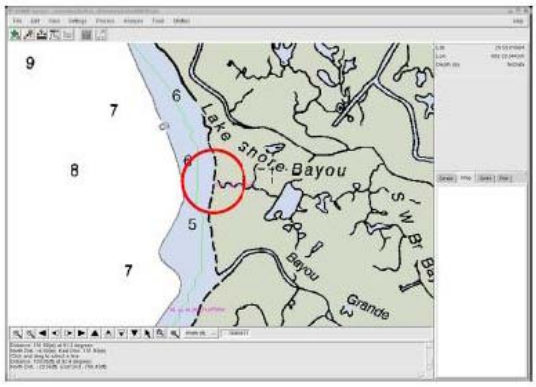

Figure 1.2.4

1.3) Platform

DANGER TO NAVIGATION

Survey Summary

Survey Position:	029° 59' 02.676" N, 89° 37' 15.036" W
Least Depth:	[None]
Timestamp:	2007-121.12:01:00.000 (05/01/2007)
GP Dataset:	DtoN1-3_H11613.txt
GP No.:	6
Charts Affected:	11364_1, 11371_1, 11366_1, 1116A_1, 11340_1, 11006_1, 411_1

Remarks:

A single uncharted platform was visually identified during survey operations.

Feature Correlation

Address	Feature	Range	Azimuth	Status
DtoN1-3_H11613.txt	6	0.00	000.0	Primary

Hydrographer Recommendations

Chart platform at the reported location.

S-57 Data

Geo object 1:	Offshore platform (OFSPLF)
Attributes:	CATOFP - 2:production platform
	CONVIS - 1:visual conspicuous
	INFORM - uncharted platform
	NATCON - 7:metal
	SORDAT - 20070501
	SORIND - us,us,surve,H11613
	VERDAT - 12:Mean lower low water

Pydro Feature Report 1 - DToNs

Office Notes

Data submission is preliminary. No data have been submitted to nor verified by AHB. Feature will be reviewed and verified once the survey data have been submitted to AHB.

Feature Images

Figure 1.3.1

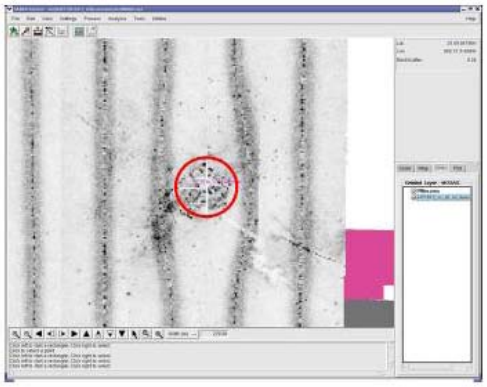

Figure 1.3.2

Pydro Feature Report 1 - DToNs

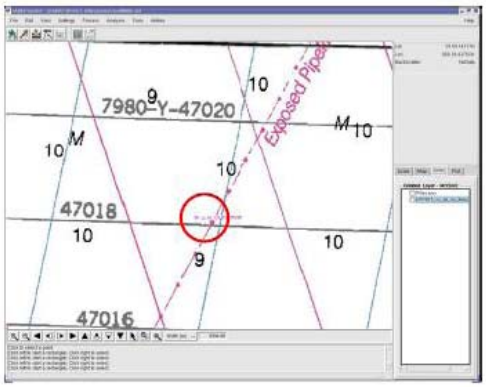

Figure 1.3.3

1.4) Dolphin

DANGER TO NAVIGATION

Survey Summary

Survey Position:	030° 01' 48.300" N, 89° 36' 17.912" W
Least Depth:	-2.40 m
Timestamp:	2007-125.13:23:00.000 (05/05/2007)
GP Dataset:	DtoN1-3_H11613.txt
GP No.:	7
Charts Affected:	11371_1, 11366_1, 1116A_1, 11340_1, 11006_1, 411_1

Remarks:

Three closely spaced dolphins were visually identified during survey operations located 300 meters north of a charted platform at 30° 01' 36.734"N 089° 36' 16.394"W.

Feature Correlation

Address	Feature	Range	Azimuth	Status
DtoN1-3_H11613.txt	7	0.00	000.0	Primary

Hydrographer Recommendations

Chart a dolphin symbol at the reported location and label "Dols".

Cartographically-Rounded Depth (Affected Charts):

-8ft (11371_1)

-1 ¼fm (1116A_1, 11340_1, 11006_1, 411_1)

-1fm 2ft (11366_1)

S-57 Data

Geo object 1:	Pile (PILPNT)
Attributes:	CATPLE - 4:tripodal
	CONVIS - 1:visual conspicuous
	HEIGHT - 2.4 m
	SORDAT - 20070505

Pydro Feature Report 1 - DToNs

SORIND - us,us,surve,H11613

Office Notes

Data submission is preliminary. No data have been submitted to nor verified by AHB. Feature will be reviewed and verified once the survey data have been submitted to AHB.

Feature Images

Figure 1.4.1

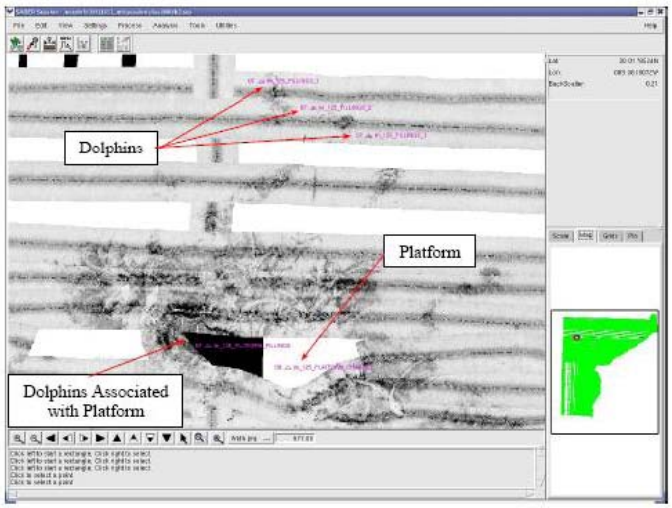

Figure 1.4.2

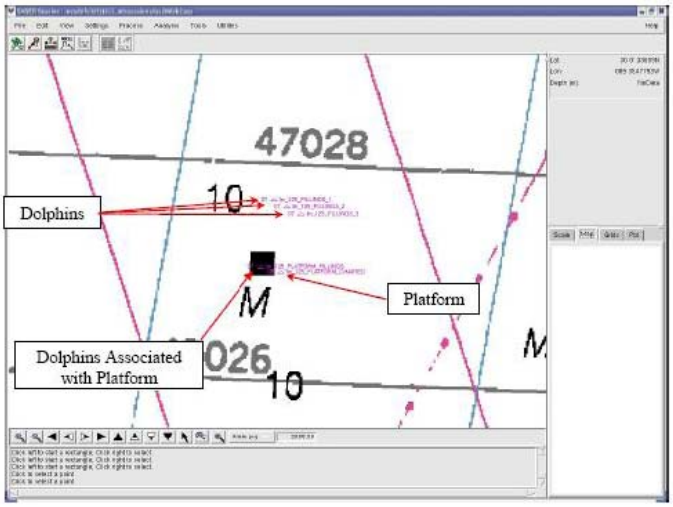
47028
10
Dolphins
M
Platform
Dolphins Associated with Platform
026
10

Figure 1.4.3

1.5) Dolphin

DANGER TO NAVIGATION

Survey Summary

Survey Position:	030° 01' 47.281" N, 89° 36' 15.488" W
Least Depth:	-2.40 m
Timestamp:	2007-125.13:23:00.000 (05/05/2007)
GP Dataset:	DtoN1-3_H11613.txt
GP No.:	8
Charts Affected:	11371_1, 11366_1, 1116A_1, 11340_1, 11006_1, 411_1

Remarks:

Three closely spaced dolphins were visually identified during survey operations located 300 meters north of a charted platform at 30° 01' 36.734"N 089° 36' 16.394"W.

Feature Correlation

Address	Feature	Range	Azimuth	Status
DtoN1-3_H11613.txt	8	0.00	000.0	Primary

Hydrographer Recommendations

Chart dolphin symbol at the reported location and label "Dols".

Cartographically-Rounded Depth (Affected Charts):

-8ft (11371_1)

-1 ¼fm (1116A_1, 11340_1, 11006_1, 411_1)

-1fm 2ft (11366_1)

S-57 Data

Geo object 1:	Pile (PILPNT)
Attributes:	CATPLE - 4:tripodal
	CONVIS - 1:visual conspicuous
	HEIGHT - 2.4 m
	SORDAT - 20070505

Pydro Feature Report 1 - DToNs

SORIND - us,us,surve,H11613

Office Notes

Data submission is preliminary. No data have been submitted to nor verified by AHB. Feature will be reviewed and verified once the survey data have been submitted to AHB.

1.6) Dolphin

DANGER TO NAVIGATION

Survey Summary

Survey Position:	030° 01' 46.204" N, 89° 36' 12.890" W
Least Depth:	-2.40 m
Timestamp:	2007-125.13:23:00.000 (05/05/2007)
GP Dataset:	DtoN1-3_H11613.txt
GP No.:	9
Charts Affected:	11371_1, 11366_1, 1116A_1, 11340_1, 11006_1, 411_1

Remarks:

Three closely spaced dolphins were visually identified during survey operations located 300 meters north of a charted platform at 30° 01' 36.734"N 089° 36' 16.394"W.

Feature Correlation

Address	Feature	Range	Azimuth	Status
DtoN1-3_H11613.txt	9	0.00	000.0	Primary

Hydrographer Recommendations

Chart a dolphin symbol at the reported location and label "Dols".

Cartographically-Rounded Depth (Affected Charts):

-8ft (11371_1)

-1 ¼fm (1116A_1, 11340_1, 11006_1, 411_1)

-1fm 2ft (11366_1)

S-57 Data

Geo object 1:	Pile (PILPNT)
Attributes:	CATPLE - 4:tripodal
	CONVIS - 1:visual conspicuous
	HEIGHT - 2.4 m
	SORDAT - 20070505

Pydro Feature Report 1 - DToNs

SORIND - us,us,surve,H11613

Office Notes

Data submission is preliminary. No data have been submitted to nor verified by AHB. Feature will be reviewed and verified once the survey data have been submitted to AHB.

APPENDIX II. SURVEY FEATURE REPORT

This survey feature report consists of 31 files, including:

- One excel spreadsheet and one corresponding PDF file, titled *H11613_Bathymetry_Feature_List.xls*, describing all bathymetry features that can be observed in the S-57 feature file,
- One excel spreadsheet and one corresponding PDF file, titled *H11613_Side_Scan_Contact_List.xls*, describing all side scan contacts identified on H11613.
- Twenty-nine PDF files containing feature correlator sheets, listed below:
    - H11613_F01.pdf
    - H11613_F02.pdf
    - H11613_F03.pdf
    - H11613_F04.pdf
    - H11613_F05.pdf
    - H11613_F06.pdf
    - H11613_F07.pdf
    - H11613_F08.pdf
    - H11613_F09.pdf
    - H11613_F10.pdf
    - H11613_F11.pdf
    - H11613_F12.pdf
    - H11613_F13.pdf
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    - H11613_F20.pdf
    - H11613_F21.pdf
    - H11613_F22.pdf
    - H11613_F23.pdf
    - H11613_F24.pdf
    - H11613_F25.pdf
    - H11613_F26.pdf
    - H11613_F27.pdf
    - H11613_F28.pdf
    - H11613_F29.pdf

FEATURE CORRELATOR SHEET Job: H11613

Feature #: 0029 Least Depth: 7(ft), 2.16(m) Lat: 30 01 34.68N Lon: 089 36 19.16W Ping: 12299 Beam: 543

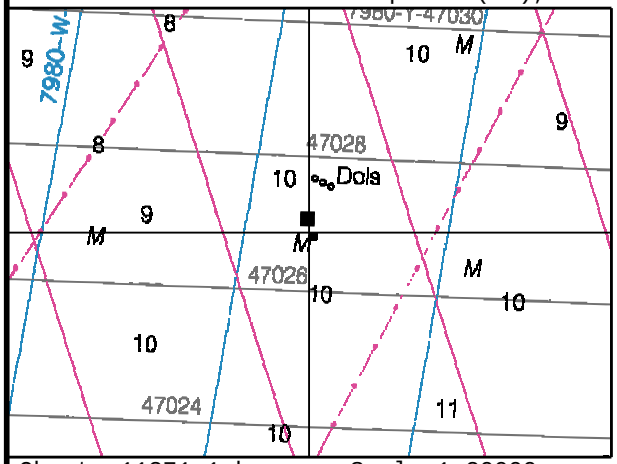


Chart: 11371_1.kap Scale 1:20000

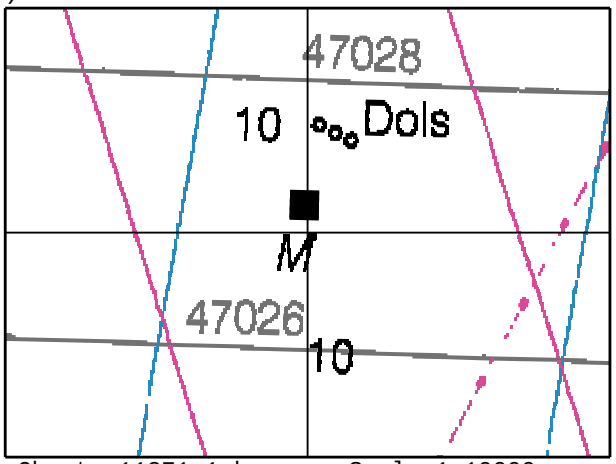
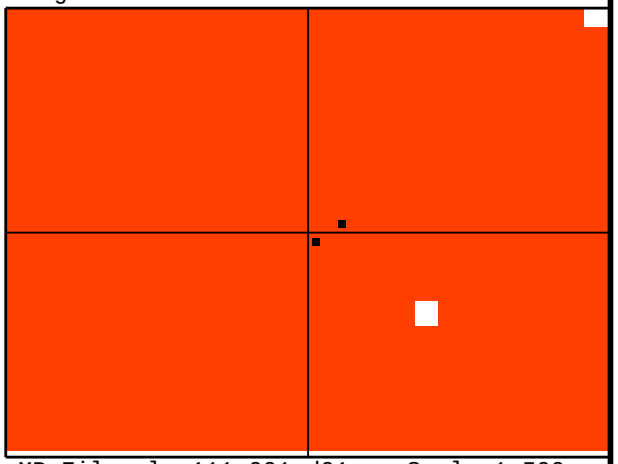
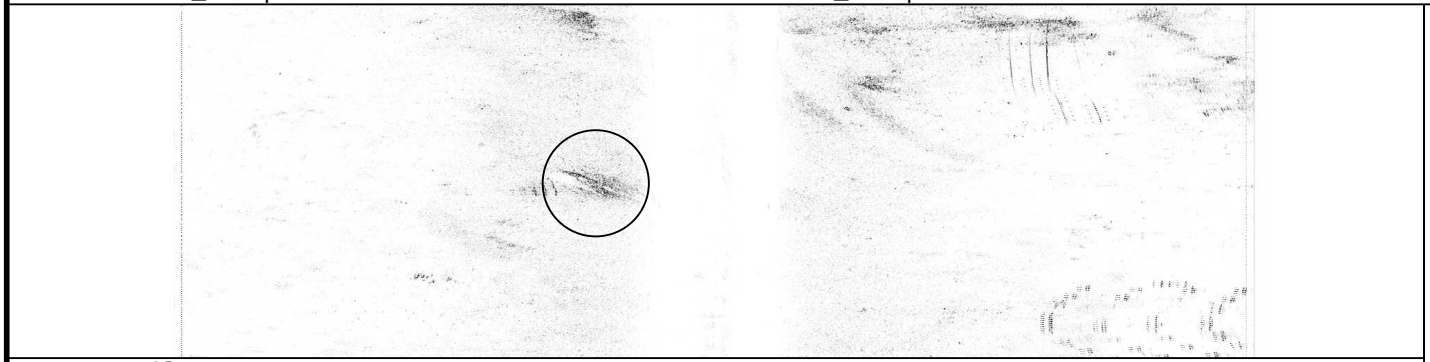


Chart: 11371_1.kap Scale 1:10000

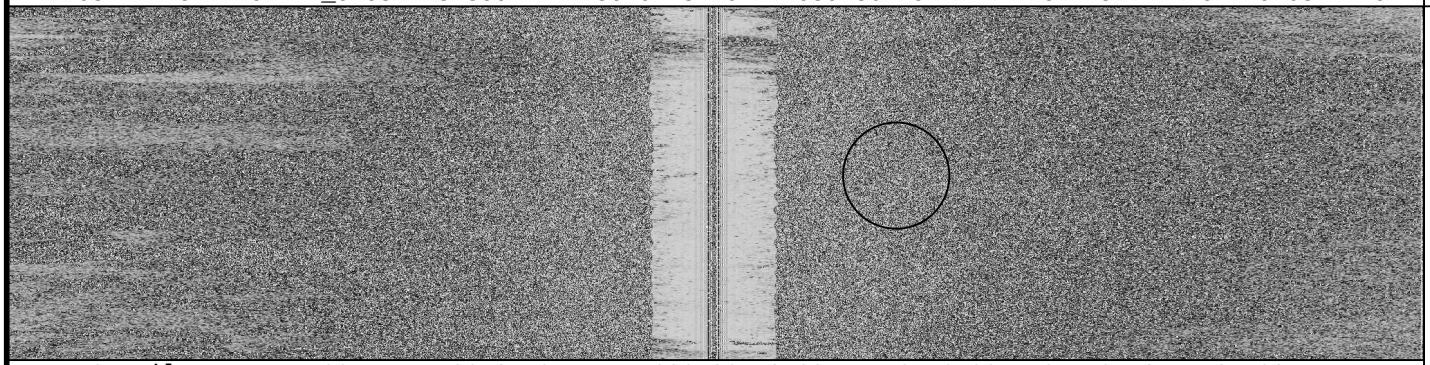


MB File: lm_111_001.d01 Scale 1:500



ID: 63 File: TD07147_070527132300.XTF 30 01 34.64N 089 36 19.12W RNG: -5.41 HGT: 0.63 HDG: 280

COMMENT:
OBSTR No Plot See Features 7 and 8



ID: 13 File: LM_111_001.XTF 30 01 34.77N 089 36 18.93W RNG: 6.39 HGT: 0.70 HDG: 084

CORRELATED SS CONTACTS:

Contact	Range/Height
147132359	-5.41/0.63
111121620	6.39/0.70

FEATURE CORRELATOR SHEET Job: H11613

Feature #: 0028 Least Depth: Lat: 29 58 06.42N Lon: 089 36 58.90W Ping: Beam:

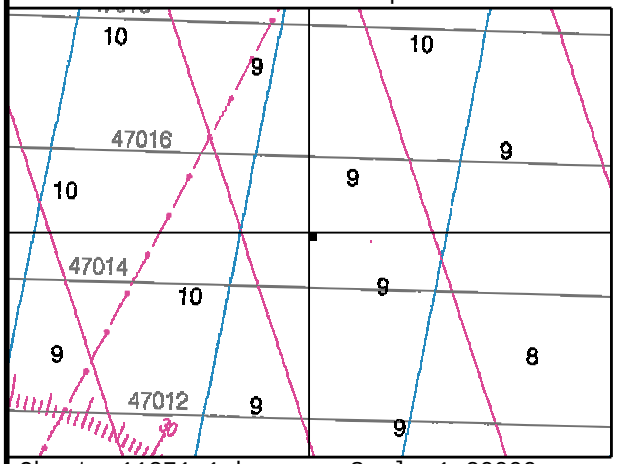


Chart: 11371_1.kap Scale 1:20000

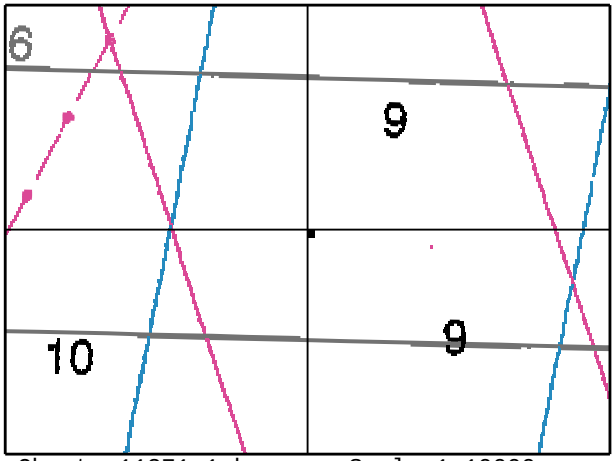
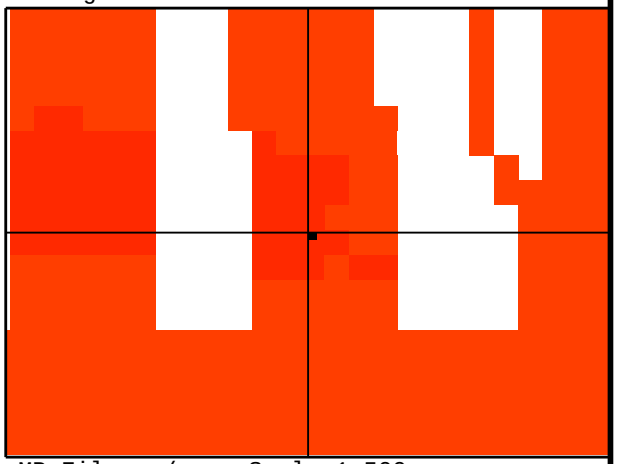
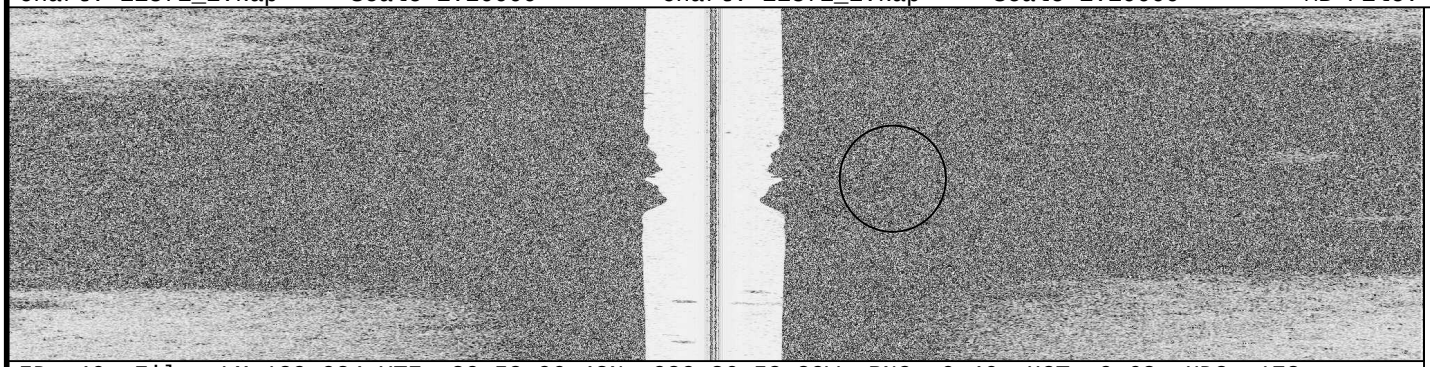


Chart: 11371_1.kap Scale 1:10000



MB File: n/a Scale 1:500



ID: 46 File: LM_129_024.XTF 29 58 06.42N 089 36 58.89W RNG: 6.46 HGT: 0.68 HDG: 173

COMMENT:
Wellhead No Plot See Feature 12

CORRELATED SS CONTACTS:

Contact	Range/Height
129195124	6.46/0.68

FEATURE CORRELATOR SHEET Job: H11613

Feature #: 0027 Least Depth: Lat: 30 02 07.51N Lon: 089 35 22.37W Ping: Beam:

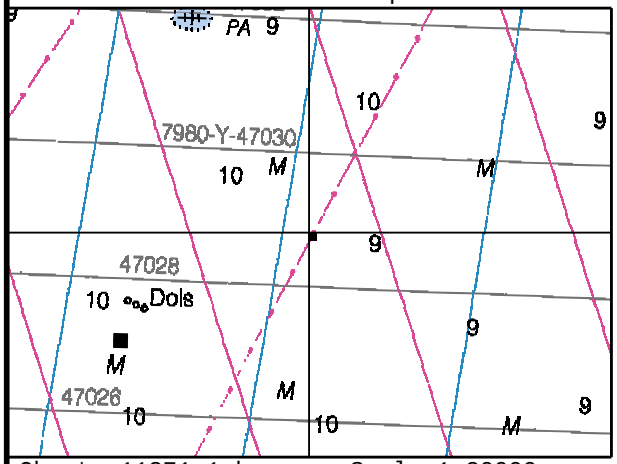


Chart: 11371_1.kap Scale 1:20000

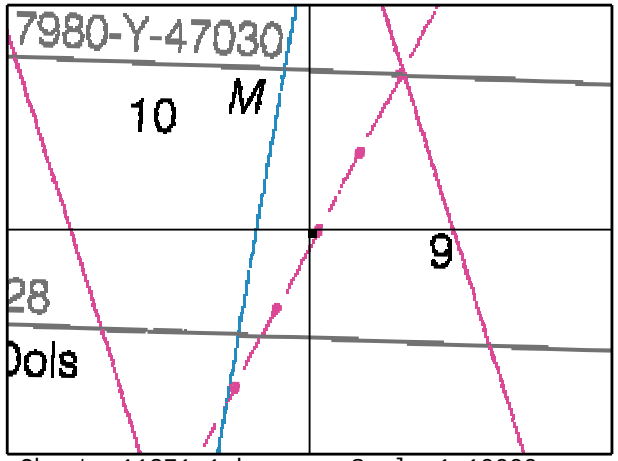
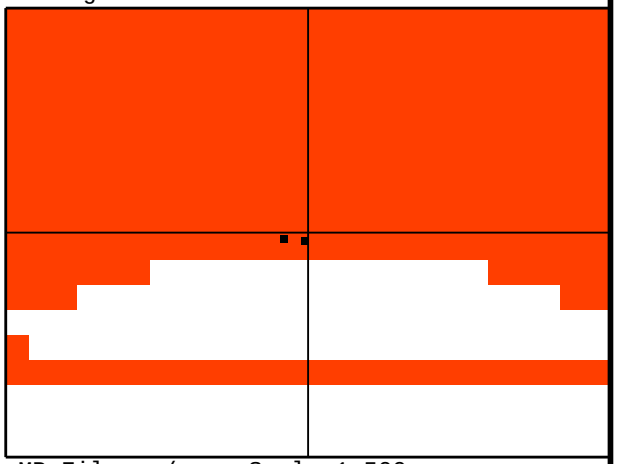
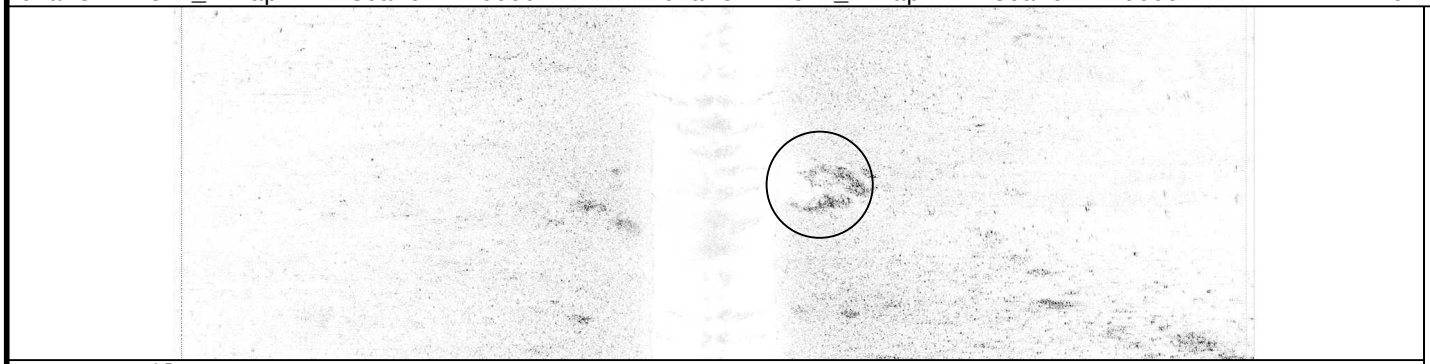


Chart: 11371_1.kap Scale 1:10000

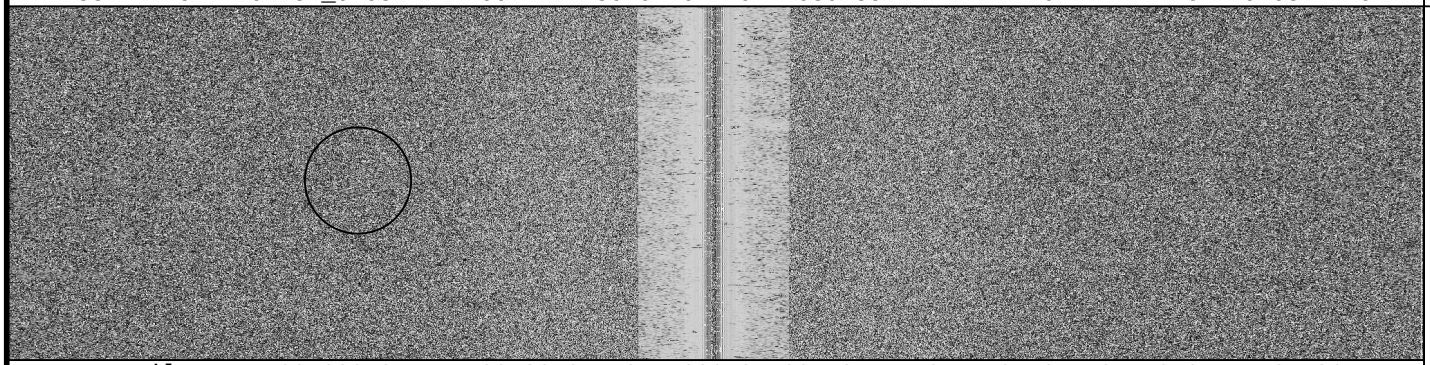


MB File: n/a Scale 1:500



ID: 53 File: TD07131_070511212700.XTF 30 02 07.49N 089 35 22.42W RNG: 4.72 HGT: 0.03 HDG: 276

COMMENT:
BUOY Private Marker Plot Buoy symbol and Label Priv Y



ID: 44 File: LM_128_020_3.XTF 30 02 07.49N 089 35 22.58W RNG: -12.70 HGT: 0.04 HDG: 265

CORRELATED SS CONTACTS:

Contact	Range/Height
131212923	4.72/0.03
128210806	-12.70/0.04

FEATURE CORRELATOR SHEET Job: H11613

Feature #: 0026 Least Depth: 10(ft), 3.25(m) Lat: 30 00 02.16N Lon: 089 36 40.85W Ping: 9811 Beam: 717

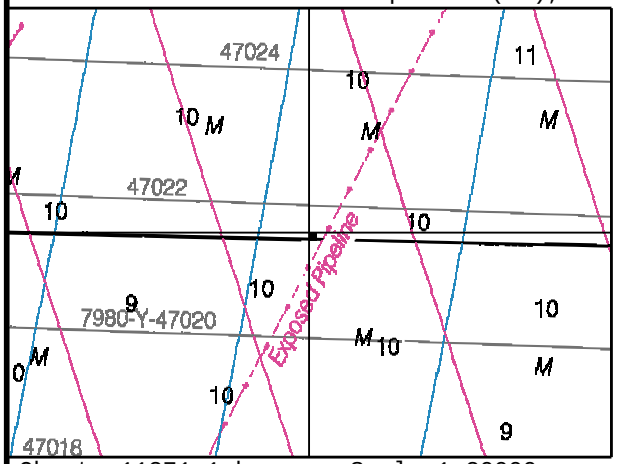


Chart: 11371_1.kap Scale 1:20000

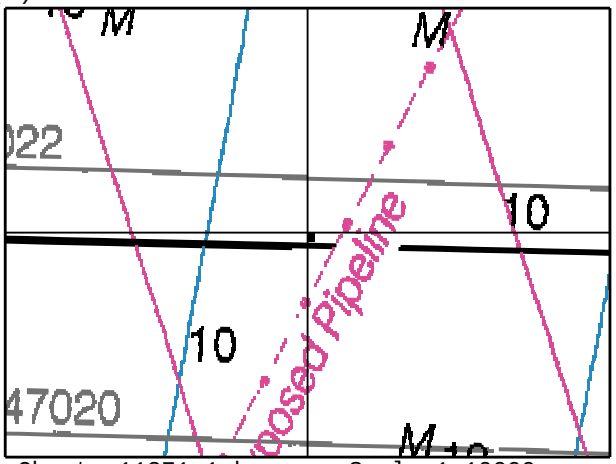
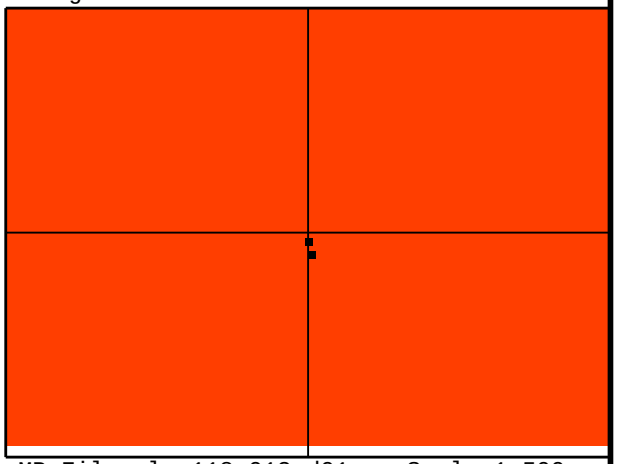
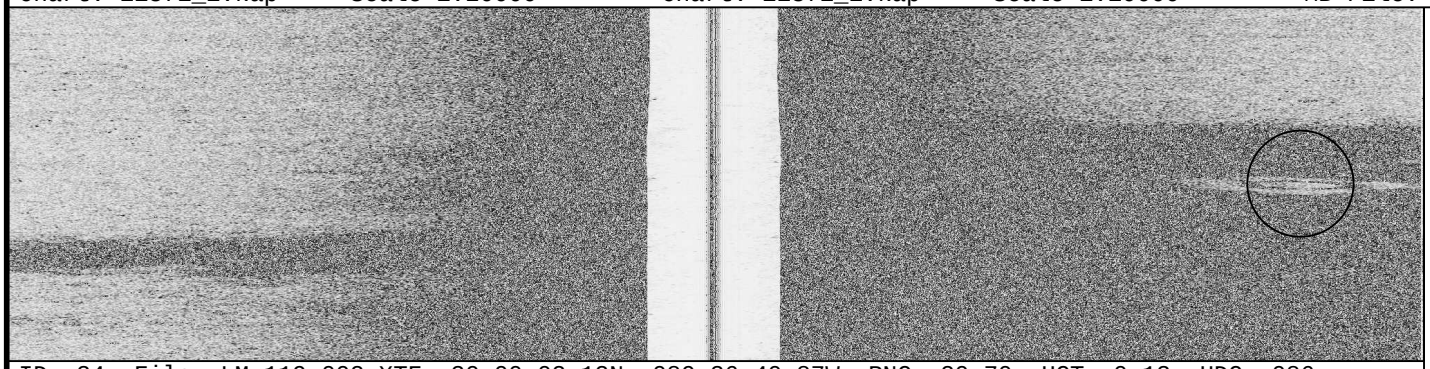


Chart: 11371_1.kap Scale 1:10000

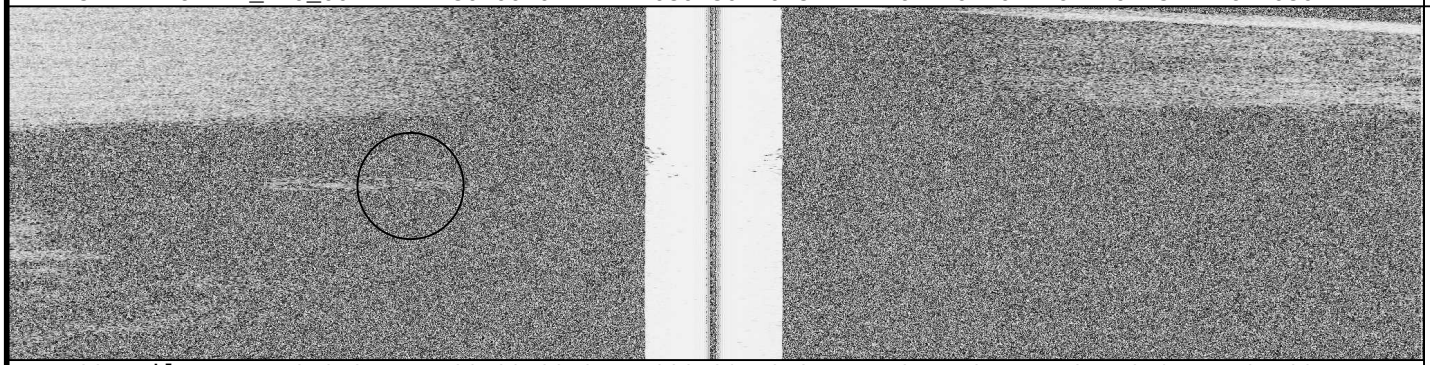


MB File: lm_118_013.d01 Scale 1:500



ID: 34 File: LM_119_002.XTF 30 00 02.12N 089 36 40.87W RNG: 20.70 HGT: 0.13 HDG: 086

COMMENT:
OBSTR Plot sounding and symbol Obstr



ID: 33 File: LM_118_013.XTF 30 00 02.04N 089 36 40.85W RNG: -10.75 HGT: 0.61 HDG: 091

CORRELATED SS CONTACTS:

Contact	Range/Height
119123938	20.70/0.13
118212521	-10.75/0.61

FEATURE CORRELATOR SHEET Job: H11613

Feature #: 0025 Least Depth: 9(ft), 2.97(m) Lat: 29 59 01.49N Lon: 089 37 12.73W Ping: 12795 Beam: 236

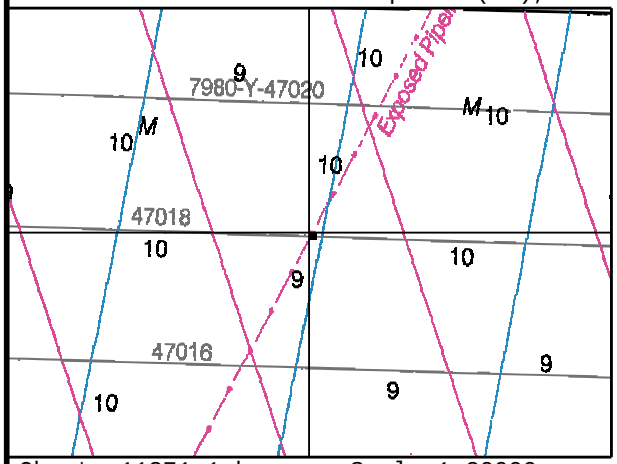


Chart: 11371_1.kap Scale 1:20000

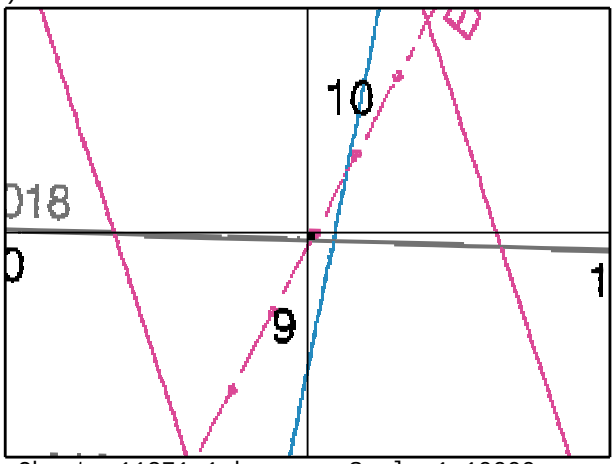
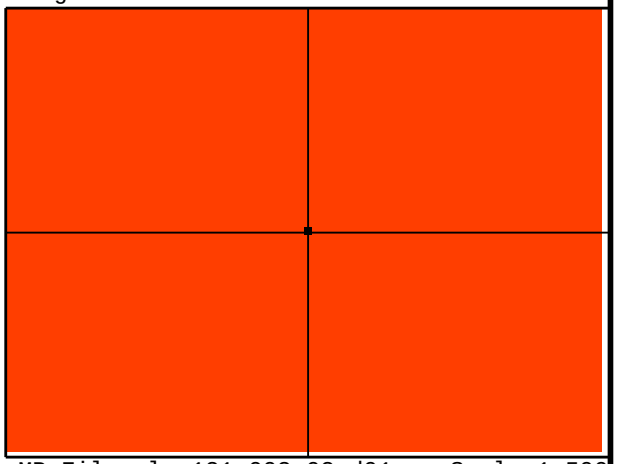
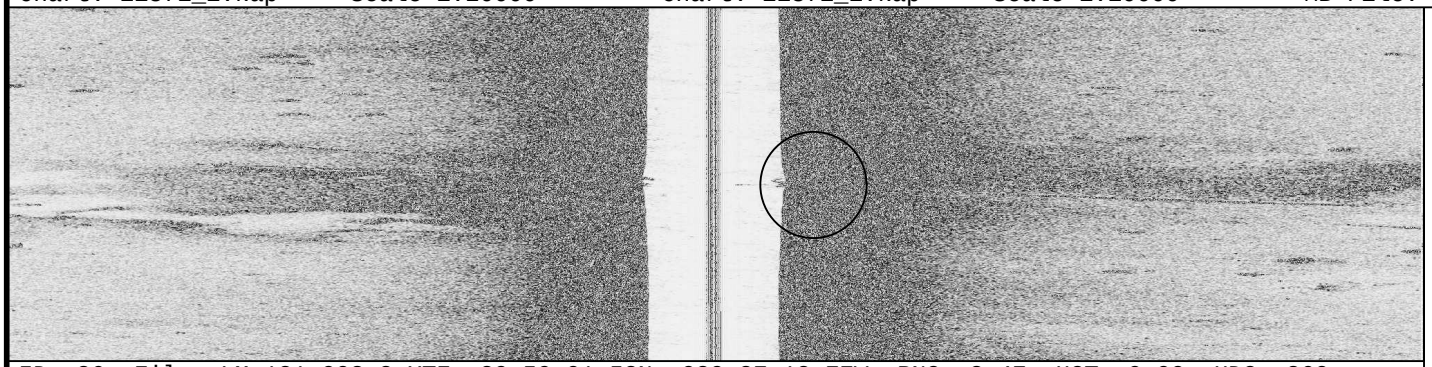


Chart: 11371_1.kap Scale 1:10000



MB File: lm_121_003_02.d01 Scale 1:500



ID: 36 File: LM_121_003_2.XTF 29 59 01.52N 089 37 12.77W RNG: 3.47 HGT: 0.00 HDG: 360

COMMENT:
OBSTR Pipe No Plot See Feature 6

CORRELATED SS CONTACTS:

Contact	Range/Height
121132144	3.47/0.00

FEATURE CORRELATOR SHEET Job: H11613

Feature #: 0024 Least Depth: 8(ft), 2.39(m) Lat: 29 58 05.90N Lon: 089 36 34.58W Ping: 1046 Beam: 776

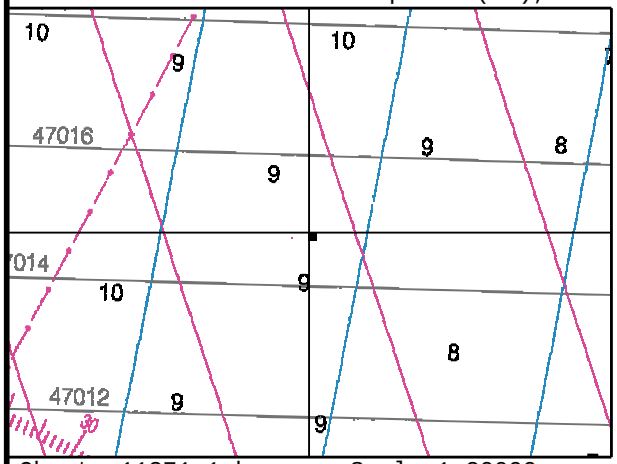


Chart: 11371_1.kap Scale 1:20000

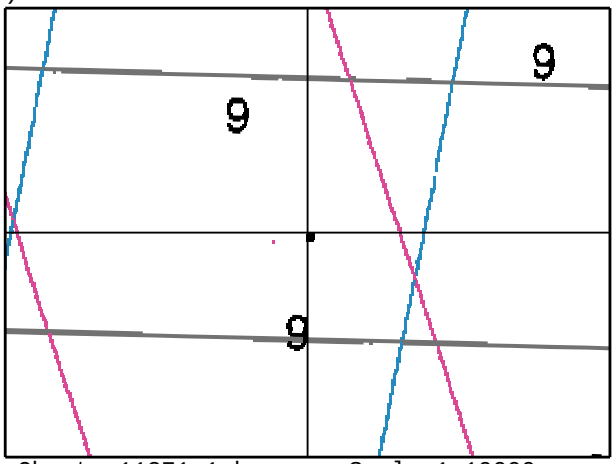
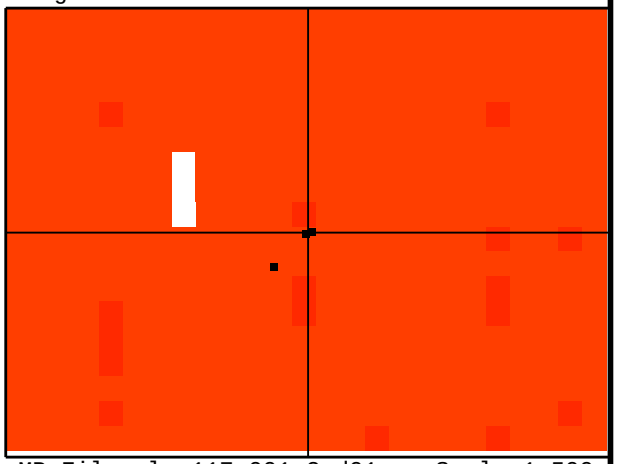
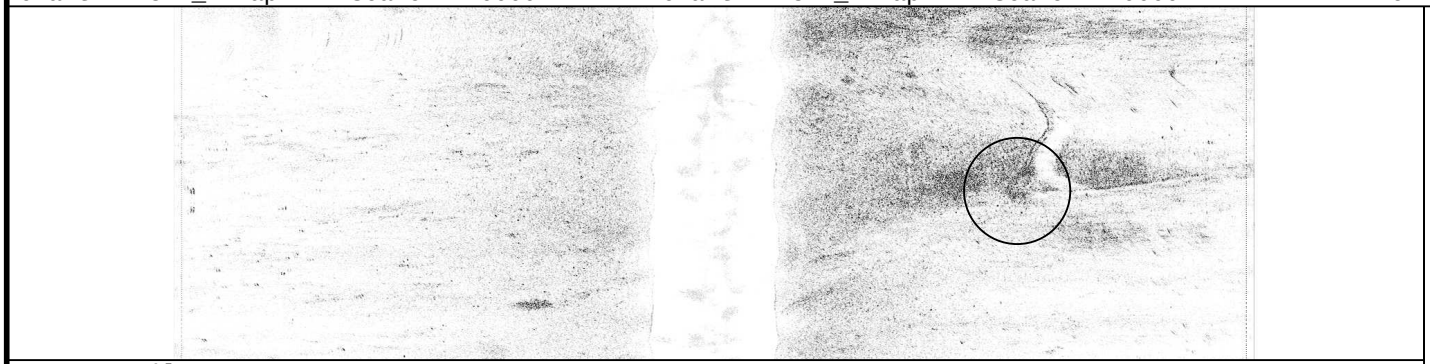


Chart: 11371_1.kap Scale 1:10000

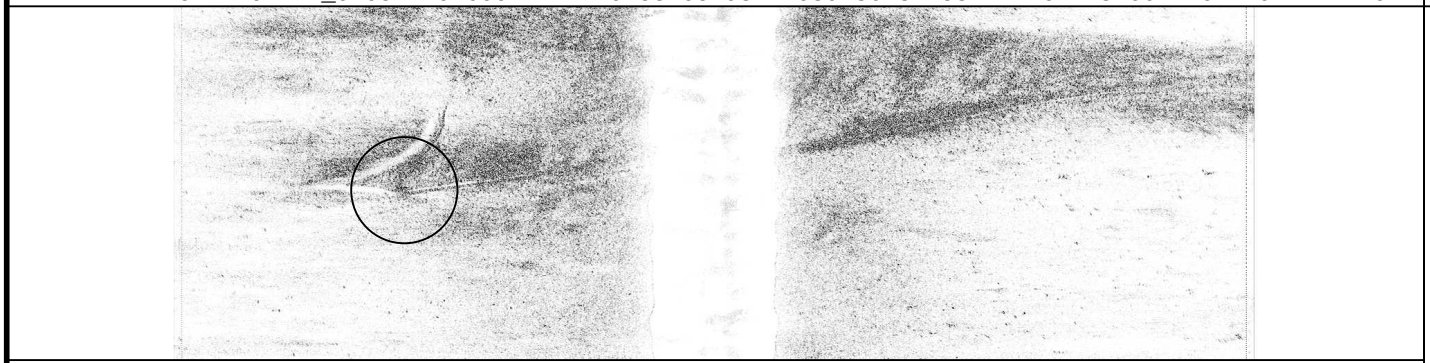


MB File: lm_117_001_2.d01 Scale 1:500



ID: 72 File: TD07147_070527204600.XTF 29 58 05.93N 089 36 34.58W RNG: 13.66 HGT: 0.47 HDG: 217

COMMENT:
OBSTR Plot Pipe symbol and Label Subm Pipe



ID: 73 File: TD07147_070527204800.XTF 29 58 05.92N 089 36 34.63W RNG: -14.06 HGT: 0.60 HDG: 216

CORRELATED SS CONTACTS:

Contact	Range/Height
147204716	13.66/0.47
147205110	-14.06/0.60
117120724	4.67/1.33

FEATURE CORRELATOR SHEET Job: H11613

Feature #: 0023 Least Depth: 6(ft), 1.97(m) Lat: 29 59 56.75N Lon: 089 33 47.47W Ping: Beam:

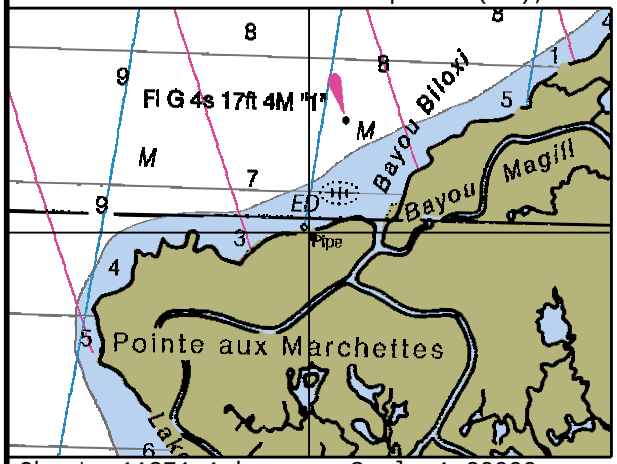


Chart: 11371_1.kap Scale 1:20000

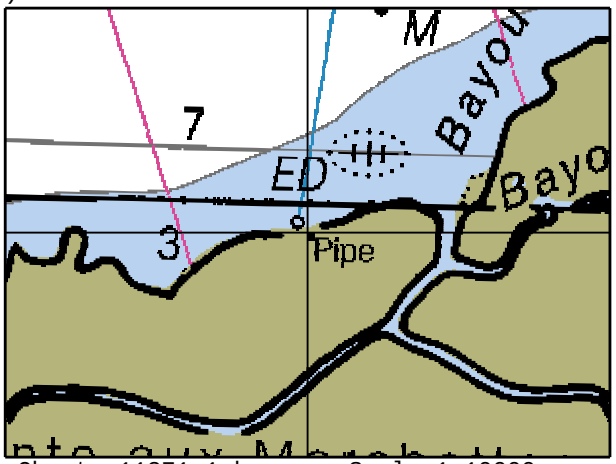
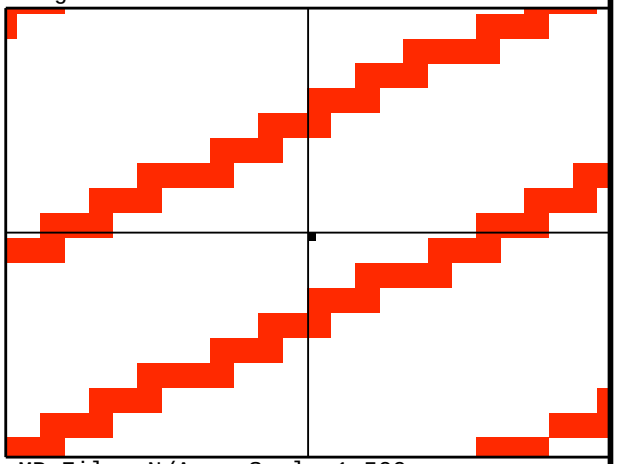
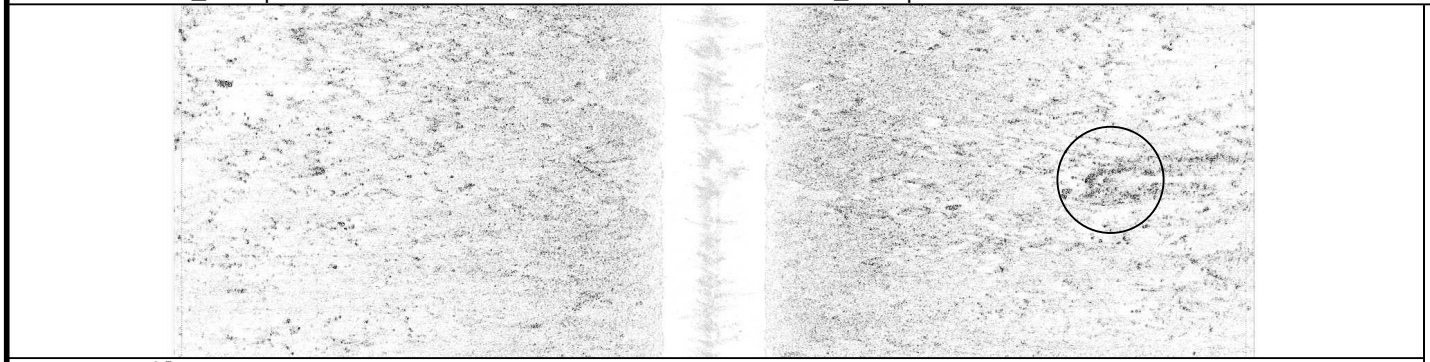


Chart: 11371_1.kap Scale 1:10000



MB File: N/A Scale 1:500



ID: 20 File: TD07112_070422212000.XTF 29 59 56.75N 089 33 47.47W RNG: 17.88 HGT: 0.52 HDG: 064

COMMENT:
OBSTR Plot Pipe symbol and Label Pipe (Sounding was estimated from side scan sonar)

CORRELATED SS CONTACTS:

Contact	Range/Height
112212606	17.88/0.52

FEATURE CORRELATOR SHEET Job: H11613

Feature #: 0022 Least Depth: 8(ft), 2.55(m) Lat: 30 02 59.61N Lon: 089 31 45.54W Ping: Beam:

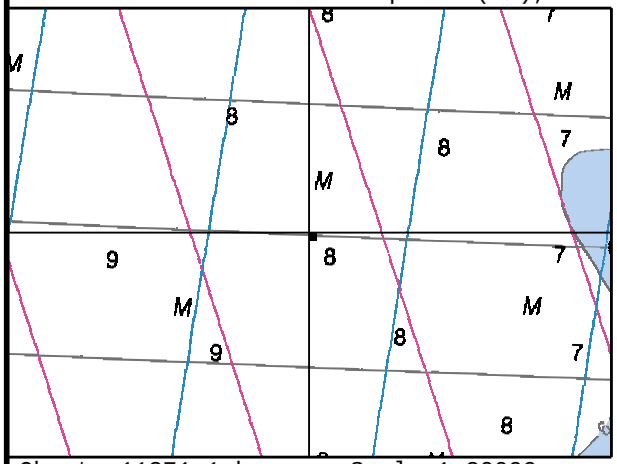


Chart: 11371_1.kap Scale 1:20000

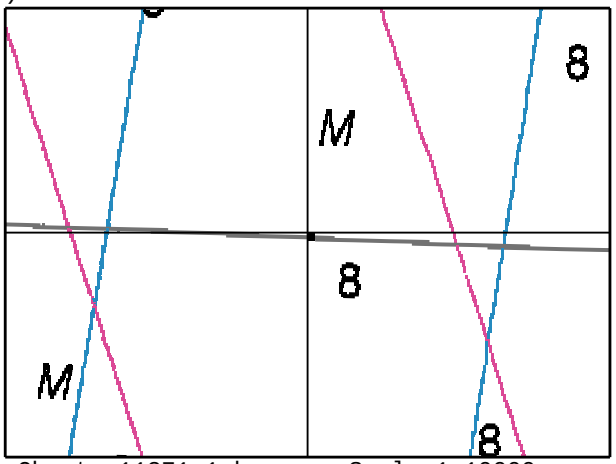
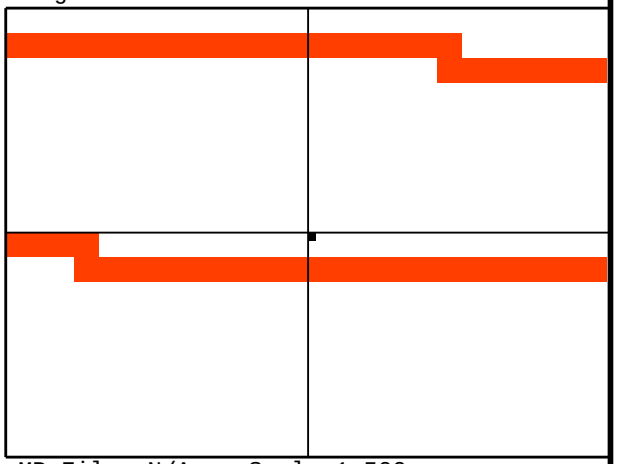
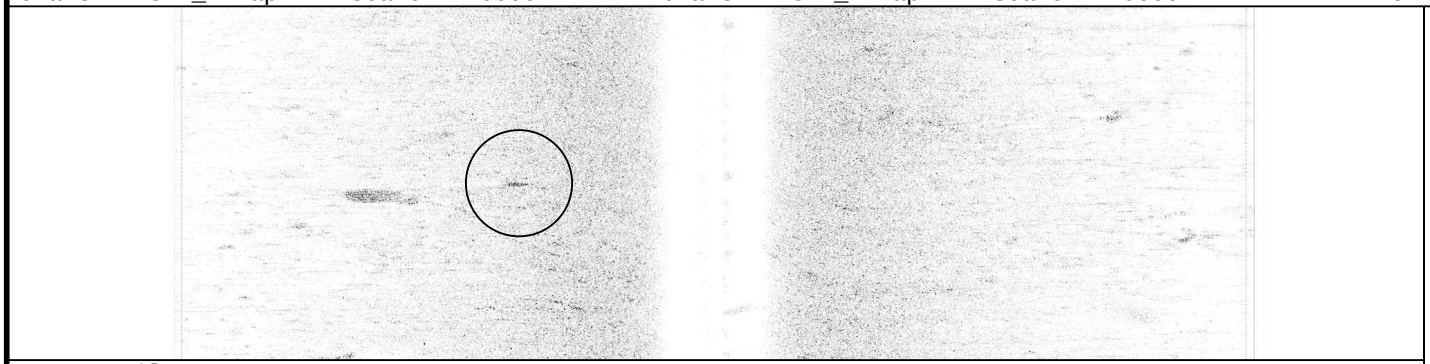


Chart: 11371_1.kap Scale 1:10000



MB File: N/A Scale 1:500



ID: 5 File: TD07082_070323124000.XTF 30 02 59.61N 089 31 45.54W RNG: -8.88 HGT: 0.49 HDG: 092

COMMENT:
OBSTR Plot sounding and symbol Obstr (Sounding was estimated from side scan sonar)

CORRELATED SS CONTACTS:

Contact	Range/Height
082131800	-8.88/0.49

FEATURE CORRELATOR SHEET Job: H11613

Feature #: 0021 Least Depth: 8(ft), 2.44(m) Lat: 30 02 57.85N Lon: 089 31 25.22W Ping: Beam:

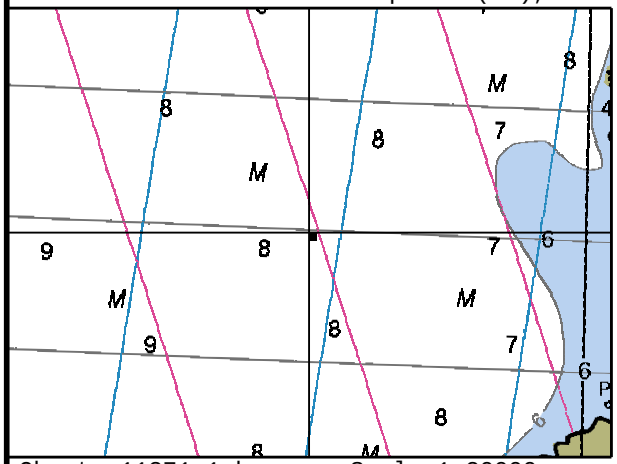


Chart: 11371_1.kap Scale 1:20000

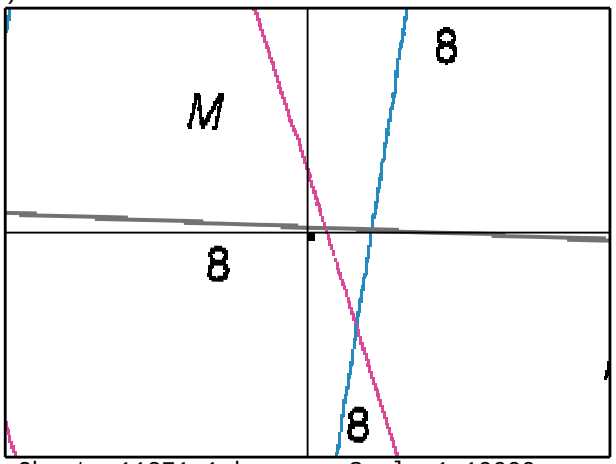
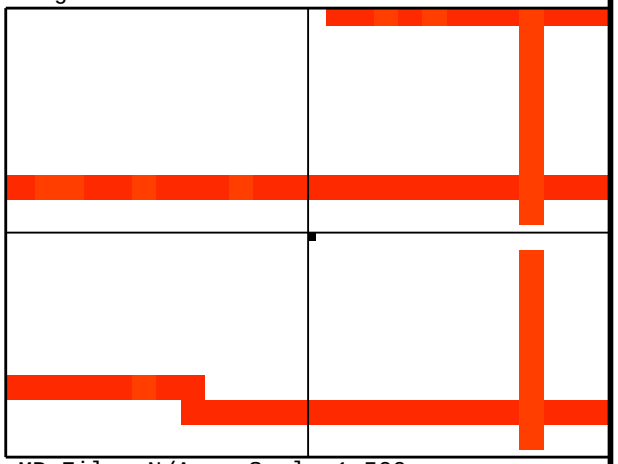
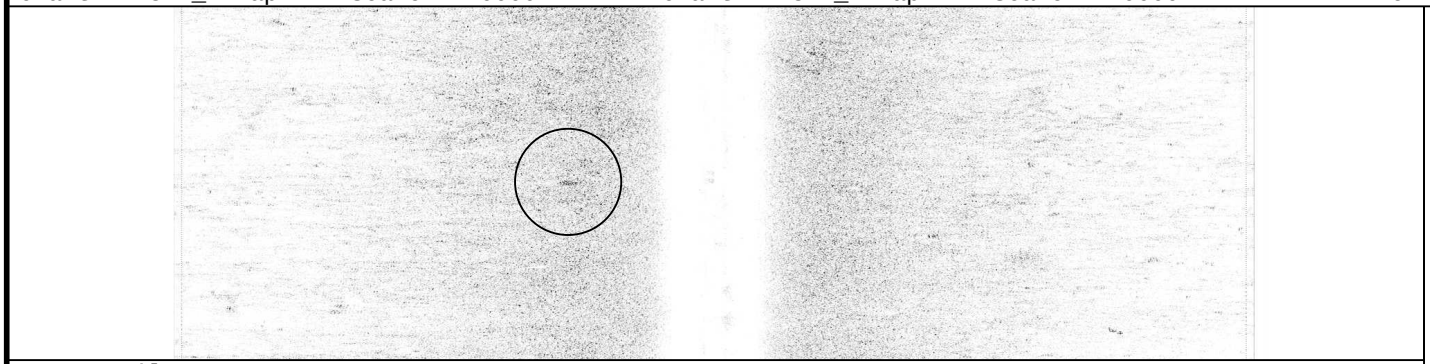


Chart: 11371_1.kap Scale 1:10000



MB File: N/A Scale 1:500



ID: 6 File: TD07082_070323132800.XTF 30 02 57.85N 089 31 25.22W RNG: -6.66 HGT: 0.50 HDG: 270

COMMENT:
OBSTR Plot sounding and symbol Obstr (Sounding was estimated from side scan sonar)

CORRELATED SS CONTACTS:

Contact	Range/Height
082133713	-6.66/0.50

FEATURE CORRELATOR SHEET Job: H11613

Feature #: 0020 Least Depth: 9(ft), 2.71(m) Lat: 30 02 05.09N Lon: 089 33 21.97W Ping: Beam:

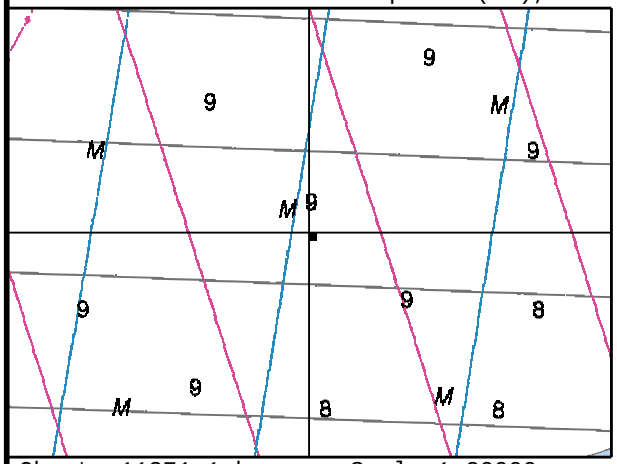


Chart: 11371_1.kap Scale 1:20000

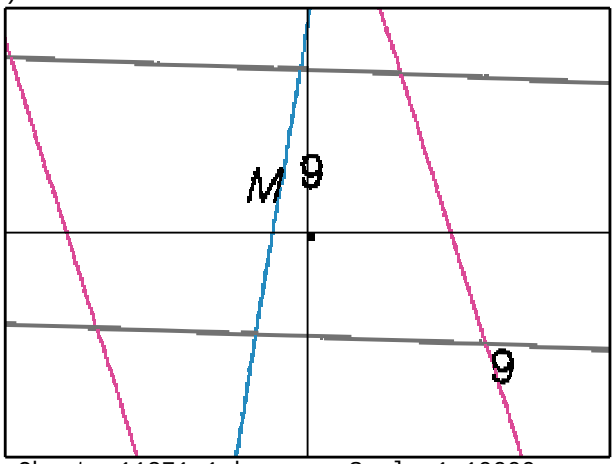
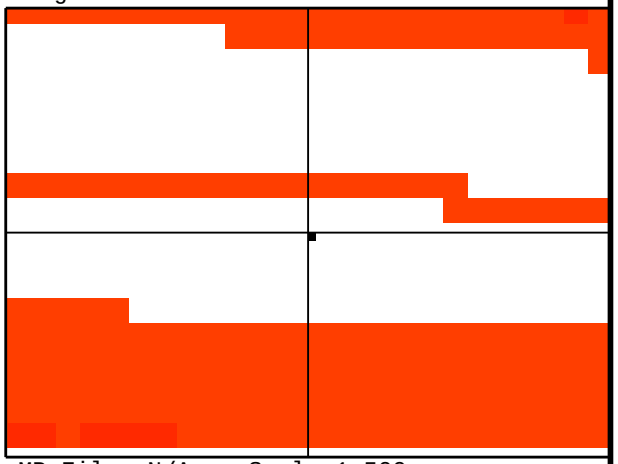
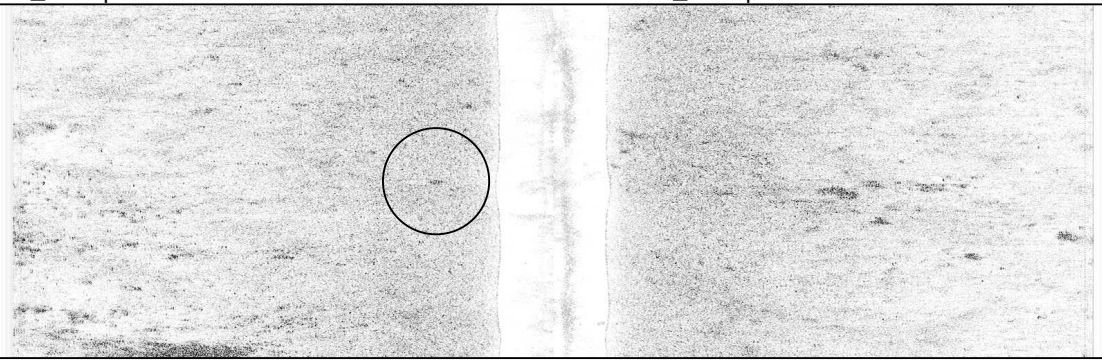


Chart: 11371_1.kap Scale 1:10000



MB File: N/A Scale 1:500



ID: 1 File: TD07054_070223175400.XTF 30 02 05.09N 089 33 21.97W RNG: -5.34 HGT: 0.50 HDG: 268

COMMENT:
OBSTR Plot sounding and symbol Obstr (Sounding was estimated from side scan sonar)

CORRELATED SS CONTACTS:

Contact	Range/Height
054181504	-5.34/0.50

FEATURE CORRELATOR SHEET Job: H11613

Feature #: 0019 Least Depth: 9(ft), 2.96(m) Lat: 30 02 48.54N Lon: 089 35 43.26W Ping: Beam:

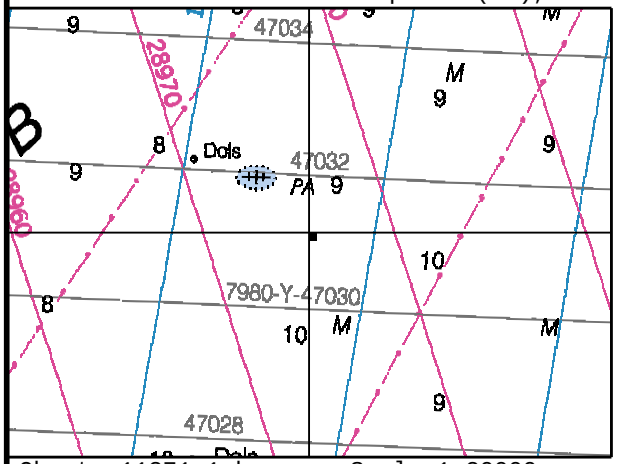


Chart: 11371_1.kap Scale 1:20000

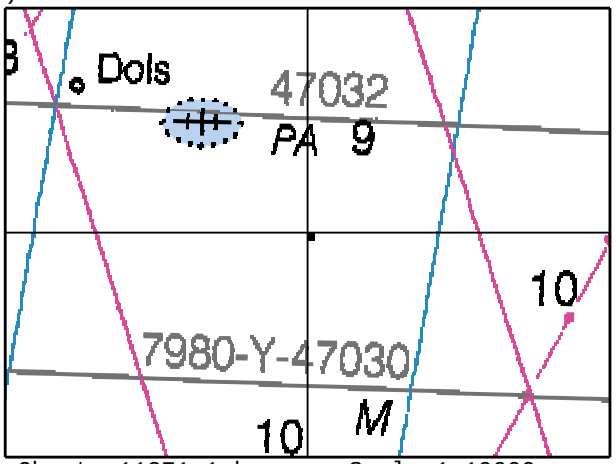
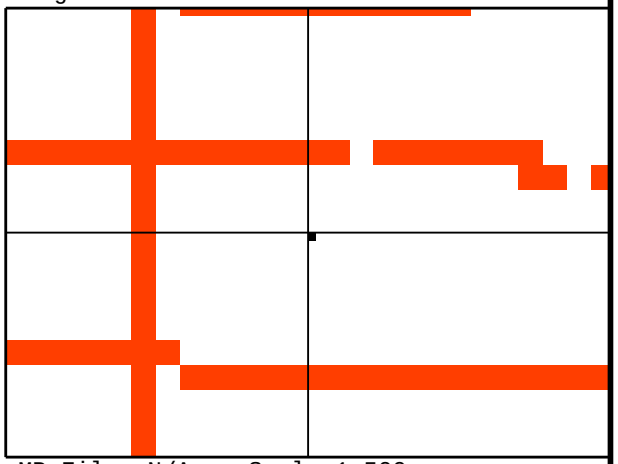
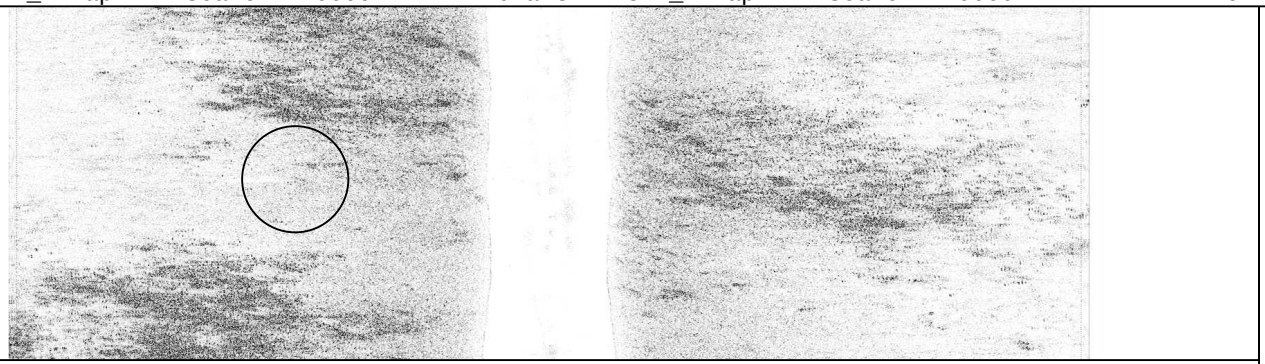


Chart: 11371_1.kap Scale 1:10000



MB File: N/A Scale 1:500



ID: 9 File: TD07082_070323203500.XTF 30 02 48.54N 089 35 43.26W RNG: -11.53 HGT: 0.51 HDG: 269

COMMENT:
OBSTR Plot sounding and symbol Obstr (Sounding was estimated from side scan sonar)

CORRELATED SS CONTACTS:

Contact	Range/Height
082211023	-11.53/0.51

FEATURE CORRELATOR SHEET Job: H11613

Feature #: 0018 Least Depth: 8(ft), 2.52(m) Lat: 30 02 59.82N Lon: 089 32 16.69W Ping: Beam:

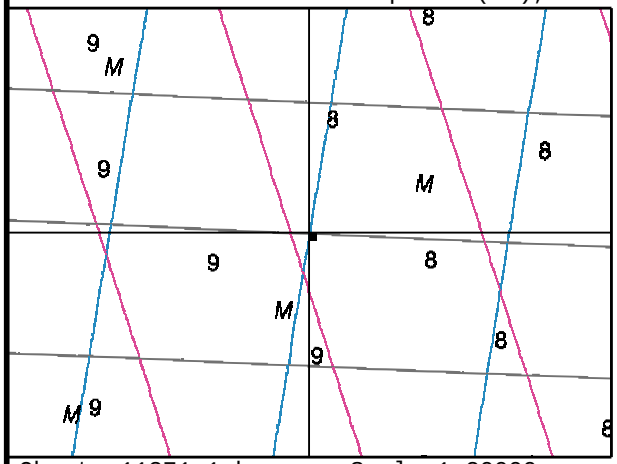


Chart: 11371_1.kap Scale 1:20000

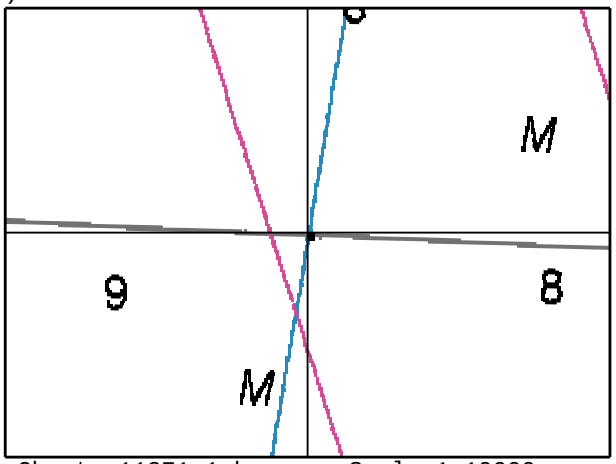
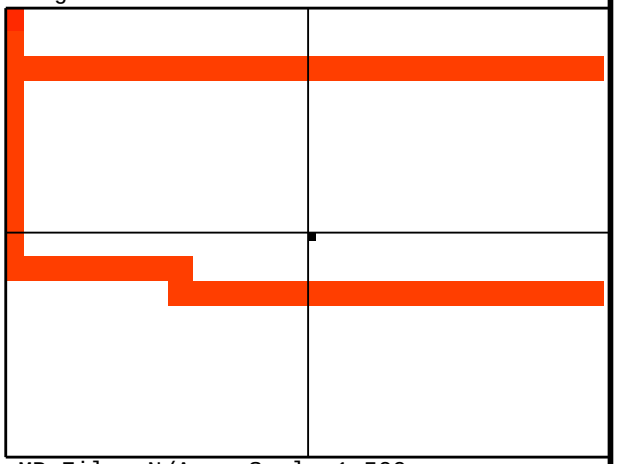
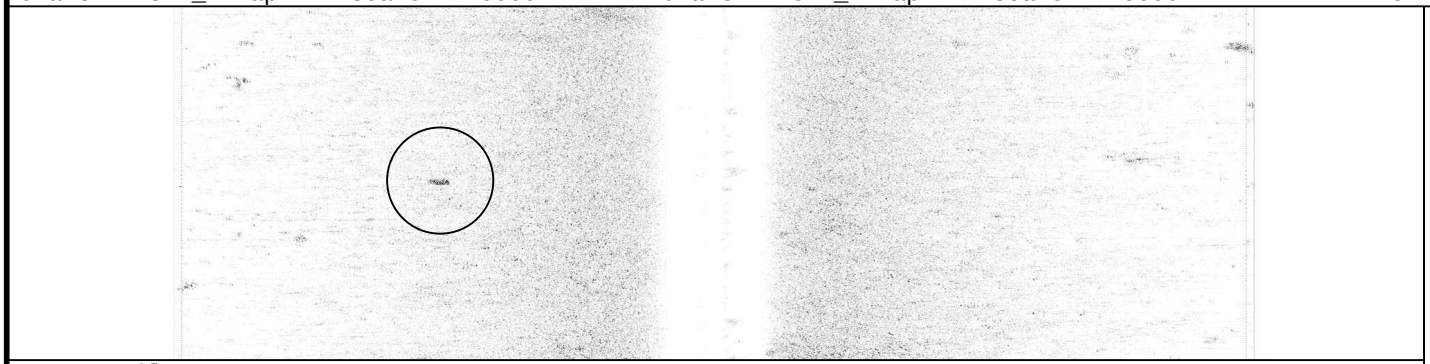


Chart: 11371_1.kap Scale 1:10000



MB File: N/A Scale 1:500



ID: 4 File: TD07082_070323124000.XTF 30 02 59.82N 089 32 16.69W RNG: -12.44 HGT: 0.54 HDG: 089

COMMENT:
OBSTR Plot sounding and symbol Obstr (Sounding was estimated from side scan sonar)

CORRELATED SS CONTACTS:

Contact	Range/Height
082131439	-12.44/0.54

FEATURE CORRELATOR SHEET Job: H11613

Feature #: 0017 Least Depth: 8(ft), 2.49(m) Lat: 29 58 41.93N Lon: 089 35 51.95W Ping: Beam:

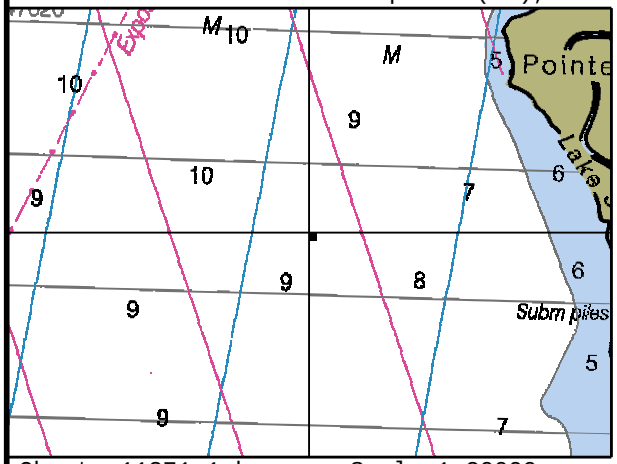


Chart: 11371_1.kap Scale 1:20000

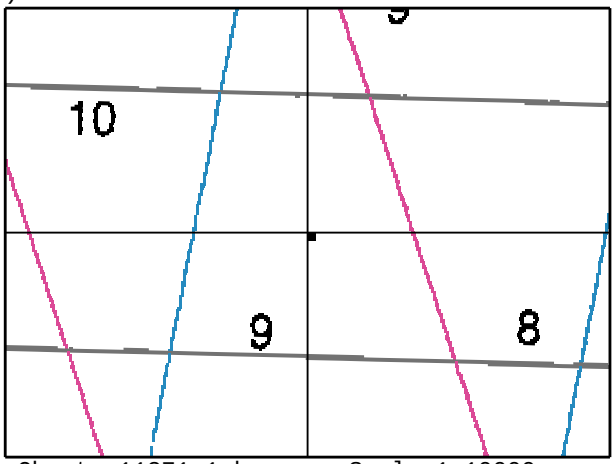
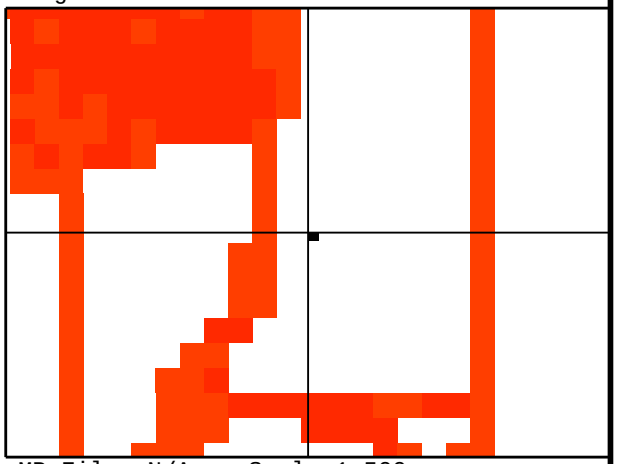
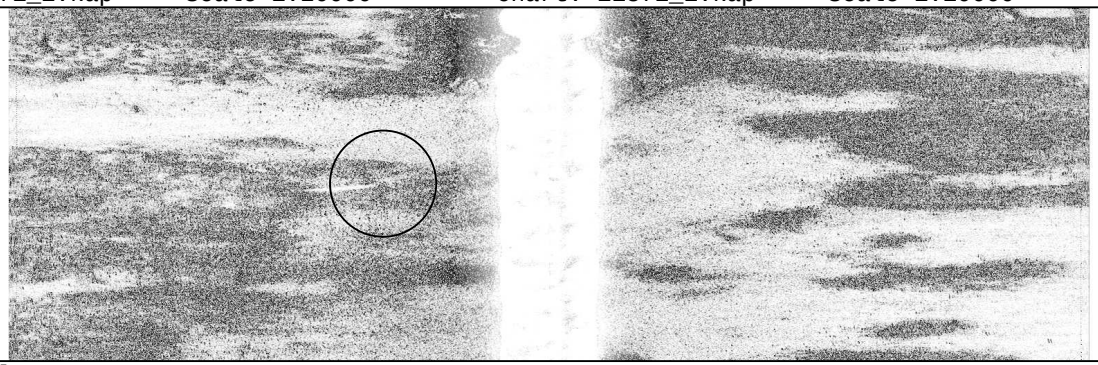


Chart: 11371_1.kap Scale 1:10000

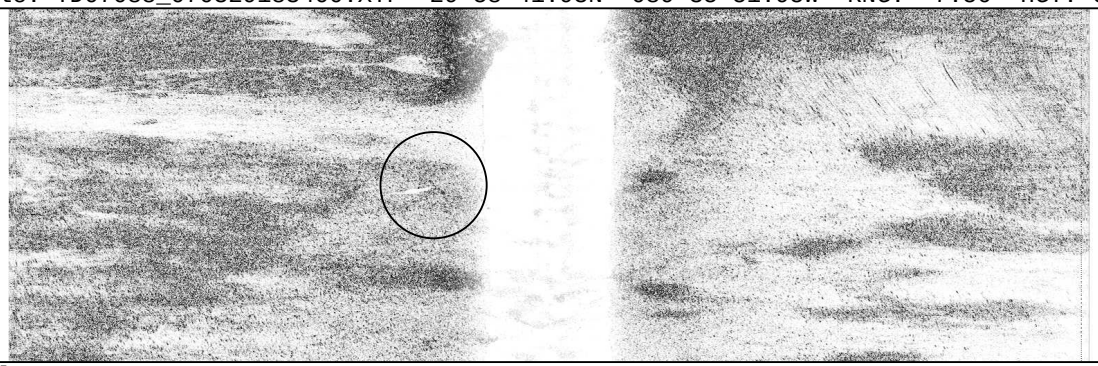


MB File: N/A Scale 1:500



ID: 11 File: TD07088_070329183400.XTF 29 58 41.93N 089 35 51.95W RNG: -7.56 HGT: 0.72 HDG: 190

COMMENT:
OBSTR No Plot See Feature 4
(Sounding was estimated from side scan sonar)



ID: 67 File: TD07147_070527192700.XTF 29 58 41.93N 089 35 51.93W RNG: -5.28 HGT: 0.81 HDG: 180

CORRELATED SS CONTACTS:

Contact	Range/Height
088184345	-7.56/0.72
147192818	-5.28/0.81

FEATURE CORRELATOR SHEET Job: H11613

Feature #: 0016 Least Depth: 3(ft), 0.93(m) Lat: 29 56 44.27N Lon: 089 35 05.53W Ping: Beam:

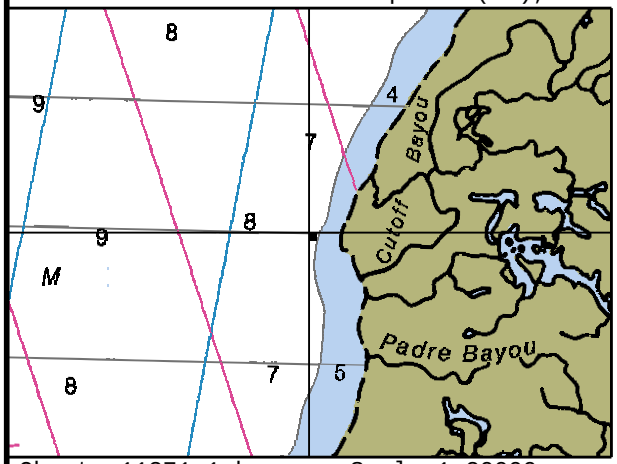


Chart: 11371_1.kap Scale 1:20000

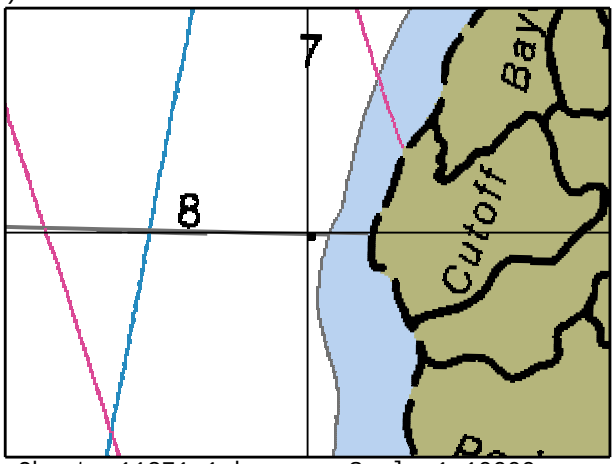
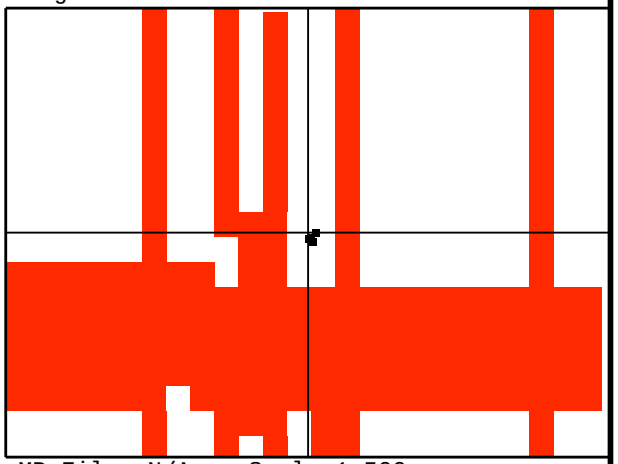
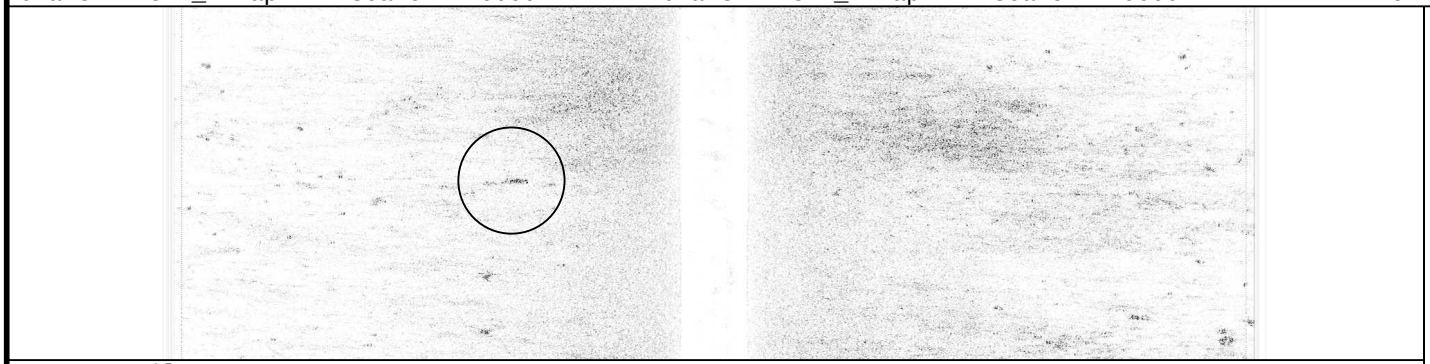


Chart: 11371_1.kap Scale 1:10000

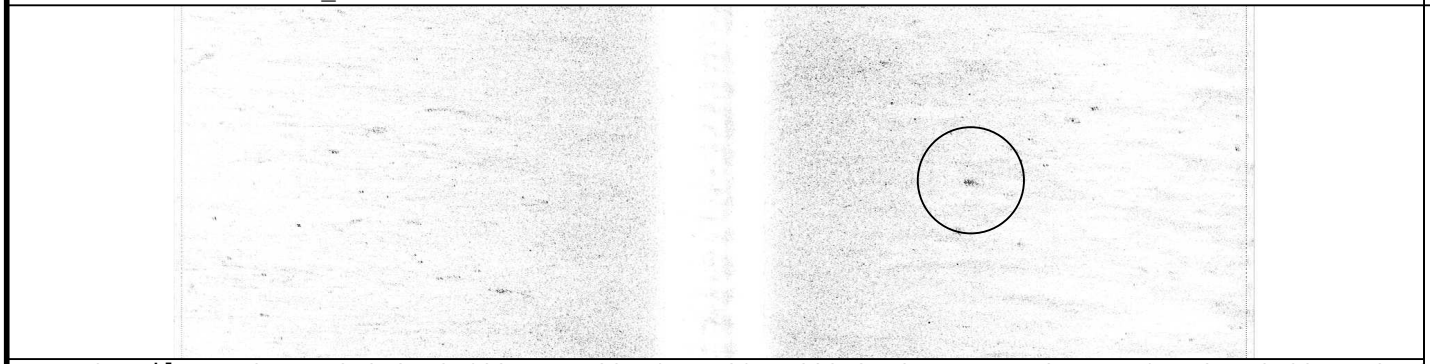


MB File: N/A Scale 1:500



ID: 10 File: TD07086_070327153100.XTF 29 56 44.27N 089 35 05.54W RNG: -9.22 HGT: 0.88 HDG: 001

COMMENT:
OBSTR Plot sounding and label Obstr (Sounding was estimated from side scan sonar)



ID: 70 File: TD07147_070527195600.XTF 29 56 44.26N 089 35 05.55W RNG: 11.56 HGT: 0.92 HDG: 358

CORRELATED SS CONTACTS:

Contact	Range/Height
086153838	-9.22/0.88
147195824	11.56/0.92
147195531	10.12/1.23
147200102	-3.88/1.80

FEATURE CORRELATOR SHEET Job: H11613

Feature #: 0015 Least Depth: 11(ft), 3.32(m) Lat: 30 00 23.54N Lon: 089 36 24.75W Ping: 7848 Beam: 1430

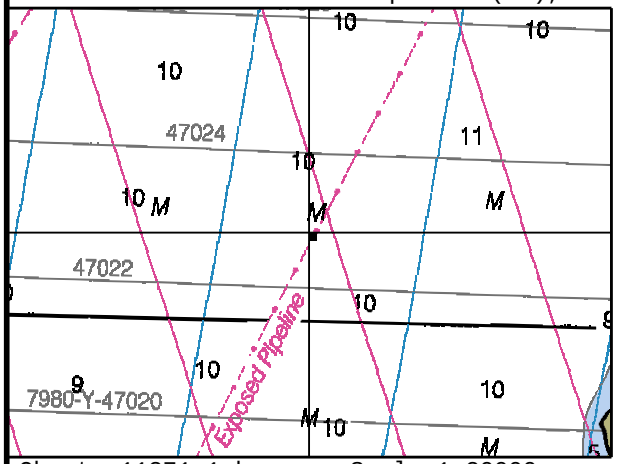


Chart: 11371_1.kap Scale 1:20000

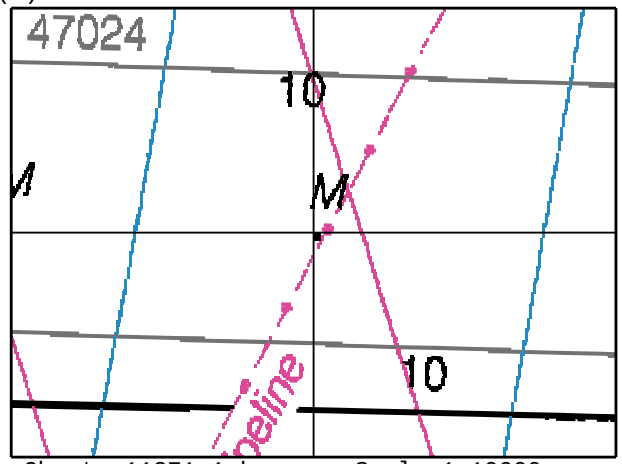
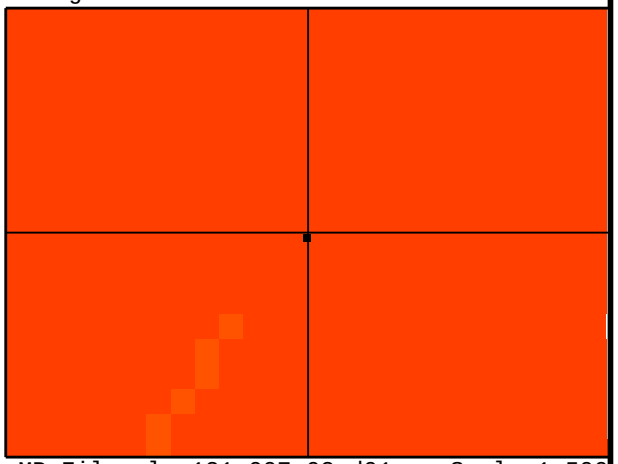
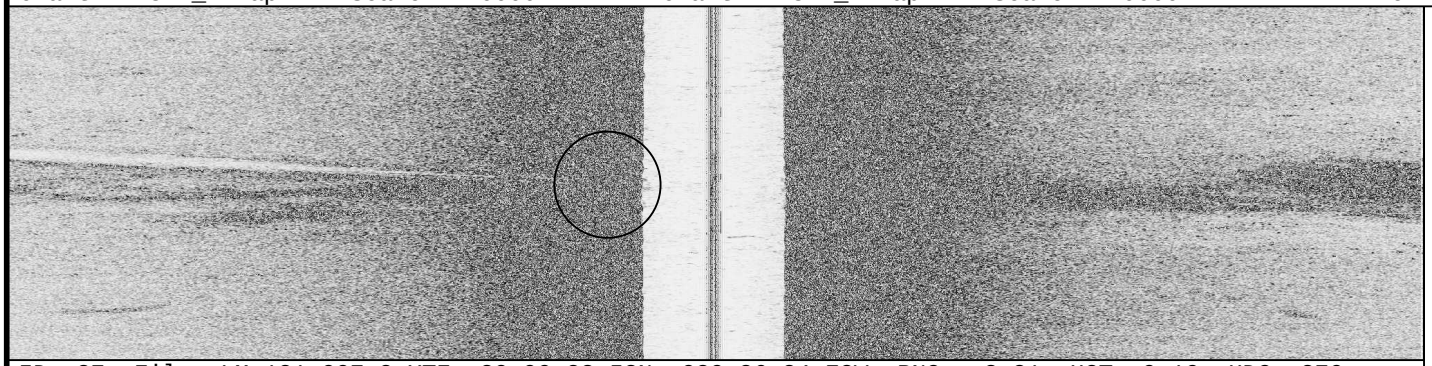


Chart: 11371_1.kap Scale 1:10000



MB File: lm_121_007_02.d01 Scale 1:500



ID: 37 File: LM_121_007_2.XTF 30 00 23.53N 089 36 24.78W RNG: -3.81 HGT: 0.19 HDG: 270

COMMENT:
OBSTR Pipeline No Plot Non Sig

CORRELATED SS CONTACTS:

Contact	Range/Height
121152857	-3.81/0.19

FEATURE CORRELATOR SHEET Job: H11613

Feature #: 0014 Least Depth: 11(ft), 3.49(m) Lat: 29 59 22.00N Lon: 089 37 01.34W Ping: 3954 Beam: 850

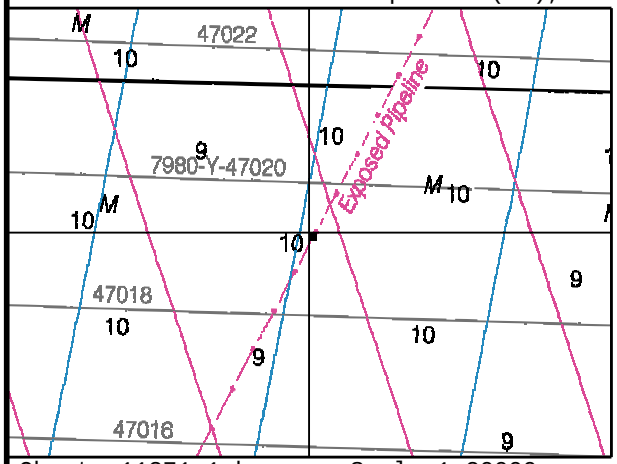


Chart: 11371_1.kap Scale 1:20000

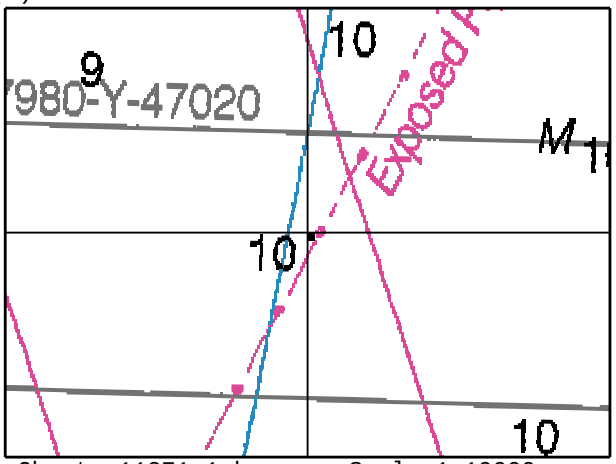
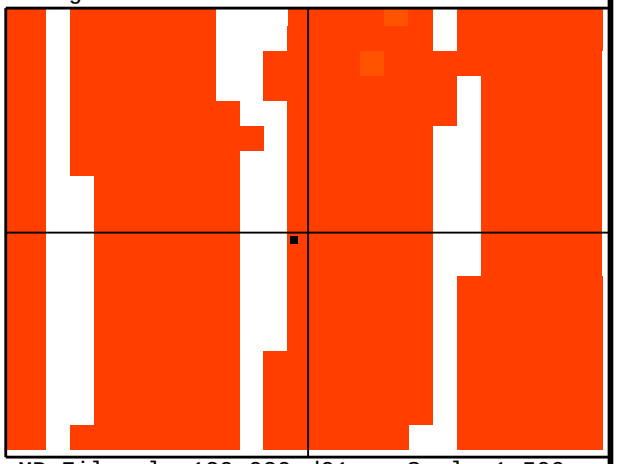
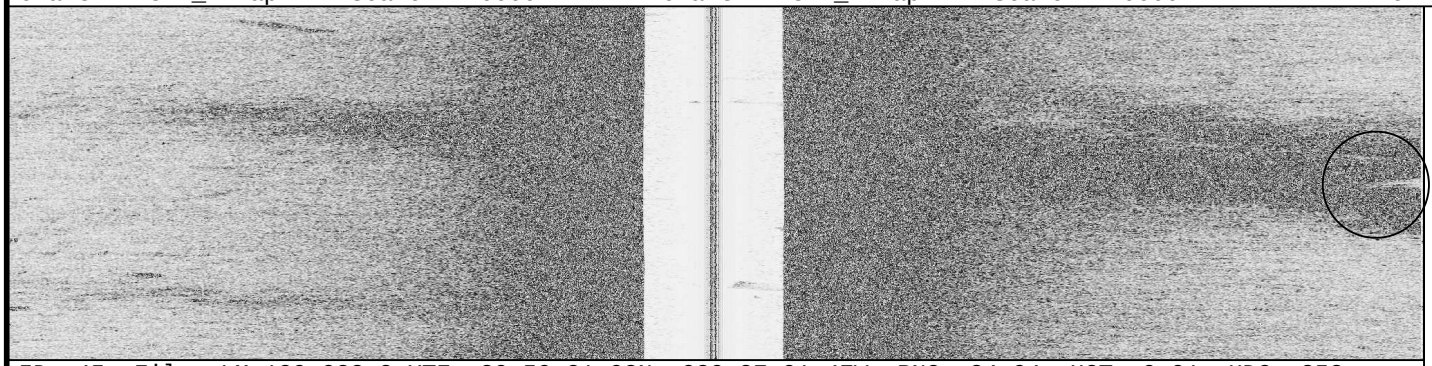


Chart: 11371_1.kap Scale 1:10000



MB File: lm_129_020.d01 Scale 1:500



ID: 45 File: LM_129_023_2.XTF 29 59 21.98N 089 37 01.47W RNG: 24.04 HGT: 0.01 HDG: 353

COMMENT:
OBSTR Pipeline No Plot Non Sig

CORRELATED SS CONTACTS:

Contact	Range/Height
129192822	24.04/0.01

FEATURE CORRELATOR SHEET Job: H11613

Feature #: 0013 Least Depth: Lat: 30 01 52.84N Lon: 089 35 31.16W Ping: Beam:

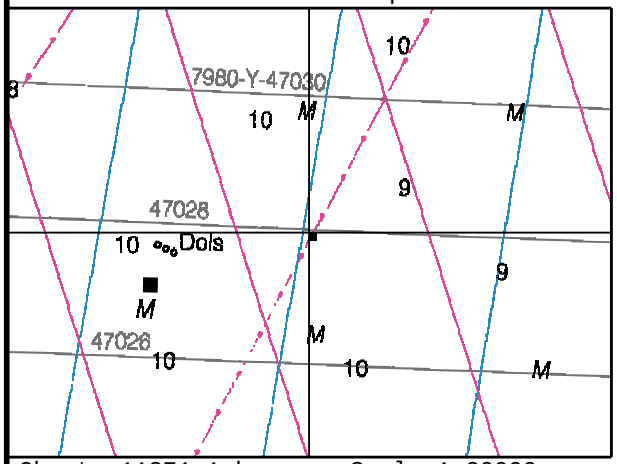


Chart: 11371_1.kap Scale 1:20000

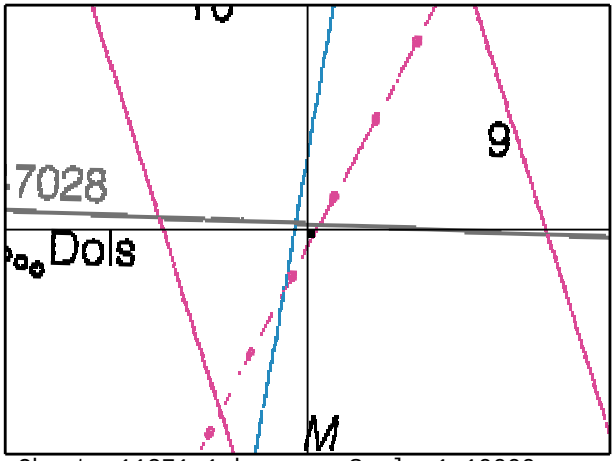
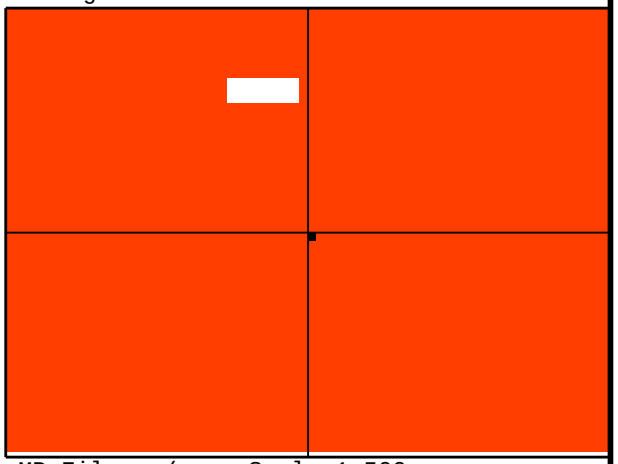
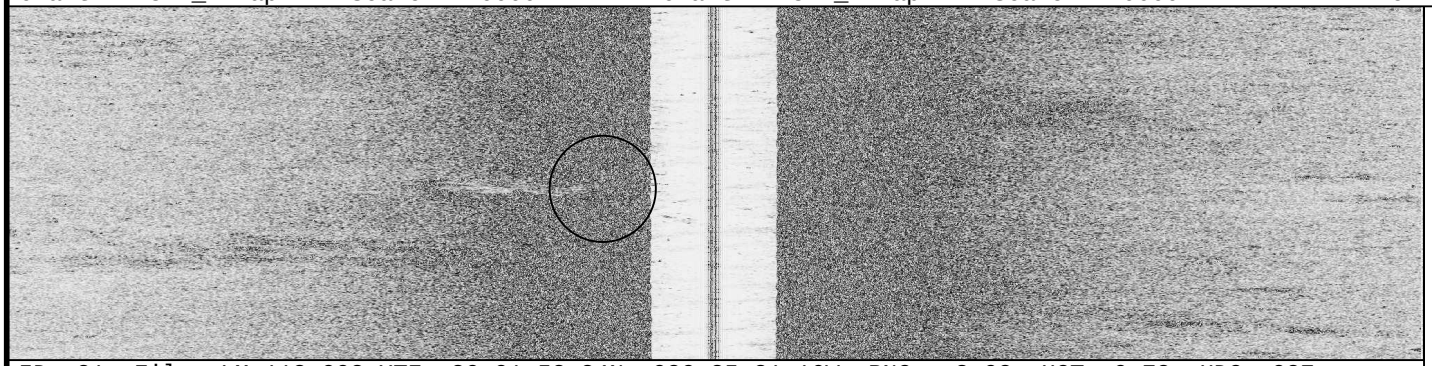


Chart: 11371_1.kap Scale 1:10000



MB File: n/a Scale 1:500



ID: 21 File: LM_113_003.XTF 30 01 52.84N 089 35 31.16W RNG: -3.98 HGT: 0.78 HDG: 087

COMMENT:
Buoy Private Marker Plot Buoy symbol and Label Priv Y

CORRELATED SS CONTACTS:

Contact	Range/Height
113143341	-3.98/0.78

FEATURE CORRELATOR SHEET Job: H11613

Feature #: 0012 Least Depth: Lat: 29 58 06.38N Lon: 089 36 58.01W Ping: Beam:

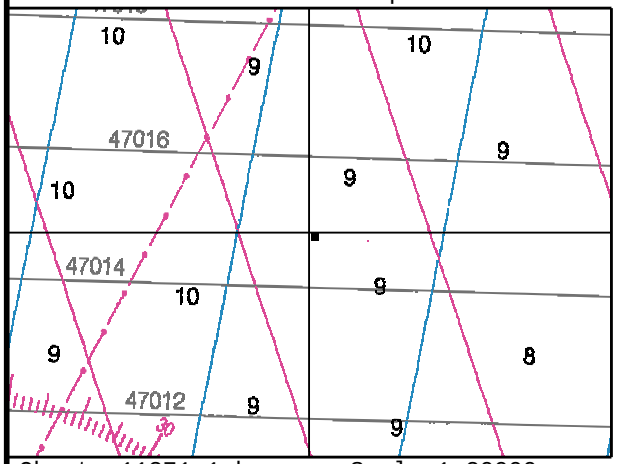


Chart: 11371_1.kap Scale 1:20000

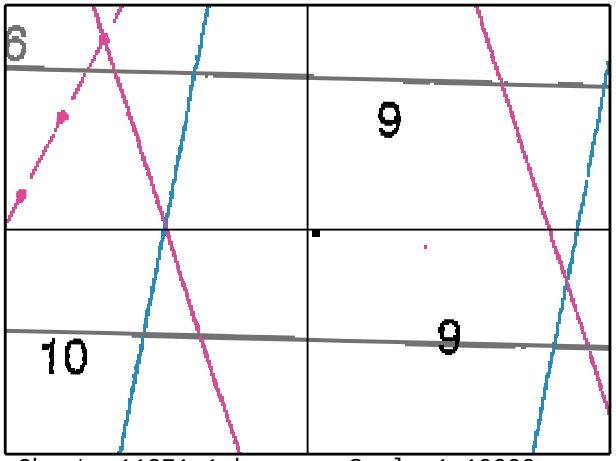
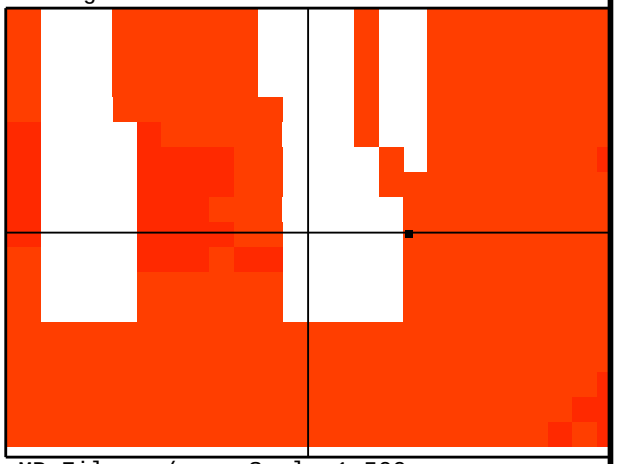
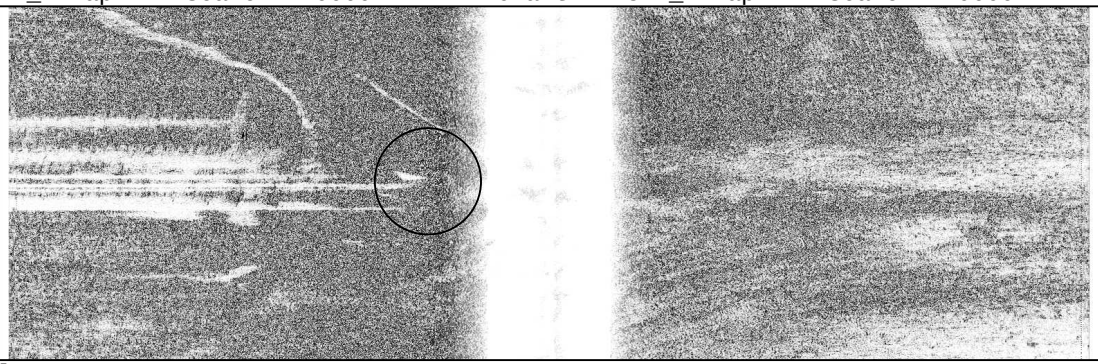


Chart: 11371_1.kap Scale 1:10000



MB File: n/a Scale 1:500



ID: 52 File: TD07131_070511193500.XTF 29 58 06.42N 089 36 57.26W RNG: -5.53 HGT: 2.51 HDG: 348

COMMENT:
Wellhead Platform Plot
platform symbol See Feature
28

CORRELATED SS CONTACTS:

Contact	Range/Height
131193718	-5.53/2.51

FEATURE CORRELATOR SHEET Job: H11613

Feature #: 0011 Least Depth: Lat: 30 01 46.20N Lon: 089 36 12.89W Ping: Beam:

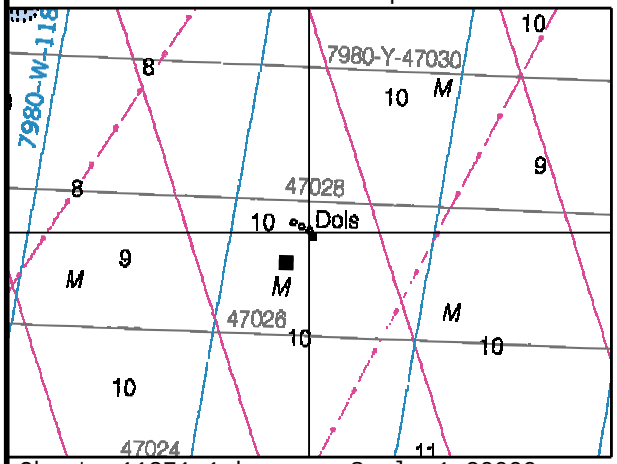


Chart: 11371_1.kap Scale 1:20000

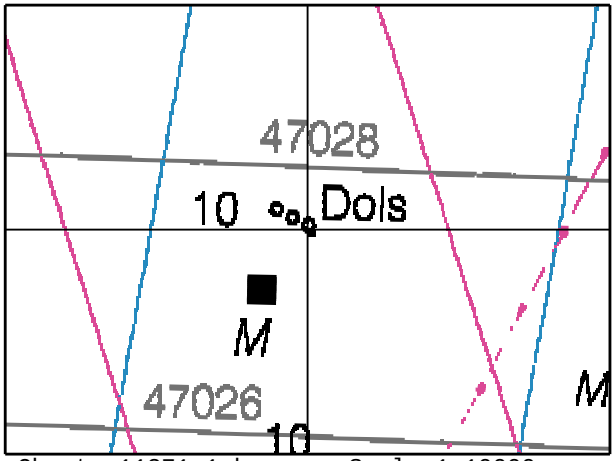
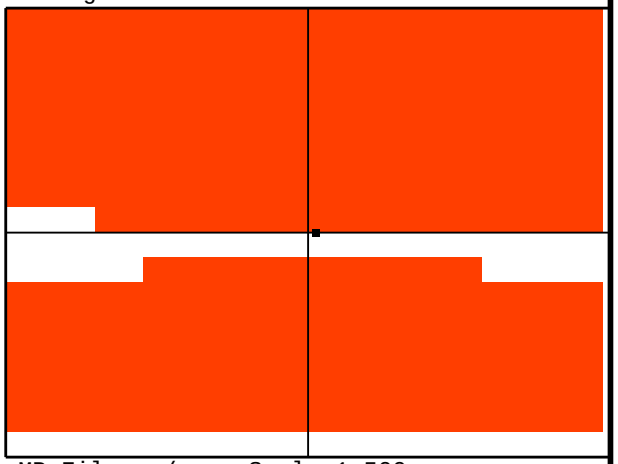
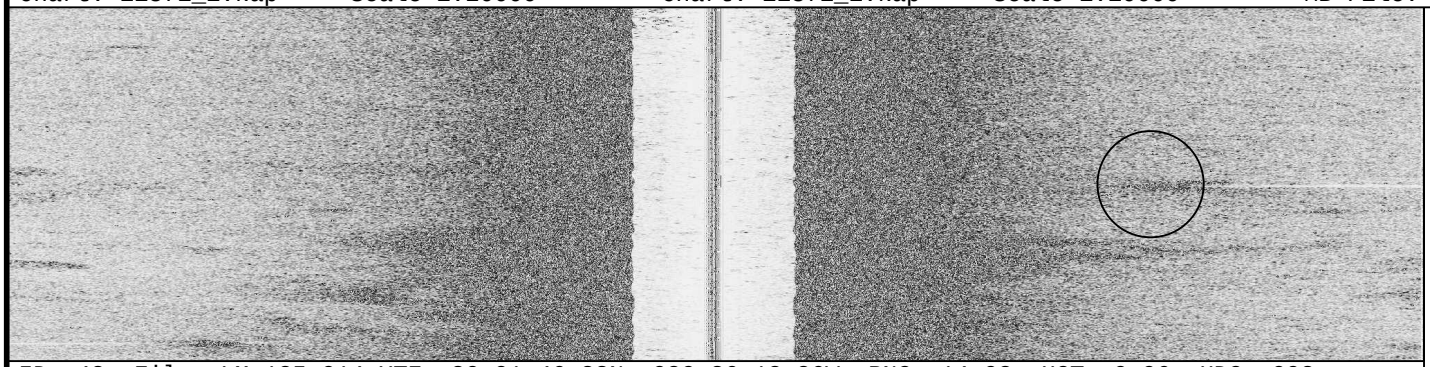


Chart: 11371_1.kap Scale 1:10000



MB File: n/a Scale 1:500



ID: 42 File: LM_125_014.XTF 30 01 46.23N 089 36 12.86W RNG: 14.93 HGT: 0.96 HDG: 092

COMMENT:
Dolphin Plot Dolphin symbol
see Feature 9 and 10

CORRELATED SS CONTACTS:

Contact	Range/Height
125213844	14.93/0.96

FEATURE CORRELATOR SHEET Job: H11613

Feature #: 0010 Least Depth: Lat: 30 01 47.28N Lon: 089 36 15.49W Ping: Beam:

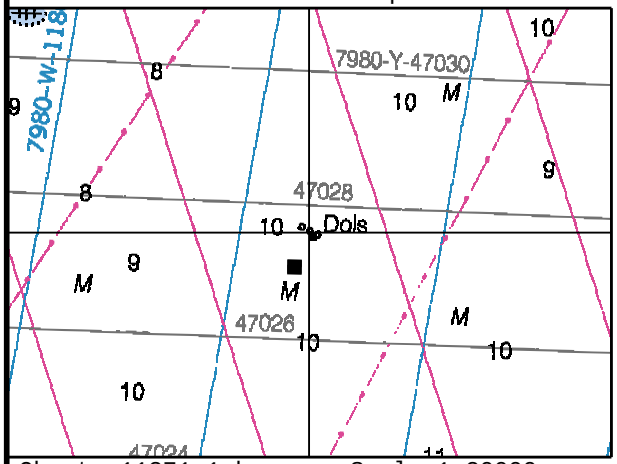


Chart: 11371_1.kap Scale 1:20000

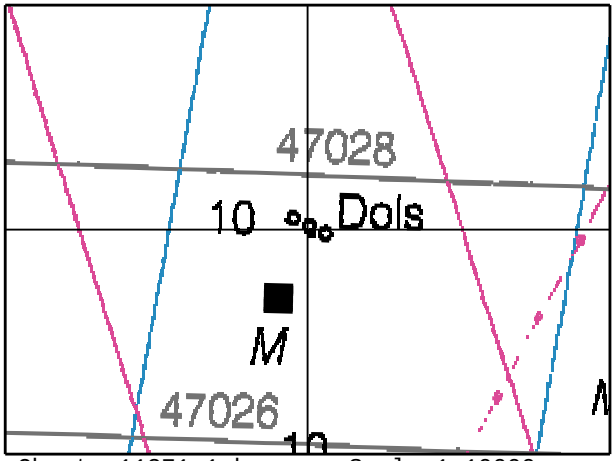
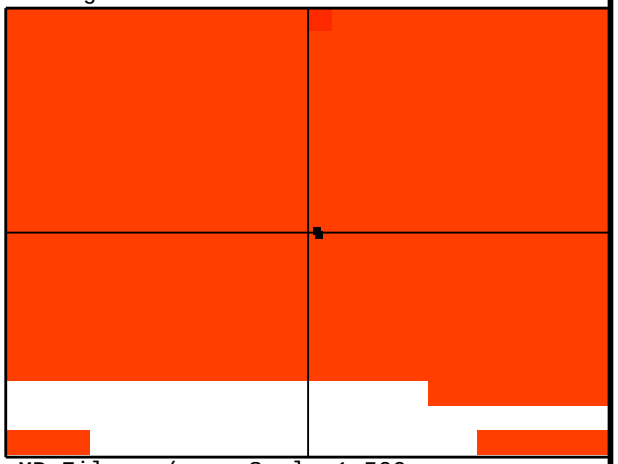
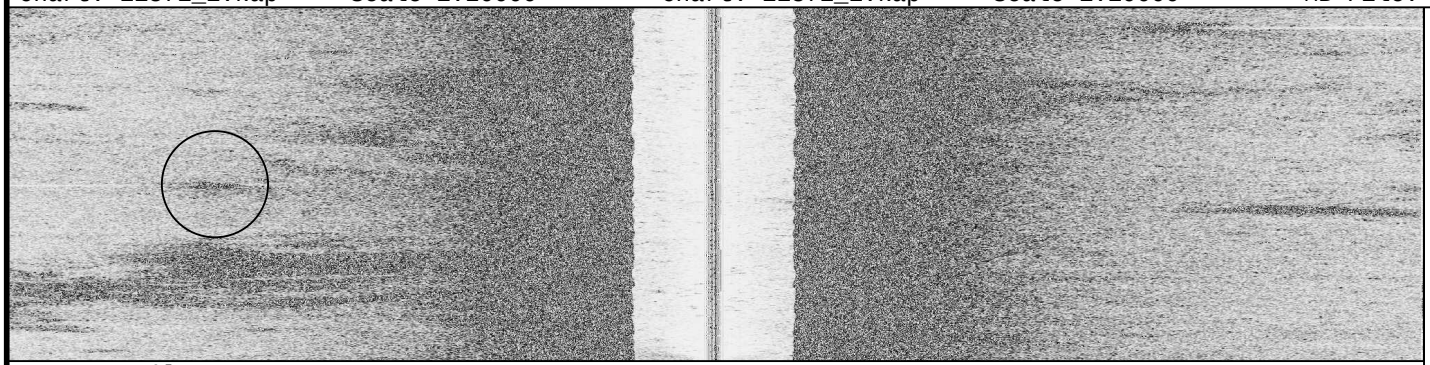


Chart: 11371_1.kap Scale 1:10000

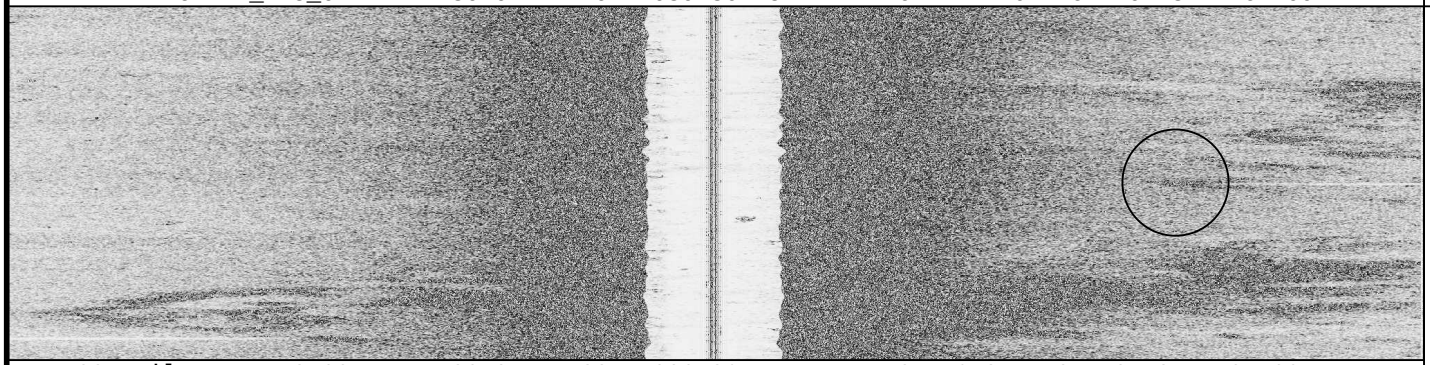


MB File: n/a Scale 1:500



ID: 41 File: LM_125_014.XTF 30 01 47.29N 089 36 15.44W RNG: -17.16 HGT: 0.73 HDG: 091

COMMENT:
Dolphin Plot Dolphin symbol and Label Dols. See Features 9 and 11



ID: 23 File: LM_113_007.XTF 30 01 47.32N 089 36 15.45W RNG: 16.31 HGT: 0.78 HDG: 097

CORRELATED SS CONTACTS:

Contact	Range/Height
125213825	-17.16/0.73
113164421	16.31/0.78

FEATURE CORRELATOR SHEET Job: H11613

Feature #: 0009 Least Depth: Lat: 30 01 48.30N Lon: 089 36 17.91W Ping: Beam:

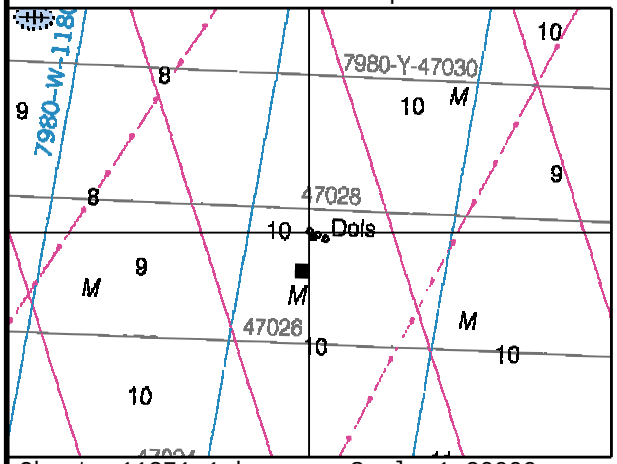


Chart: 11371_1.kap Scale 1:20000

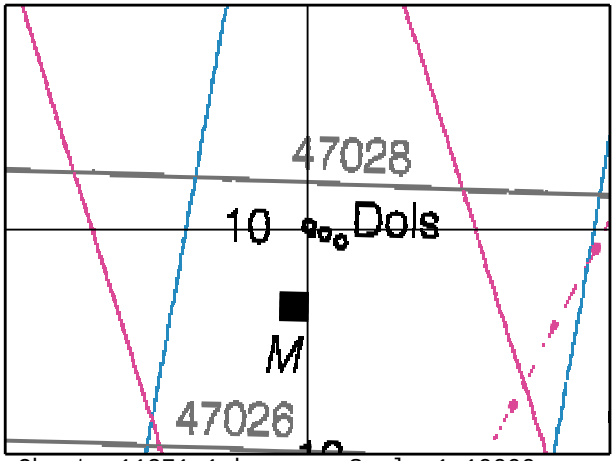
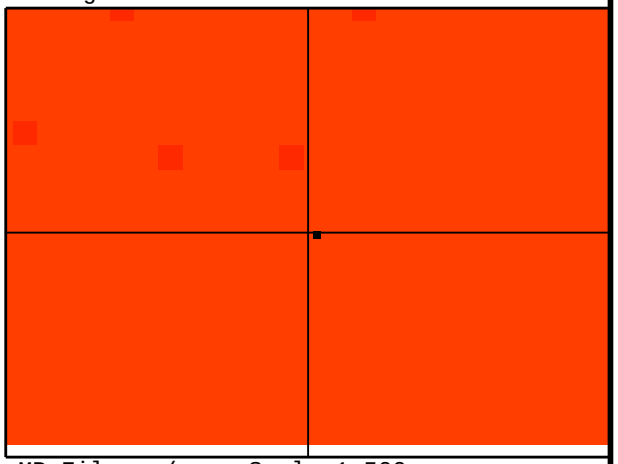
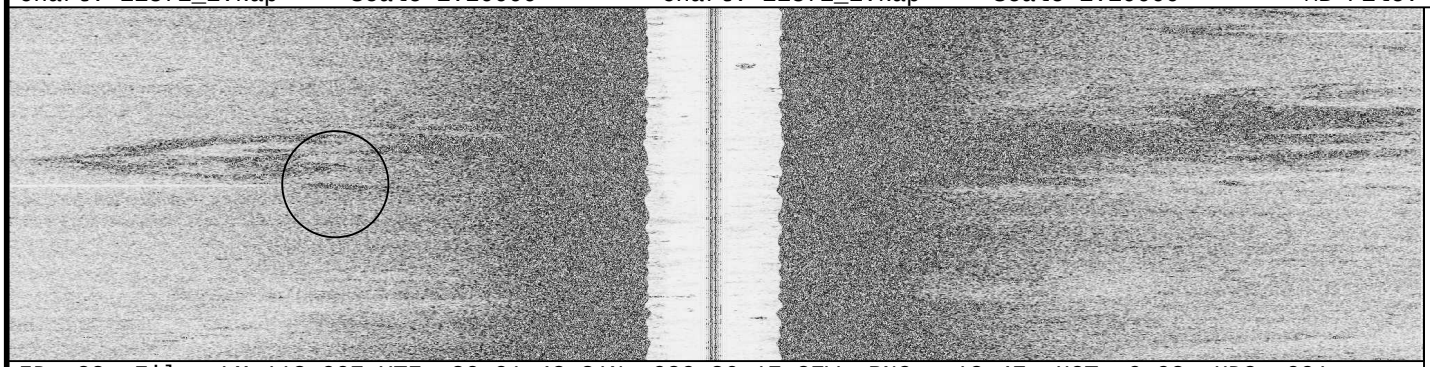


Chart: 11371_1.kap Scale 1:10000



MB File: n/a Scale 1:500



ID: 22 File: LM_113_007.XTF 30 01 48.31N 089 36 17.87W RNG: -13.47 HGT: 0.98 HDG: 091

COMMENT:
Dolphin Plot Dolphin symbol
see Feature 10 and 11

CORRELATED SS CONTACTS:

Contact	Range/Height
113164402	-13.47/0.98

FEATURE CORRELATOR SHEET Job: H11613

Feature #: 0008 Least Depth: Lat: 30 01 36.73N Lon: 089 36 16.39W Ping: Beam:

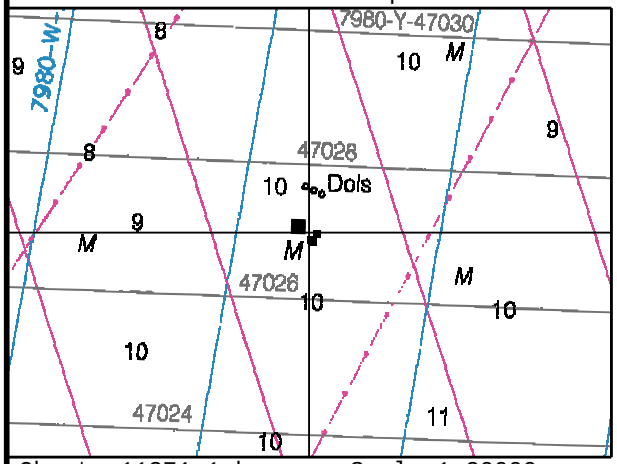


Chart: 11371_1.kap Scale 1:20000

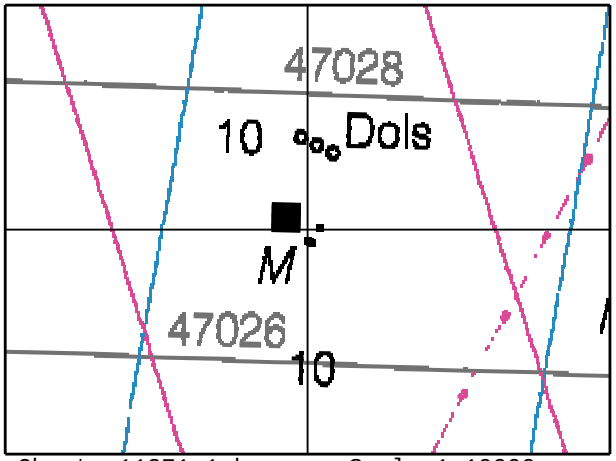
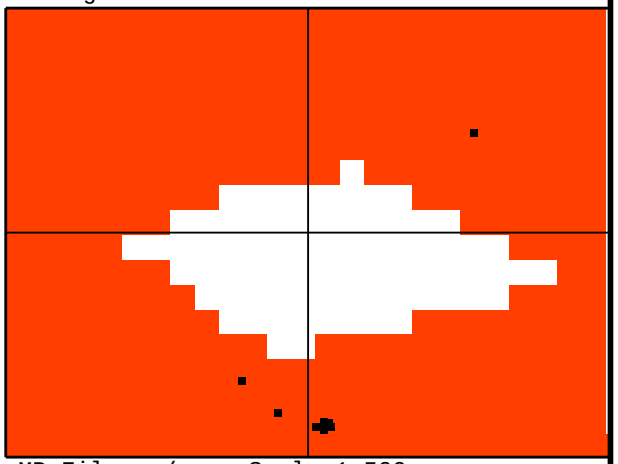
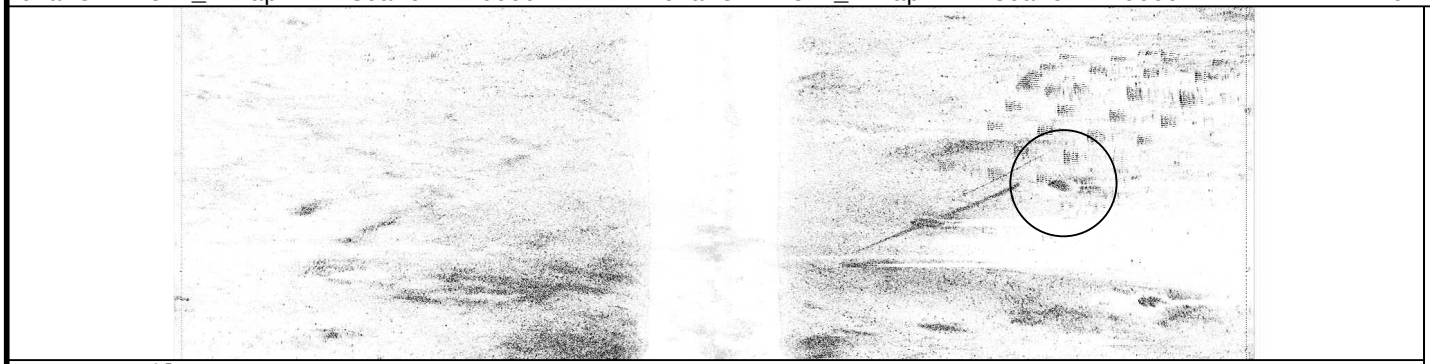


Chart: 11371_1.kap Scale 1:10000

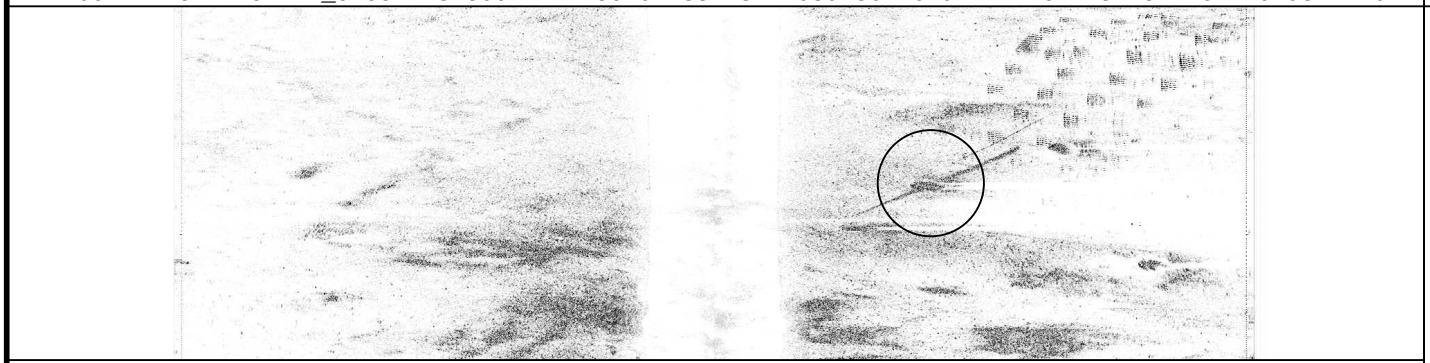


MB File: n/a Scale 1:500



ID: 66 File: TD07147_070527132500.XTF 30 01 35.78N 089 36 16.91W RNG: 15.75 HGT: 0.93 HDG: 272

COMMENT:
Platform Plot platform symbol



ID: 65 File: TD07147_070527132500.XTF 30 01 35.58N 089 36 16.63W RNG: 9.75 HGT: 1.69 HDG: 269

CORRELATED SS CONTACTS:

Contact	Range/Height
147132842	15.75/0.93
147132840	9.75/1.69
131172020	6.53/1.68
111121640	-16.59/0.60
147132018	19.38/0.54
125174034	-11.75/1.32
147132838	6.62/2.21
139202557	-9.88/1.71

FEATURE CORRELATOR SHEET Job: H11613

Feature #: 0007 Least Depth: Lat: 30 01 37.96N Lon: 089 36 20.63W Ping: Beam:

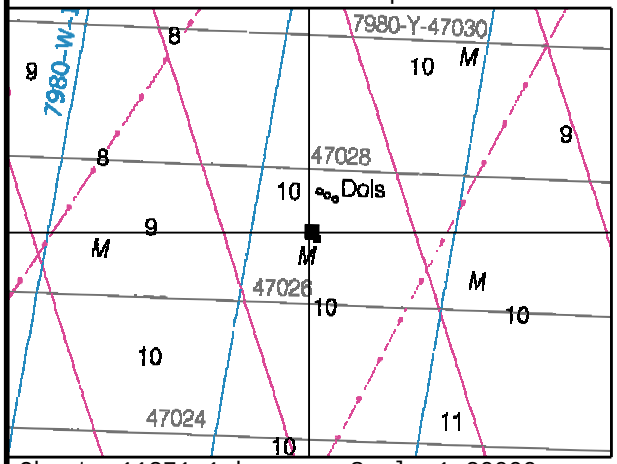


Chart: 11371_1.kap Scale 1:20000

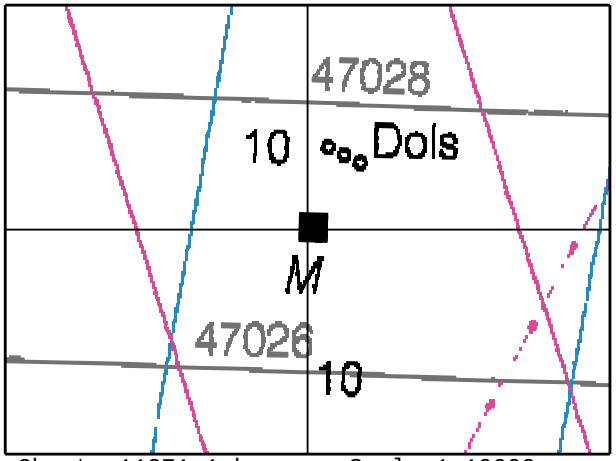
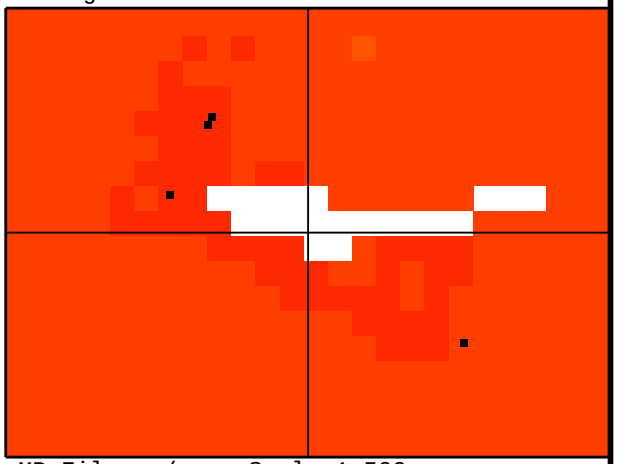
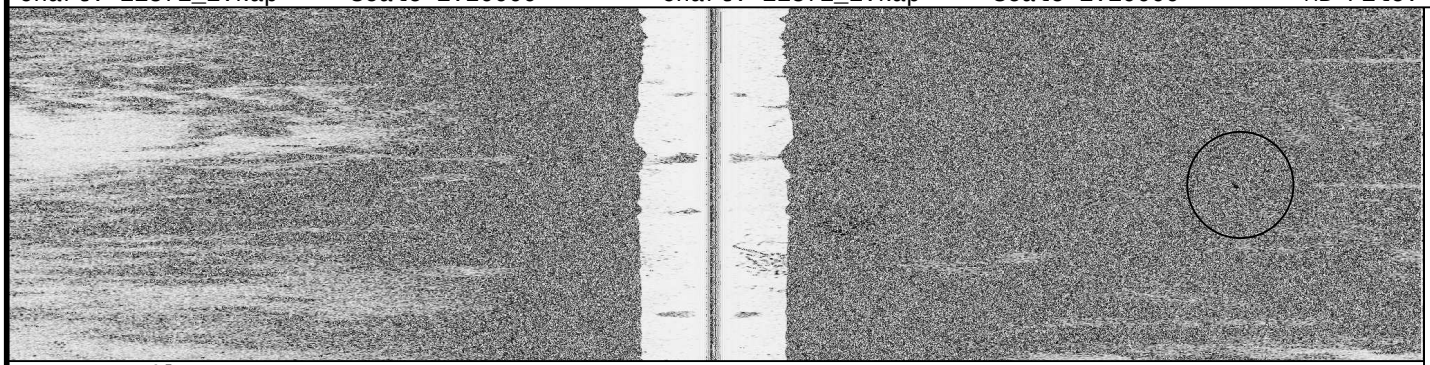


Chart: 11371_1.kap Scale 1:10000

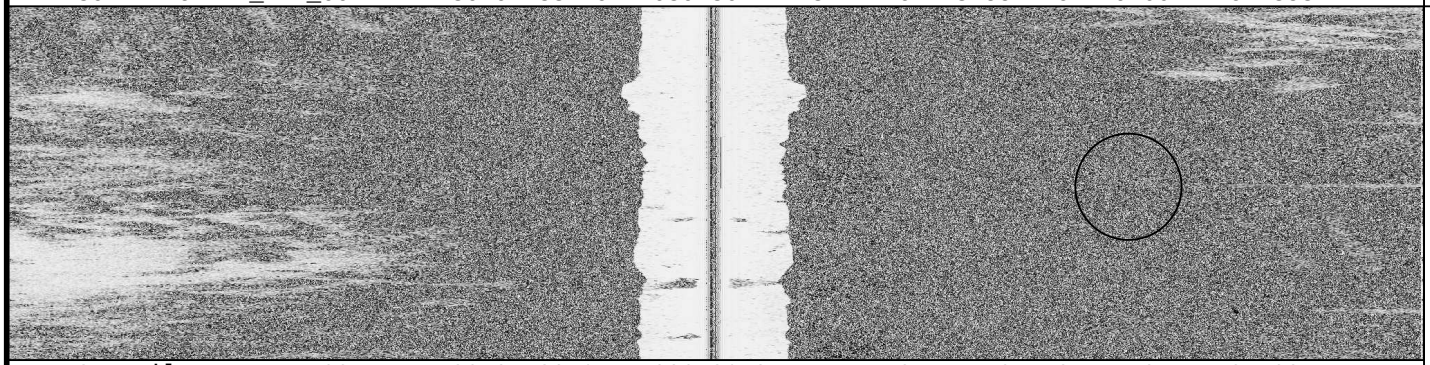


MB File: n/a Scale 1:500



ID: 30 File: LM_117_007.XTF 30 01 38.20N 089 36 21.73W RNG: 18.55 HGT: 0.66 HDG: 353

COMMENT:
Platform Plot platform symbol



ID: 31 File: LM_117_007.XTF 30 01 38.67N 089 36 21.45W RNG: 14.59 HGT: 1.07 HDG: 085

CORRELATED SS CONTACTS:

Contact	Range/Height
117152417	18.55/0.66
117152432	14.59/1.07
125191201	-7.96/1.67
139202703	9.91/1.85

FEATURE CORRELATOR SHEET Job: H11613

Feature #: 0006 Least Depth: Lat: 29 59 02.68N Lon: 089 37 15.04W Ping: Beam:

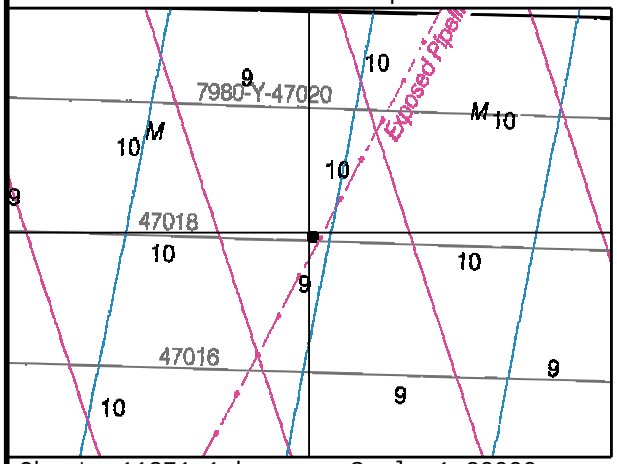


Chart: 11371_1.kap Scale 1:20000

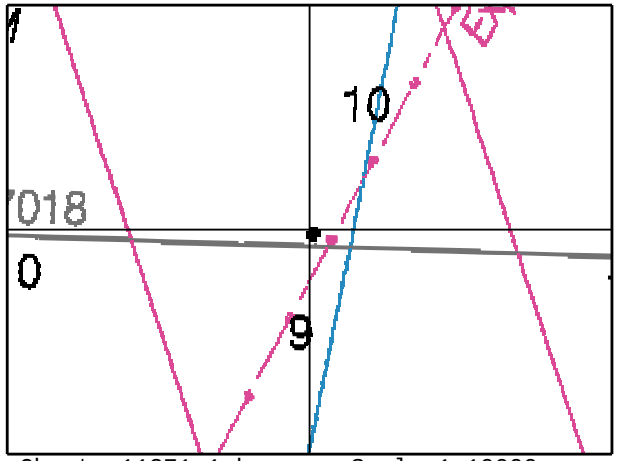
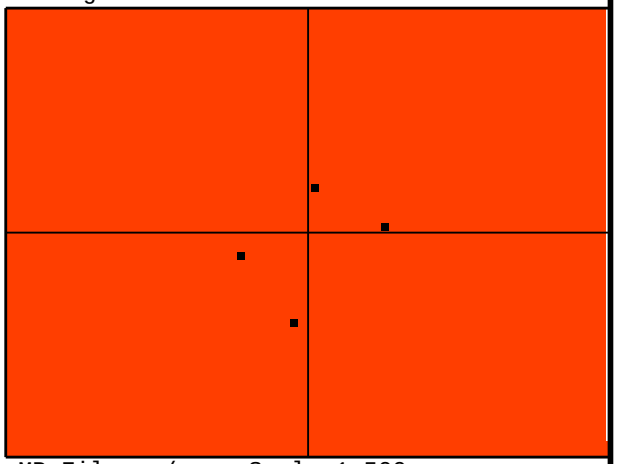
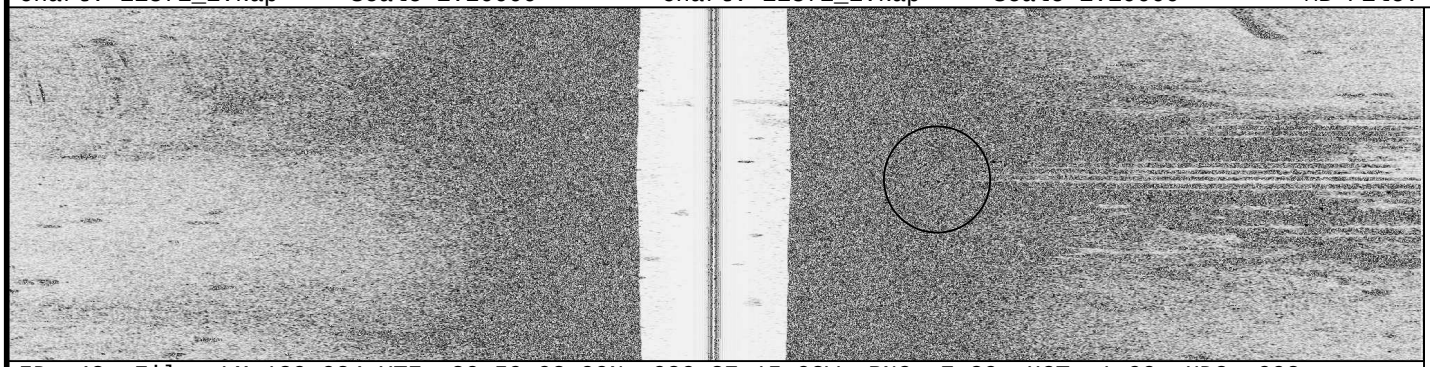


Chart: 11371_1.kap Scale 1:10000

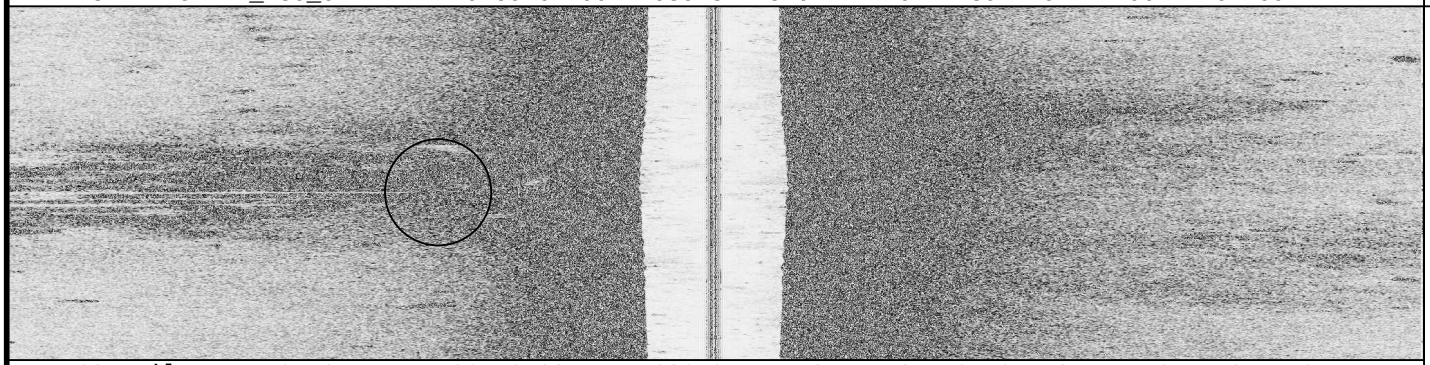


MB File: n/a Scale 1:500



ID: 48 File: LM_130_024.XTF 29 59 02.99N 089 37 15.02W RNG: 7.89 HGT: 1.90 HDG: 092

COMMENT:
Platform Plot platform symbol



ID: 38 File: LM_121_017.XTF 29 59 02.54N 089 37 15.58W RNG: -9.79 HGT: 1.53 HDG: 179

CORRELATED SS CONTACTS:

Contact	Range/Height
130203559	7.89/1.90
121213402	-9.79/1.53
121120955	-13.39/1.16
130202637	9.95/1.62

FEATURE CORRELATOR SHEET Job: H11613

Feature #: 0005 Least Depth: Lat: 30 00 03.15N Lon: 089 33 21.75W Ping: Beam:

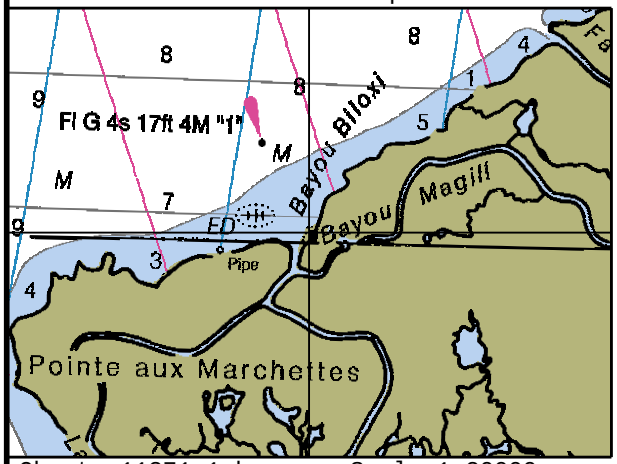


Chart: 11371_1.kap Scale 1:20000

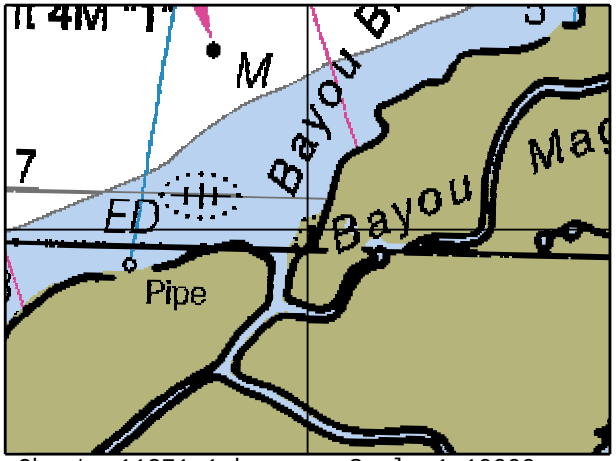
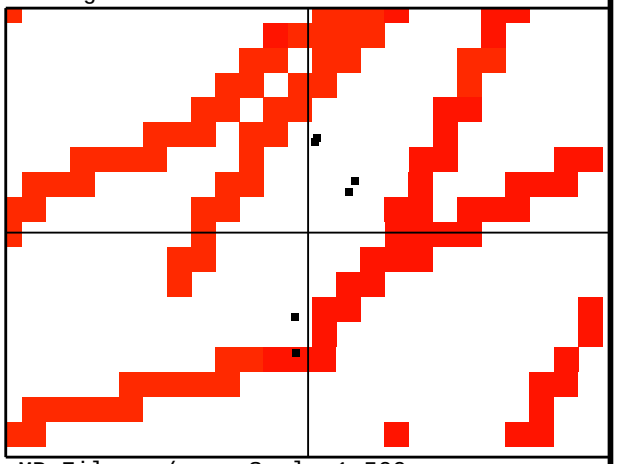
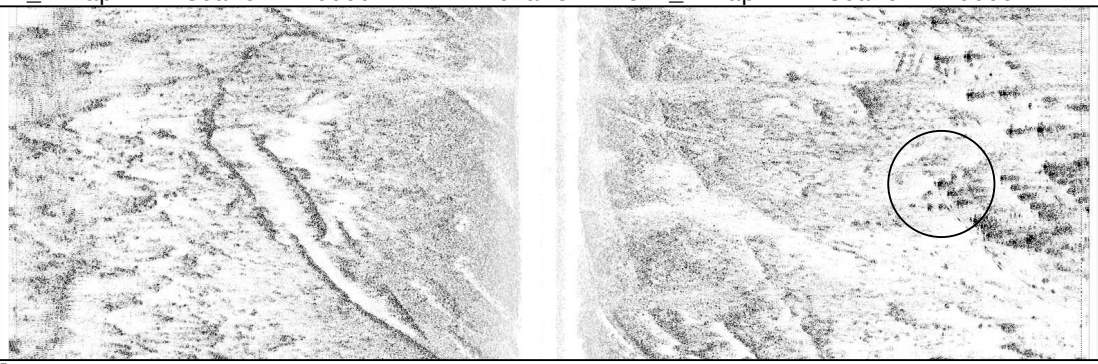


Chart: 11371_1.kap Scale 1:10000

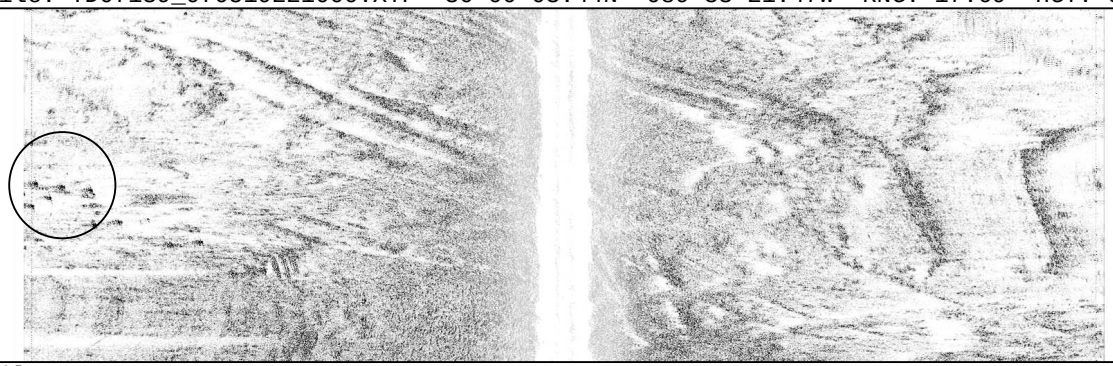


MB File: n/a Scale 1:500



ID: 56 File: TD07139_070519221000.XTF 30 00 03.44N 089 33 21.47W RNG: 17.69 HGT: 0.16 HDG: 205

COMMENT:
Platform Plot platform symbol



ID: 27 File: TD07113_070423192800.XTF 30 00 03.52N 089 33 21.43W RNG: -22.75 HGT: 0.05 HDG: 063

CORRELATED SS CONTACTS:

Contact	Range/Height
139221126	17.69/0.16
113193724	-22.75/0.05
113193716	-11.38/0.64
113192120	-14.09/0.00
139221313	4.09/1.35
113193713	-5.25/0.96

FEATURE CORRELATOR SHEET Job: H11613

Feature #: 0004 Least Depth: Lat: 29 58 39.93N Lon: 089 35 51.51W Ping: Beam:

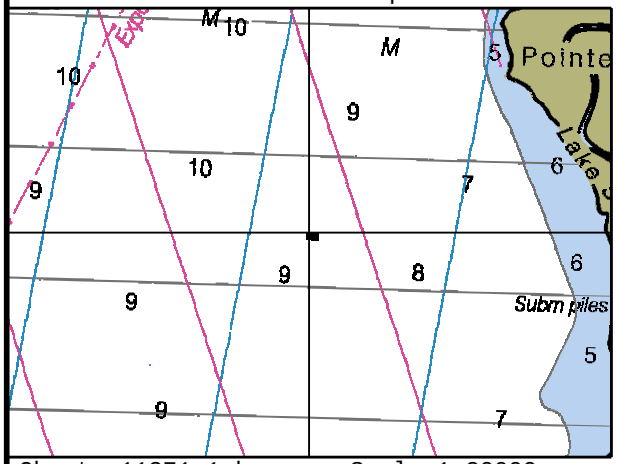


Chart: 11371_1.kap Scale 1:20000

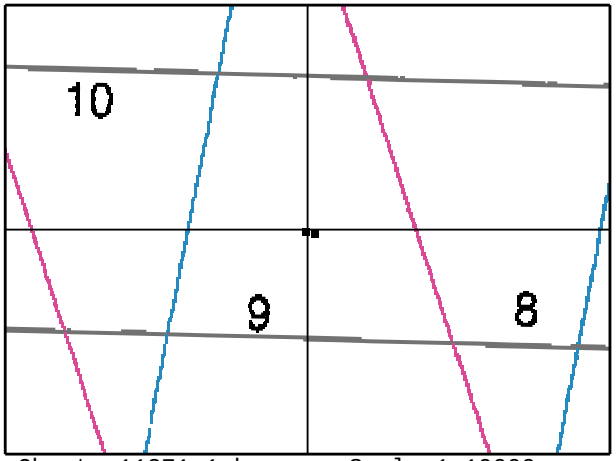
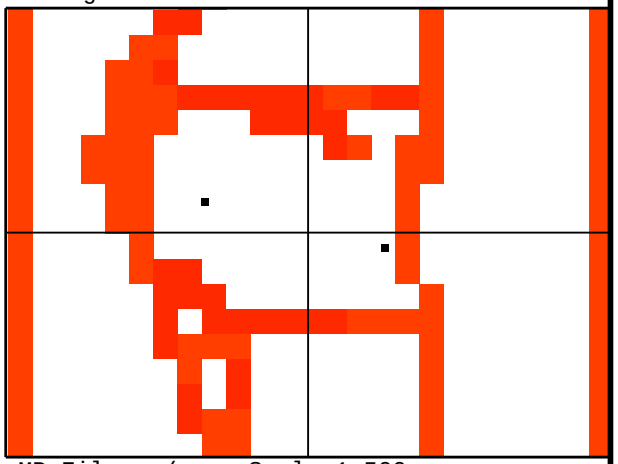
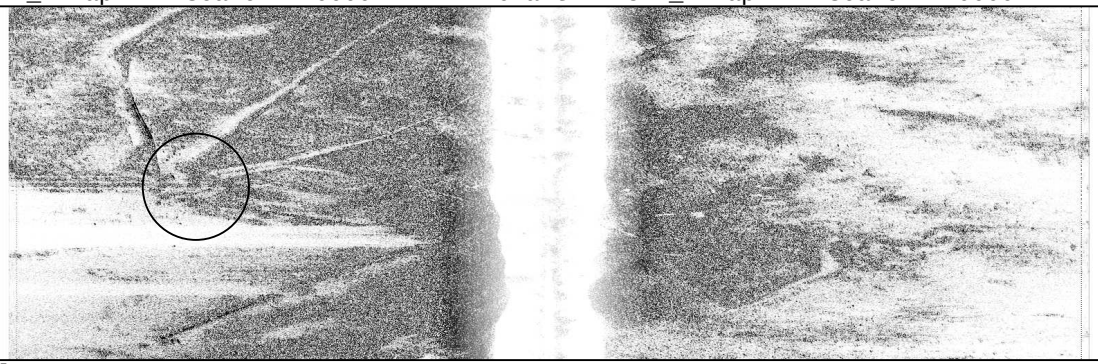


Chart: 11371_1.kap Scale 1:10000



MB File: n/a Scale 1:500



ID: 61 File: TD07140_070520180100.XTF 29 58 39.86N 089 35 50.94W RNG: -16.03 HGT: 0.00 HDG: 087

COMMENT:
Platform Plot platform symbol

ID: 68 File: TD07147_070527192700.XTF 29 58 40.14N 089 35 52.34W RNG: -14.50 HGT: 1.11 HDG: 150

CORRELATED SS CONTACTS:

Contact	Range/Height
140180311	-16.03/0.00
147192837	-14.50/1.11

FEATURE CORRELATOR SHEET Job: H11613

Feature #: 0003 Least Depth: Lat: 29 58 23.78N Lon: 089 34 13.85W Ping: Beam:

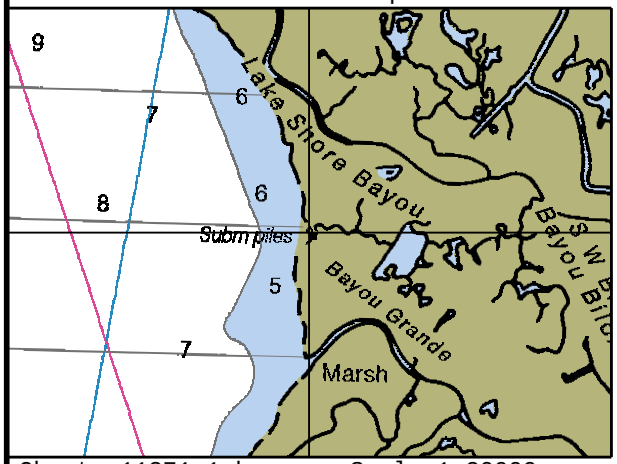


Chart: 11371_1.kap Scale 1:20000

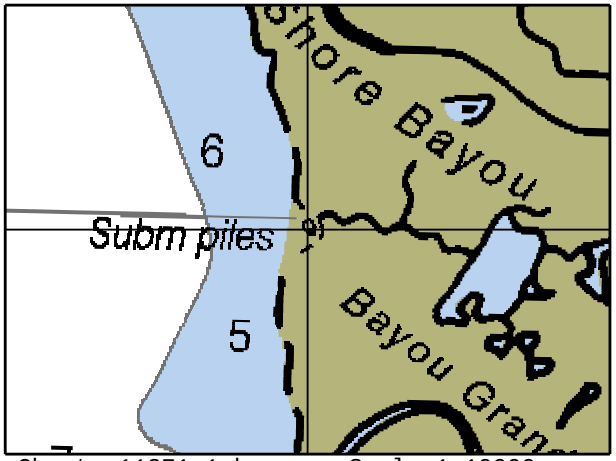
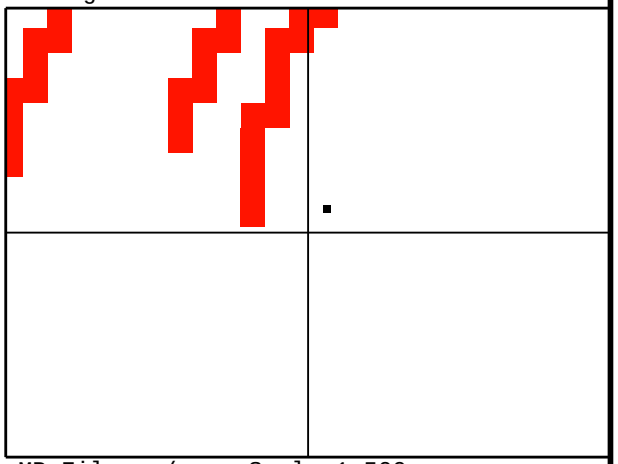
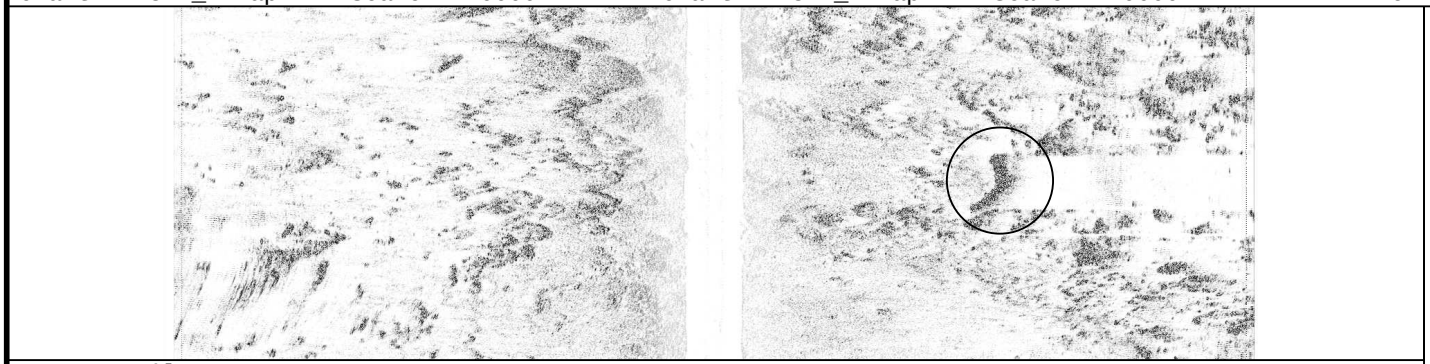


Chart: 11371_1.kap Scale 1:10000



MB File: n/a Scale 1:500



ID: 28 File: TD07113_070423203600.XTF 29 58 23.96N 089 34 13.74W RNG: 12.88 HGT: 0.53 HDG: 008

COMMENT:
OBSTR Piles Plot Pile symbol and label Subm Piles

CORRELATED SS CONTACTS:

Contact	Range/Height
113203823	12.88/0.53

FEATURE CORRELATOR SHEET Job: H11613

Feature #: 0002 Least Depth: Lat: 29 57 36.23N Lon: 089 34 29.92W Ping: Beam:

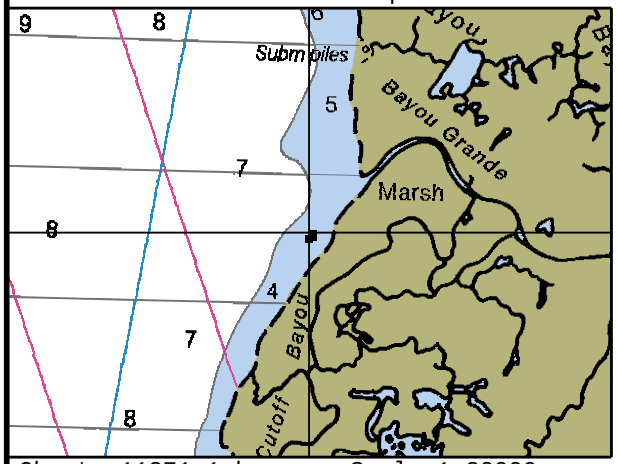


Chart: 11371_1.kap Scale 1:20000

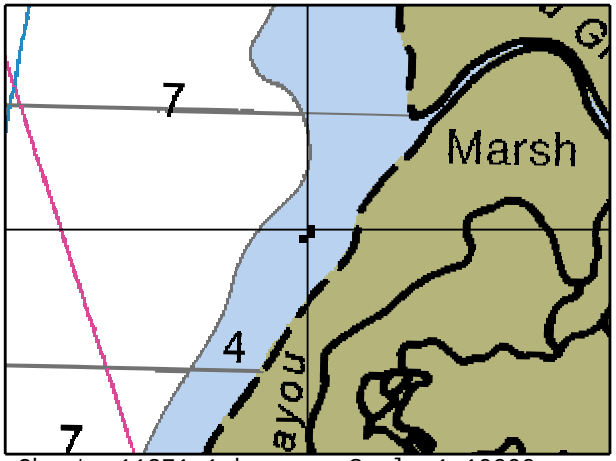
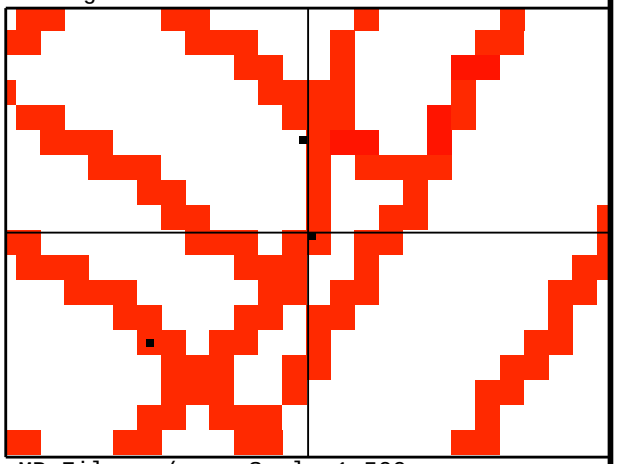
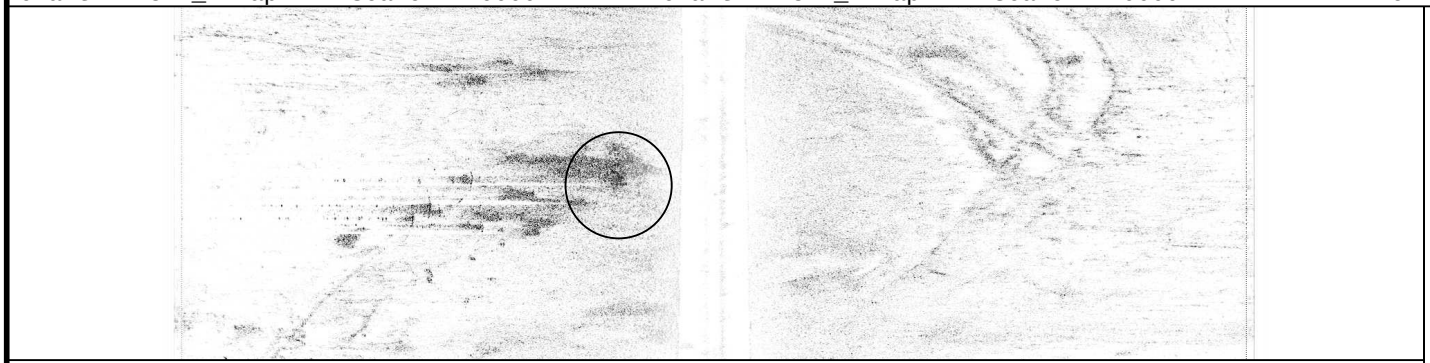


Chart: 11371_1.kap Scale 1:10000

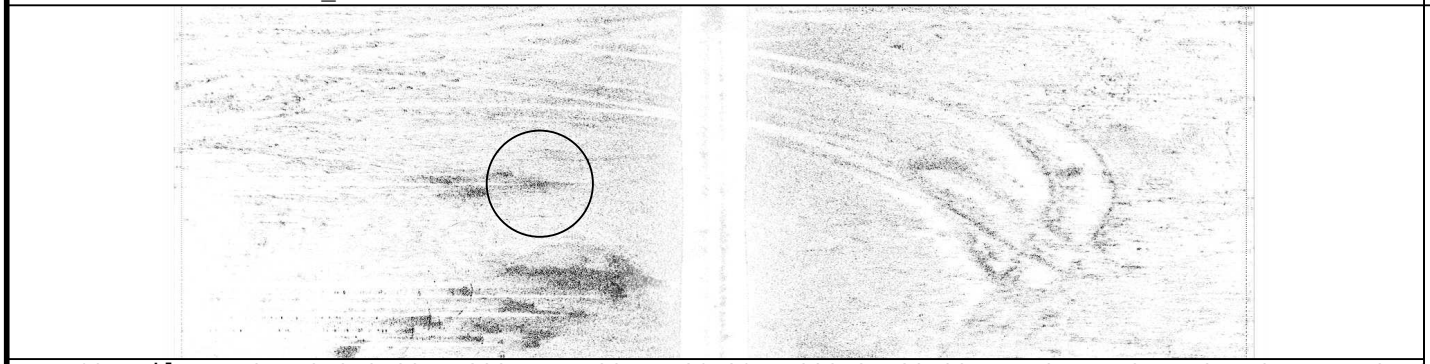


MB File: n/a Scale 1:500



ID: 59 File: TD07140_070520174300.XTF 29 57 36.23N 089 34 29.92W RNG: -4.38 HGT: 1.09 HDG: 023

COMMENT:
Platform Plot platform symbol



ID: 60 File: TD07140_070520174300.XTF 29 57 36.86N 089 34 30.00W RNG: -7.94 HGT: 0.47 HDG: 003

CORRELATED SS CONTACTS:

Contact	Range/Height
140174606	-4.38/1.09
140174611	-7.94/0.47
140174556	-15.00/0.55

FEATURE CORRELATOR SHEET Job: H11613

Feature #: 0001 Least Depth: Lat: 30 00 43.30N Lon: 089 32 39.61W Ping: Beam:

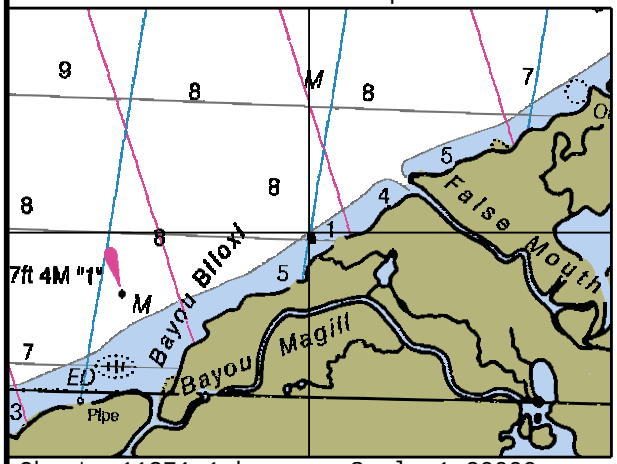


Chart: 11371_1.kap Scale 1:20000

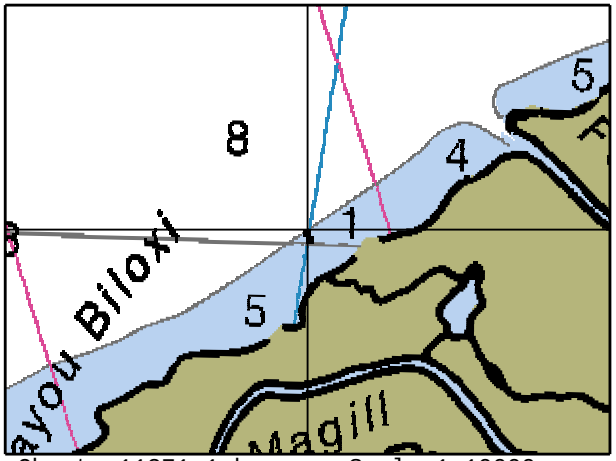
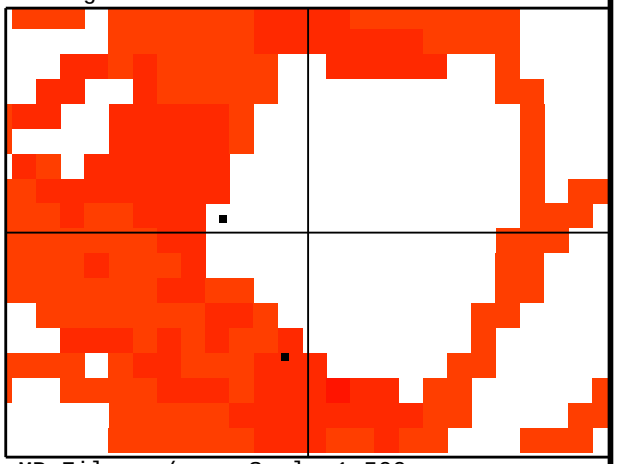
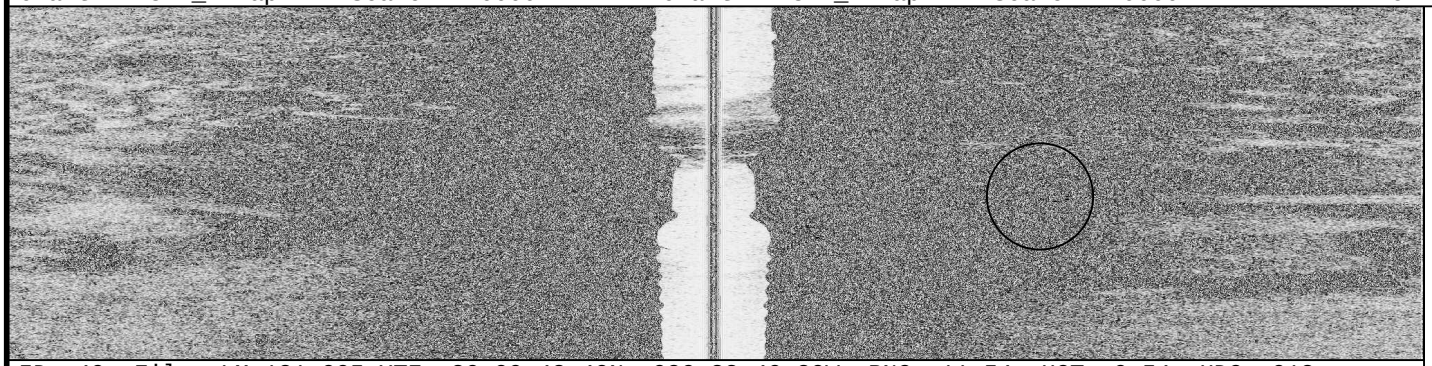


Chart: 11371_1.kap Scale 1:10000

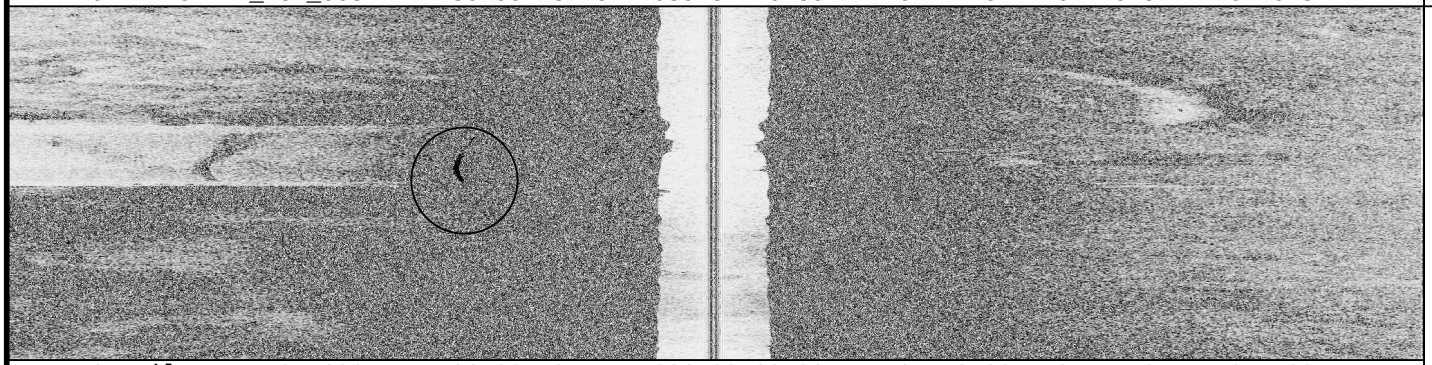


MB File: n/a Scale 1:500



ID: 49 File: LM_131_005.XTF 30 00 43.40N 089 32 40.30W RNG: 11.54 HGT: 0.54 HDG: 018

COMMENT:
Platform Plot platform symbol

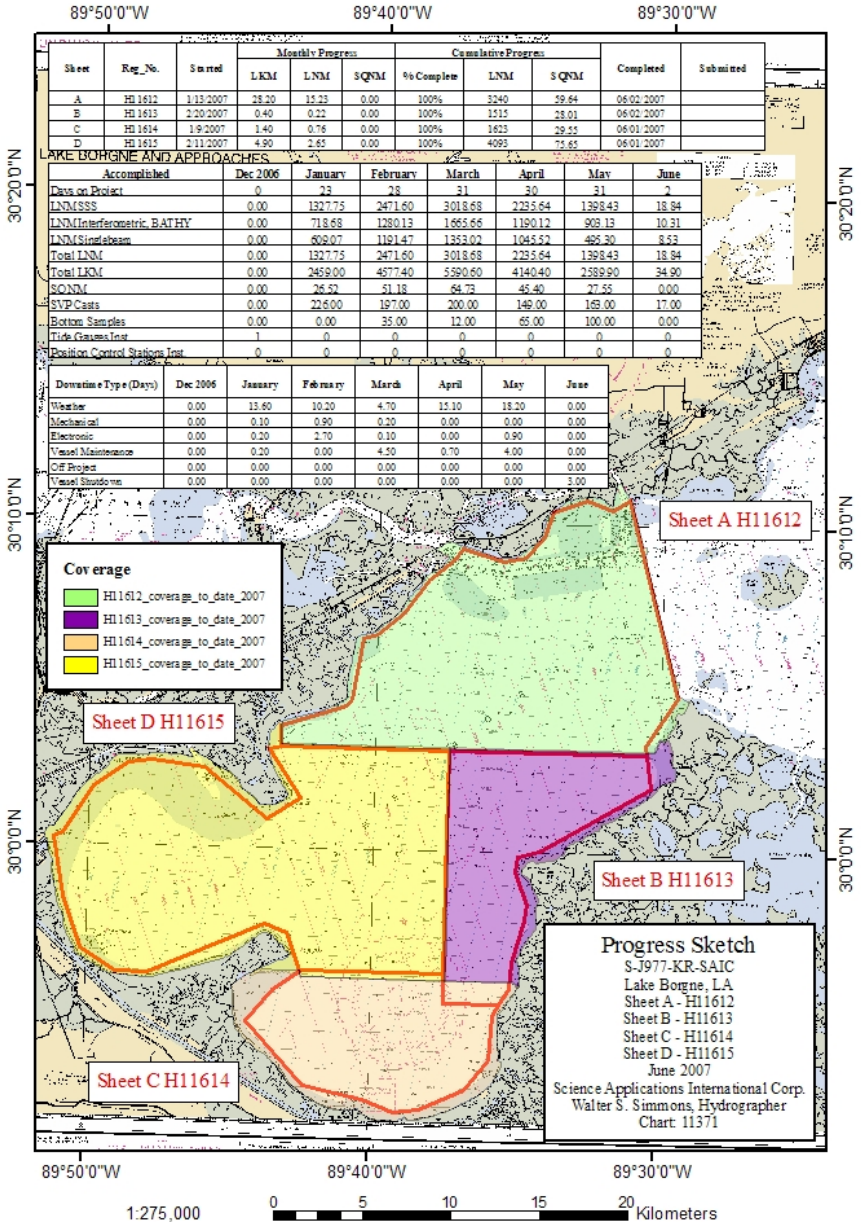


ID: 50 File: LM_131_006.XTF 30 00 42.51N 089 32 39.80W RNG: -8.92 HGT: 1.34 HDG: 123

CORRELATED SS CONTACTS:

Contact	Range/Height
131140724	11.54/0.54
131141105	-8.92/1.34

APPENDIX III. FINAL PROGRESS SKETCH AND SURVEY OUTLINE



LAKE BORGNE AND APPROACHES

Sheet	Reg_No.	Started	Monthly Progress LKM	LNM	SQNM	Cumulative Progress % Complete	LNM	SQNM	Completed	Submitted
A	H11612	1/13/2007	28.20	15.23	0.00	100%	3240	59.64	06/02/2007	
B	H11613	2/20/2007	0.40	0.22	0.00	100%	1515	28.01	06/02/2007	
C	H11614	1/9/2007	1.40	0.76	0.00	100%	1623	29.55	06/01/2007	
D	H11615	2/11/2007	4.90	2.65	0.00	100%	4093	75.65	06/01/2007	

Accomplished	Dec 2006	January	February	March	April	May	June
Days on Project	0	23	28	31	30	31	2
LNMSSS	0.00	1327.75	2471.60	3018.68	2235.64	1398.43	18.84
LNM Interferometric, BATHY	0.00	718.68	1280.13	1565.65	1190.12	908.13	10.31
LNM Singlebeam	0.00	608.07	1191.47	1353.02	1045.52	495.30	8.53
Total LNM	0.00	1327.75	2471.60	3018.68	2235.64	1398.43	18.84
Total LKM	0.00	2458.00	4577.40	5590.60	4140.40	2589.90	34.90
SQNM	0.00	26.52	51.18	64.73	45.40	27.55	0.00
SVP Casts	0.00	225.00	197.00	200.00	149.00	163.00	17.00
Bottom Samples	0.00	0.00	35.00	12.00	65.00	100.00	0.00
Tide Gauges Inst	1	0	0	0	0	0	0
Position Control Stations Inst	0	0	0	0	0	0	0

Downtime Type (Days)	Dec 2006	January	February	March	April	May	June
Weather	0.00	13.60	10.20	4.70	15.10	18.20	0.00
Mechanical	0.00	0.10	0.90	0.20	0.00	0.00	0.00
Electronic	0.00	0.20	2.70	0.10	0.00	0.90	0.00
Vessel Maintenance	0.00	0.20	0.00	4.50	0.70	4.00	0.00
Off Project	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Vessel Shutdown	0.00	0.00	0.00	0.00	0.00	0.00	3.00

Figure App. III-1. Final Progress Sketch

The Survey Outline for H11613 was delivered to the COTR, on 13 June 2007 in file H11612_H11613_H11614_H11615_Survey_outline.zip. The WinZip file contained four DXF format survey outlines (one for each sheet) in lat/lon format for import into MapInfo. The Sheet B survey outline is part of this delivery in file H11613_Survey_Outline_lat_long.dxf (Figure App. III-2).

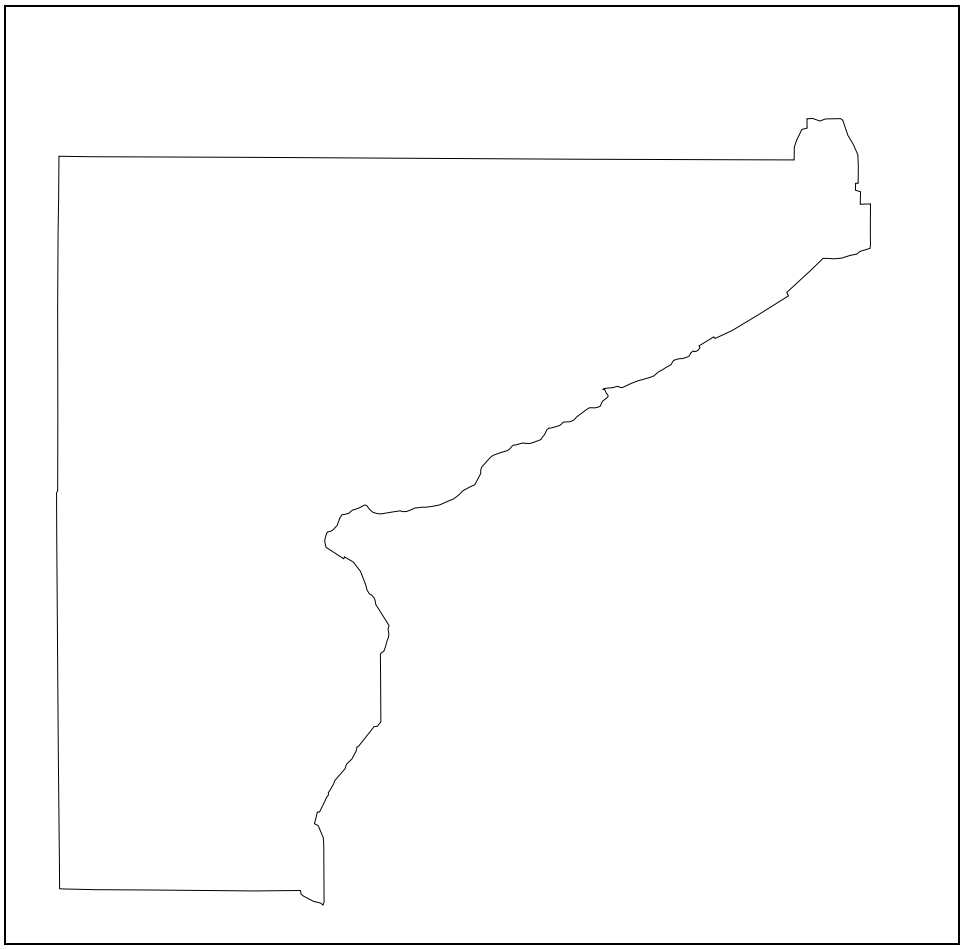


Figure App. III-2. Survey Outline for H11613

APPENDIX IV. TIDES AND WATER LEVELS

The on-line times for acquisition of valid hydrographic data are presented in Table App. IV-1. H11613 Abstract Times of Hydrography.

Project: S-J977-KR-SAIC
Registry No.: H11613
Contractor Name: Science Applications International Corporation
Date: 02 June 2007
Sheet Letter: B
Inclusive Dates: 20 February 2007 – 02 June 2007

Field work is complete.

Table App. IV-1. H11613 Abstract Times of Hydrography

Begin Julian Day	Begin Date	Begin Time	End Time
051	20-February-2007	16:41:22	20:35:20
054	23-February-2007	14:52:56	23:20:51
064	5-March-2007	14:22:05	23:05:21
072	13-March-2007	12:19:29	21:20:41
073	14-March-2007	12:30:47	15:53:49
081	22-March-2007	13:20:02	22:27:27
082	23-March-2007	12:41:59	22:19:46
086	27-March-2007	13:48:07	22:03:02
088	29-March-2007	18:34:25	21:50:07
089	30-March-2007	13:09:26	16:49:03
102	12-April-2007	12:09:51	22:20:25
103	13-April-2007	12:19:27	15:21:55
110	20-April-2007	11:53:57	15:37:10
111	21-April-2007	12:08:01	22:13:34
112	22-April-2007	11:56:25	22:14:19
113	23-April-2007	12:14:46	21:56:54
114	24-April-2007	11:39:20	21:50:09
117	27-April-2007	11:49:28	21:27:12
118	28-April-2007	11:52:32	22:08:07
119	29-April-2007	11:50:33	22:10:21
120	30-April-2007	11:39:26	22:39:47
121	1-May-2007	11:43:42	22:22:51
123	3-May-2007	12:19:21	22:12:10
124	4-May-2007	14:03:05	18:43:36
125	5-May-2007	11:50:19	22:01:42
126	6-May-2007	11:55:37	22:12:42
128	8-May-2007	11:45:45	22:28:47
129	9-May-2007	11:53:14	22:36:23
130	10-May-2007	14:45:53	21:59:43
131	11-May-2007	12:34:54	22:20:13

Begin Julian Day	Begin Date	Begin Time	End Time
132	12-May-2007	12:09:28	14:11:28
134	13-May-2007	19:14:30	20:16:24
139	19-May-2007	11:48:59	22:13:42
140	20-May-2007	16:53:55	18:05:13
147	27-May-2007	11:57:04	20:55:15
151	31-May-2007	12:00:53	14:32:49
152	1-June-2007	15:13:51	15:20:29
153	2-June-2007	12:11:34	12:12:07

Final Tide Note

Subordinate tide station 8761529 (Martello Castel, LA) was the source of verified water level heights for corrections to soundings. Water Level correctors were prepared for each zone using the **SABER/Tools/Create Water Level Files** software. **SABER/Apply Correctors/Tides** software applied these files to the multibeam data according to the zone containing the nadir beam of each ping.

APPENDIX V. SUPPLEMENTAL SURVEY RECORDS & CORRESPONDENCE

This appendix contains four sections. The first section contains the Danger to Navigation Reports as originally delivered. The second section contains five email correspondences, the third section contains the bottom composition results, and the fourth section contains the text files, which list the nodes from the three Bathymetric Attributed Grid files that exceed uncertainties for IHO Order 1 uncertainty.

Danger to Navigation Reports

Danger to Navigation Report 1

Hydrographic Survey Registry Number: H11613

State: Louisiana

Locality: Lake Borgne

Sublocality : East

Project Number: S-J977-KR-SAIC

Survey Date: 05 March 2007

The following items were found during hydrographic survey operations:

Platform

Chart Number	Edition		Charted Horiz. Datum	Geographic Position	
	No.	Date		Latitude	Longitude
11371	37	10/01/04	NAD 83	30° 00’ 43.299”N	089° 32’ 39.608”W
11364	41	12/01/05			

A single uncharted platform was noted during survey operations (Figures 1- 4).

Platforms

Chart Number	Edition		Charted Horiz. Datum	Geographic Position	
	No.	Date		Latitude	Longitude
11371	37	10/01/04	NAD 83	29° 57’ 36.000”N	089° 34’ 31.273”W
11364	41	12/01/05			

Four closely spaced, uncharted platforms were noted during survey operations. At the time of survey there was a barge moored between 2 structures and a crew boat, tug, and two barges moored along side the other two structures (Figures 5 - 8).

Platform

Chart Number	Edition		Charted Horiz. Datum	Geographic Position	
	No.	Date		Latitude	Longitude
11371	37	10/01/04	NAD 83	29° 58’ 39.928”N	089° 35’ 51.506”W
11364	41	12/01/05			

A single uncharted platform was noted during survey operations. There are several dolphins in close proximity to the platform. The closest dolphin is within 20 meters of the platform and is lighted, however the light characteristics and operation were not verified (Figures 9 - 12).

RECOMMENDATIONS:

Chart a platform (L10) in 30° 00’ 43.299”N 089° 32’ 39.608”W (NAD 83) and label “Platform”.

Chart a platform (L10) in 29° 57’ 36.000”N 089° 34’ 31.273”W (NAD 83) and label “Platforms”.

Chart a platform (L10) in 29° 58’ 39.928”N 089° 35’ 51.506”W (NAD 83) and label “Platform”.

Figure 1 Photographs of Platform within H11613 in 30° 00’ 43.299”N 089° 32’ 39.608”W (NAD 83).

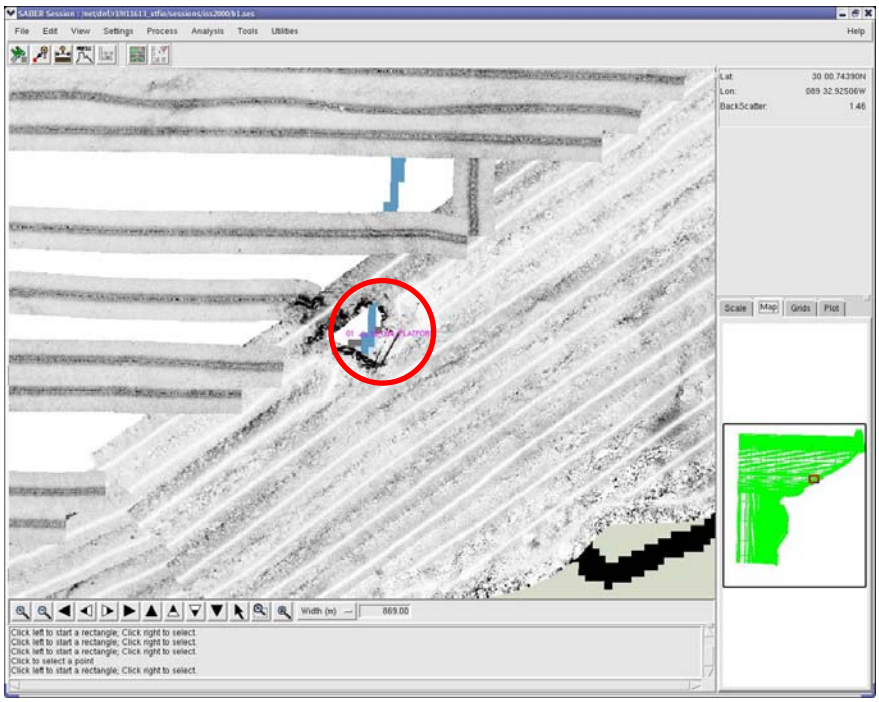


Figure 2 Side Scan Mosaic Showing Location of Platform within H11613 in 30° 00’ 43.299”N 089° 32’ 39.608”W (NAD 83).

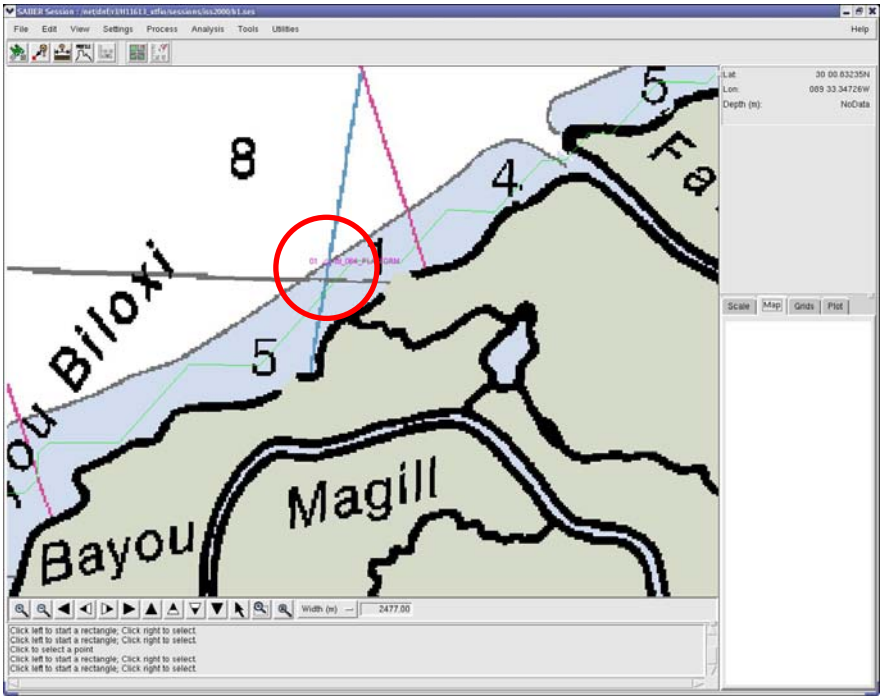


Figure 3 Chart 11371 Showing Location of Platform within H11613 in 30° 00’ 43.299”N 089° 32’ 39.608”W (NAD 83).

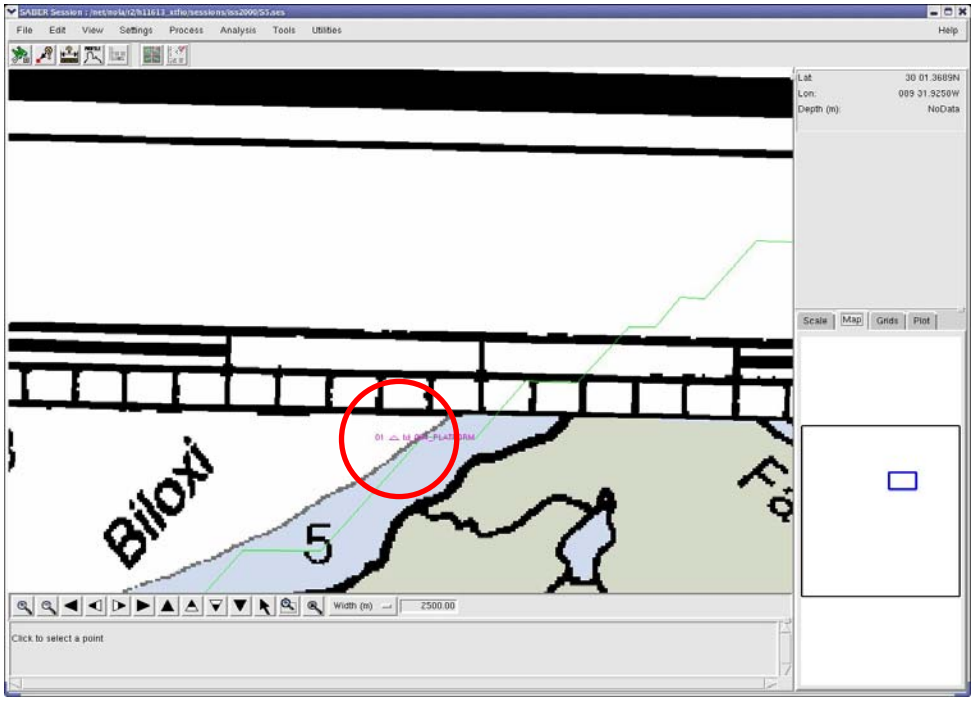


Figure 4 Chart 11364 Showing Location of Platform within H11613 in 30° 00’ 43.299”N 089° 32’ 39.608”W (NAD 83).

Figure 5 Photographs of Platforms within H11613 in 29° 57’ 36.000”N 089° 34’ 31.273”W (NAD 83).

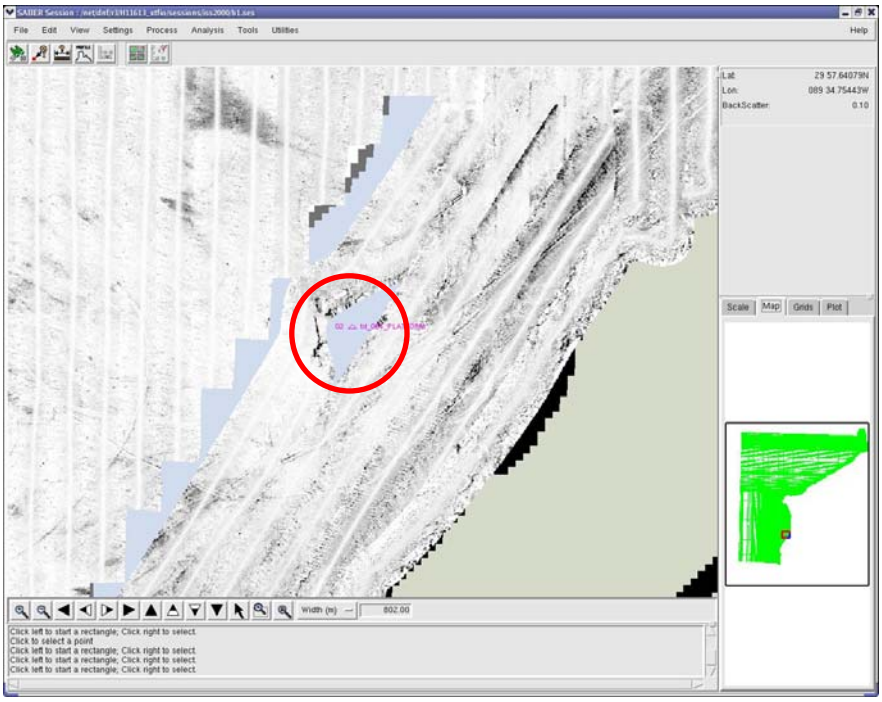


Figure 6 Side Scan Mosaic Showing Location of Platforms within H11613 in 29° 57’ 36.000”N 089° 34’ 31.273”W (NAD 83).

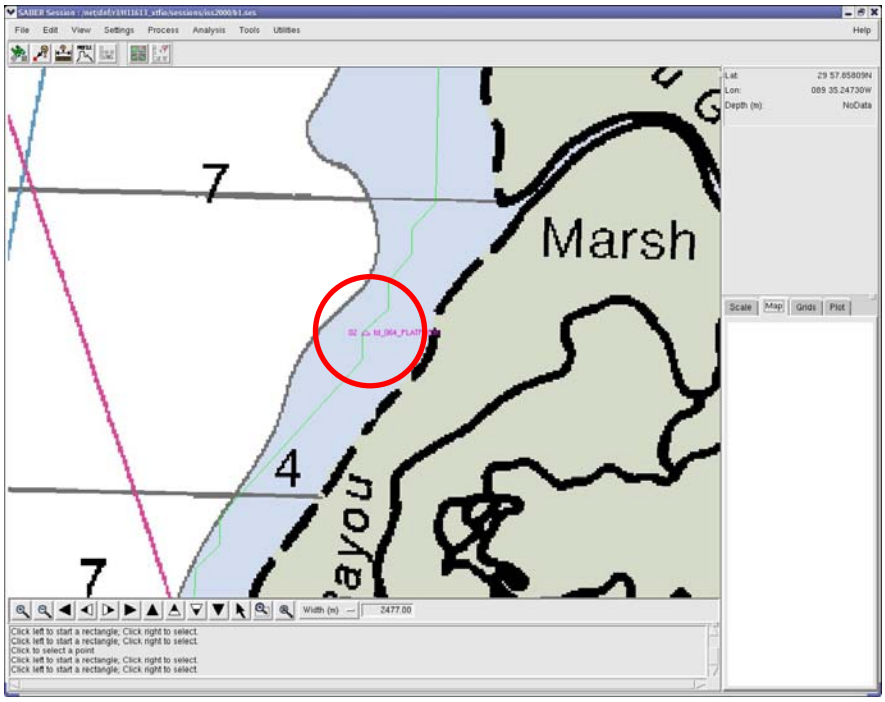


Figure 7 Chart 11371 Showing Location of Platforms within H11613 in 29° 57’ 36.000”N 089° 34’ 31.273”W (NAD 83)

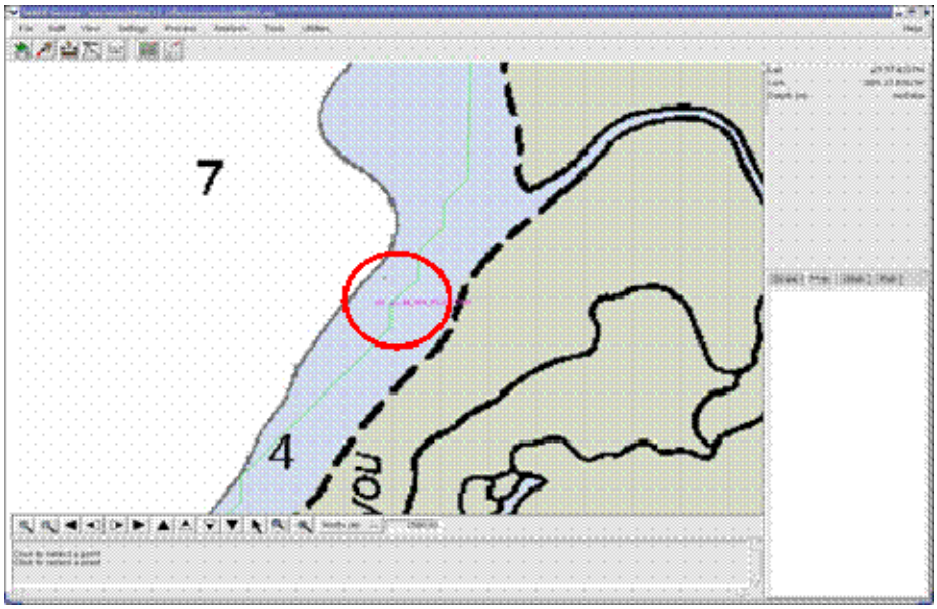


Figure 8 Chart 11364 Showing Location of Platforms within H11613 in 29° 57’ 36.000”N 089° 34’ 31.273”W (NAD 83).

Figure 9 Photograph of Platform and Lighted Dolphin within H11613 in 29° 58’ 39.928”N 089° 35’ 51.506”W (NAD 83).

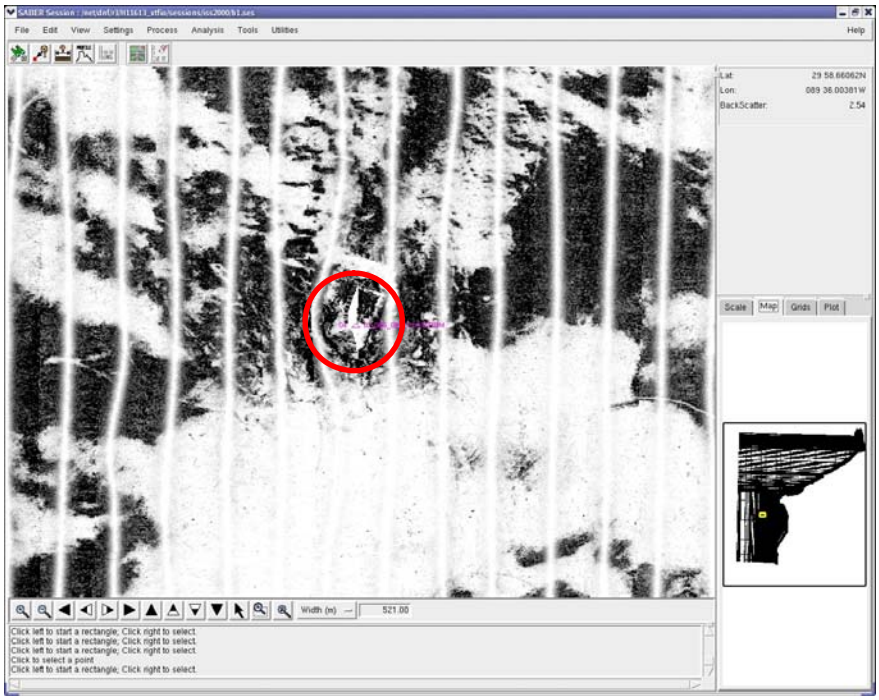


Figure 10 Side Scan Mosaic Showing Location of Platform within H11613 in 29° 58’ 39.928”N 089° 35’ 51.506”W (NAD 83).

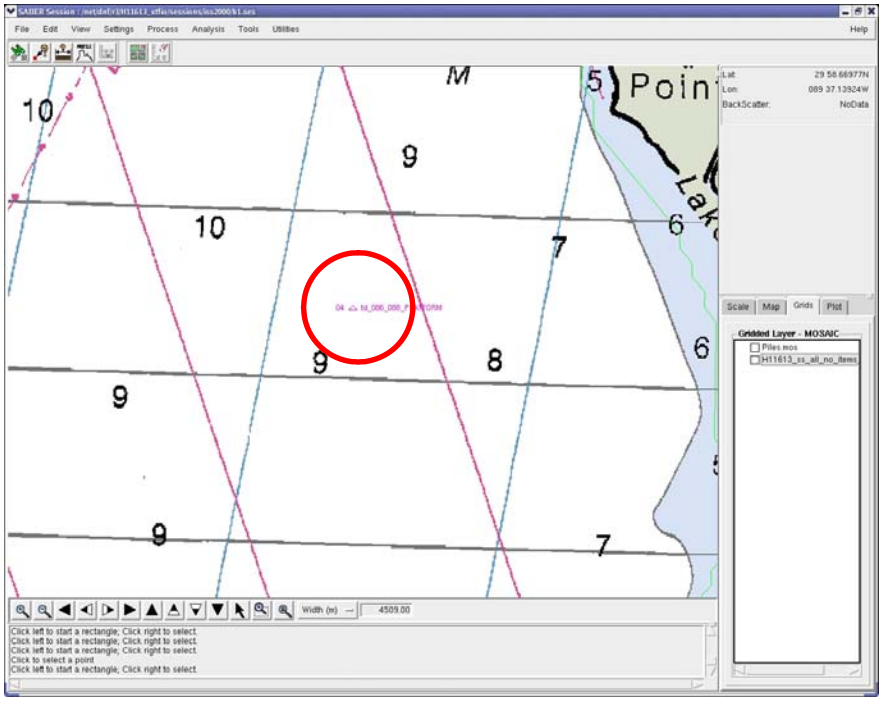


Figure 11 Chart 11371 Showing Location of Platform within H11613 in 29° 58’ 39.928”N 089° 35’ 51.506”W (NAD 83).

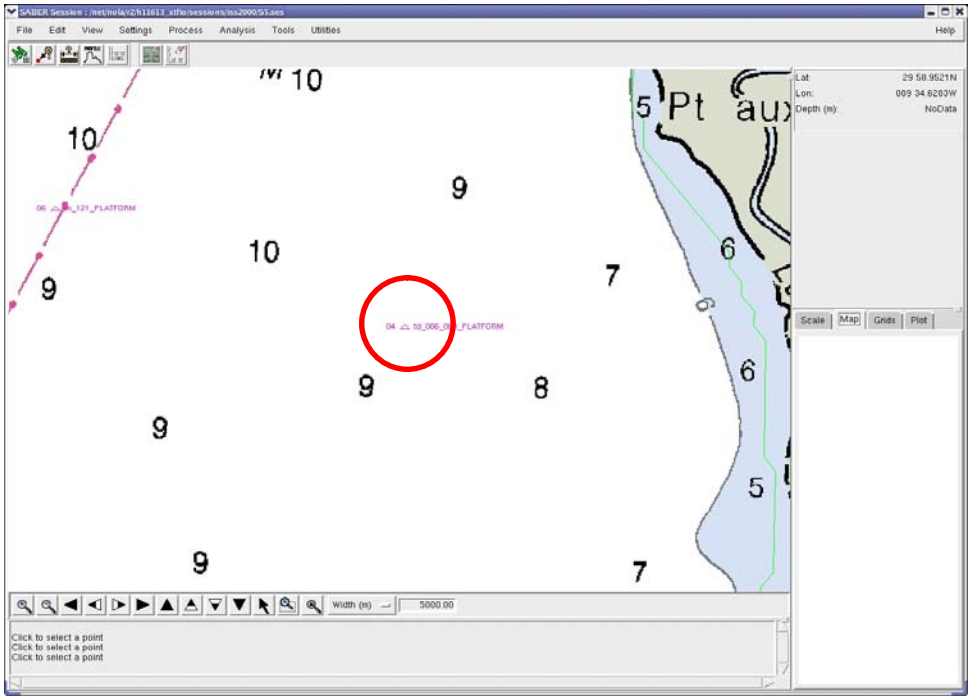


Figure 12 Chart 11364 Showing Location of Platform within H11613 in 29° 58' 39.928"N 089° 35' 51.506"W (NAD 83).

Danger to Navigation Report 2

Hydrographic Survey Registry Number: H11613

State: Louisiana

Locality: Lake Borgne

Sublocality: East

Project Number: S-J977-KR-SAIC

Survey Date: 23 April 2007

The following items were found during hydrographic survey operations:

Platform

Chart Number	Edition		Charted Horiz. Datum	Geographic Position	
	No.	Date		Latitude	Longitude
11371	37	10/01/04	NAD 83	30° 00’ 03.024”N	089° 33’ 22.416”W

A single uncharted platform was noted during survey operations. This is a double structure connected by a catwalk and had a sign which reads “MERIDIAN BML 24 #1 AND 19 #1” (Figures 1 – 4).

Awash Piles (exposed 1 foot, 0.31 meters, above chart datum)

Chart Number	Edition		Exposed Height (HW)	Charted Horiz. Datum	Geographic Position	
	No.	Date			Latitude	Longitude
11371	37	1/10/04	1 foot	NAD 83	29° 58’ 23.775”N	089° 34’ 13.854”W
11364	41	12/01/05				

Awash piles were noted during survey operations. The pilings are exposed approximately 1 foot (0.31 meter) above chart datum (Figures 5 – 9).

Platform

Chart Number	Edition		Charted Horiz. Datum	Geographic Position	
	No.	Date		Latitude	Longitude
11371	37	10/01/04	NAD 83	29° 59’ 02.676”N	089° 37’ 15.036”W
11364	41	12/01/05			

A single uncharted platform was noted during survey operations (Figures 10 – 13).
RECOMMENDATIONS:

Chart a platform (L10) in 30° 00’ 03.024”N 089° 33’ 22.416”W (NAD 83) and label “Platform”.

Chart submerged pile (K43.1) in 29° 58’ 23.775”N 089° 34’ 13.854”W (NAD 83) and label “Submerged Piles (1 ft)”.

Chart a platform (L10) in 29° 59’ 02.676”N 089° 37’ 15.036”W (NAD 83) and label “Platform”.

Figure 13 Photograph of Platform within H11613 in 30° 00’ 03.024”N 089° 089° 33’ 22.416”W.

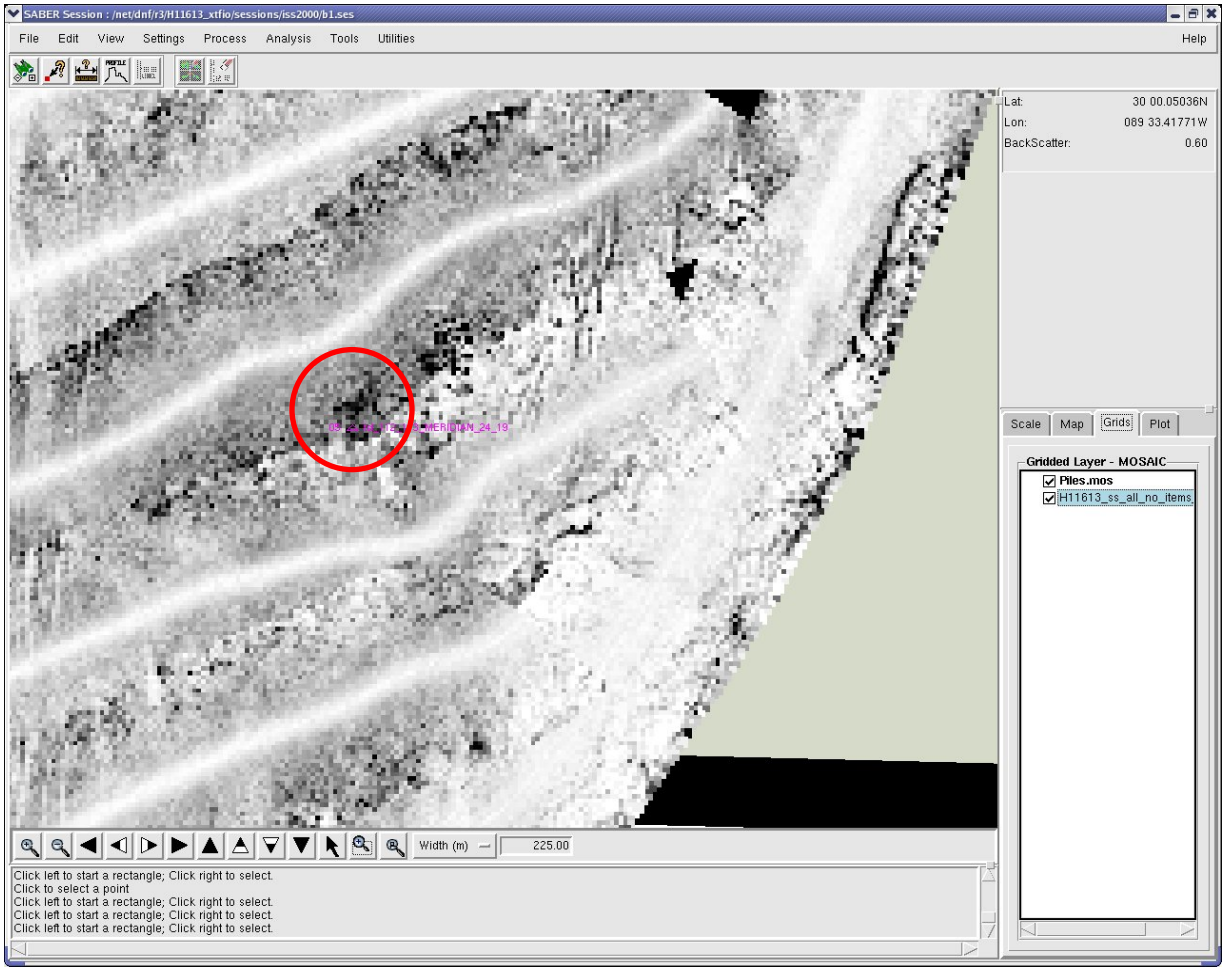


Figure 14 Side Scan Mosaic Showing Location of Platform within H11613 in 30° 00' 03.024"N 089° 089° 33' 22.416"W.

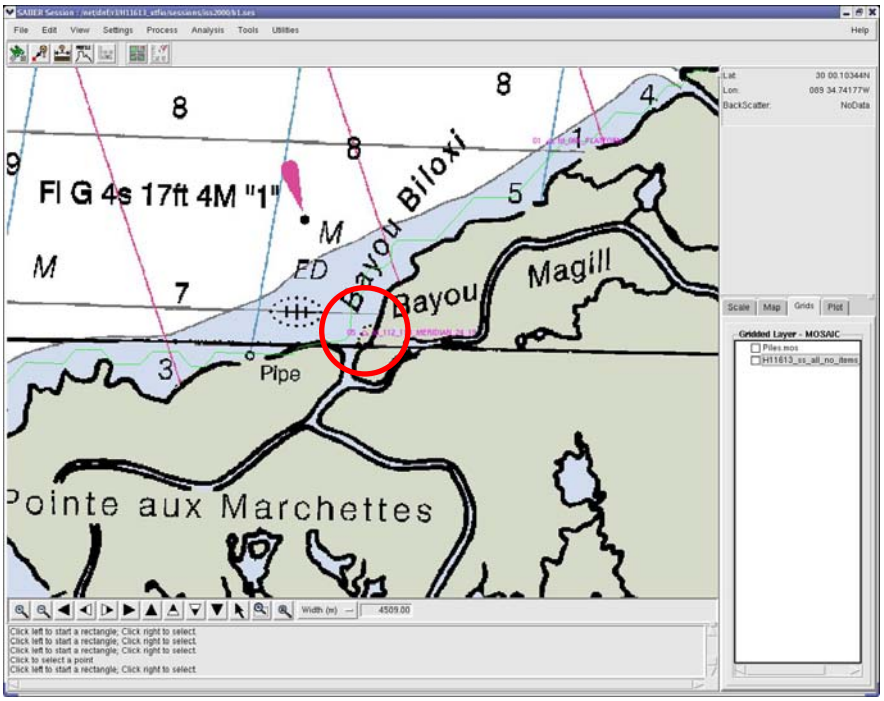


Figure 15 Chart 11371 Showing Location of Platform within H11613 in 30° 00' 03.024"N 089° 089° 33' 22.416"W.

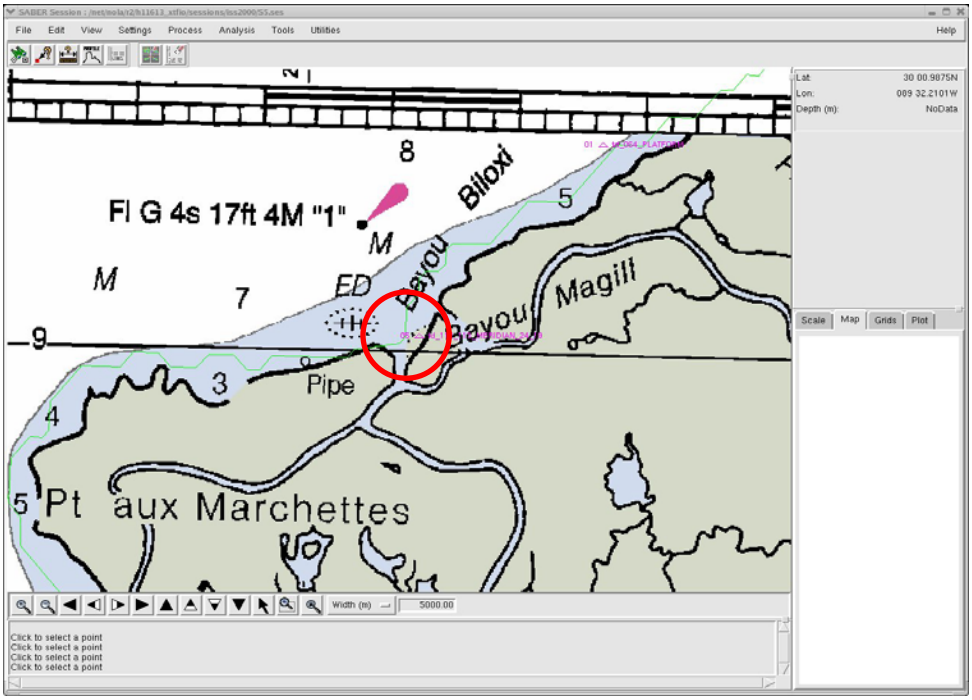


Figure 16 Chart 11364 Showing Location of Platform within H11613 in 30° 00' 03.024"N 089° 089° 33' 22.416"W.

Figure 17 Photographs of Awash Piles within H11613 in 29° 58’ 23.775”N 089° 34’ 13.854”W.

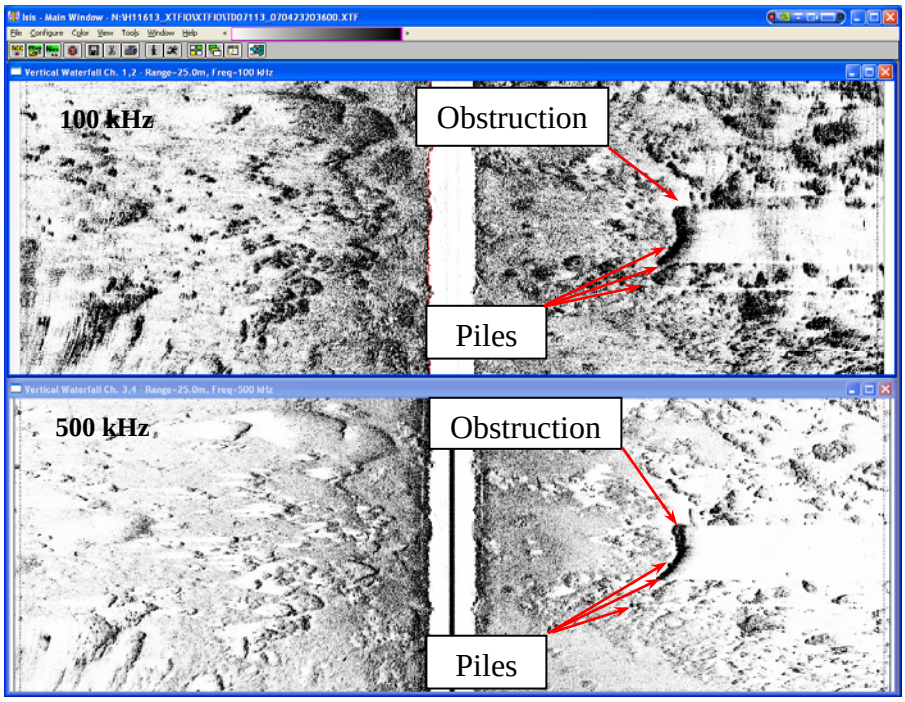


Figure 18 Side Scan Image Showing Awash Piles within H11613 Observed on JD 113 in 29° 58’ 23.775”N 089° 34’ 13.854”W.

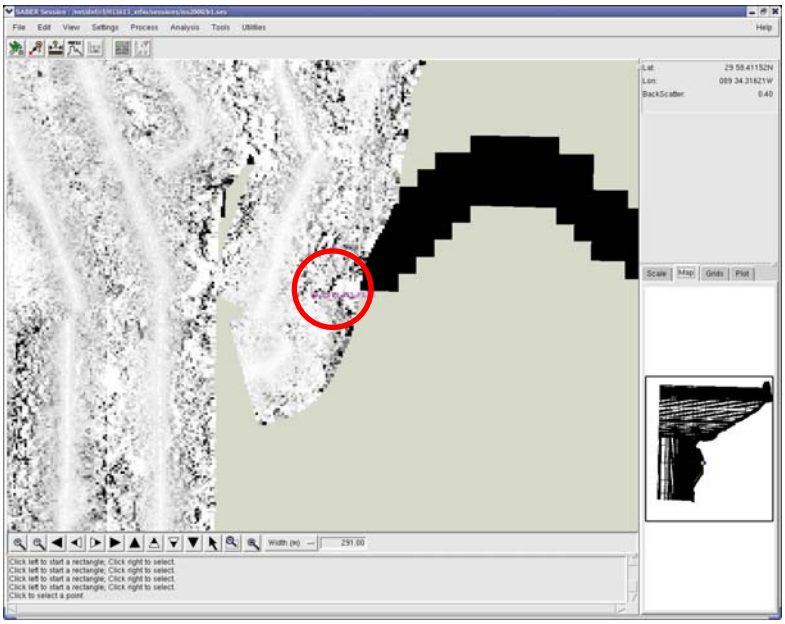


Figure 19 Side Scan Mosaic Showing Location of Awash Piles within H11613 in 29° 58’ 23.775”N 089° 34’ 13.854”W.

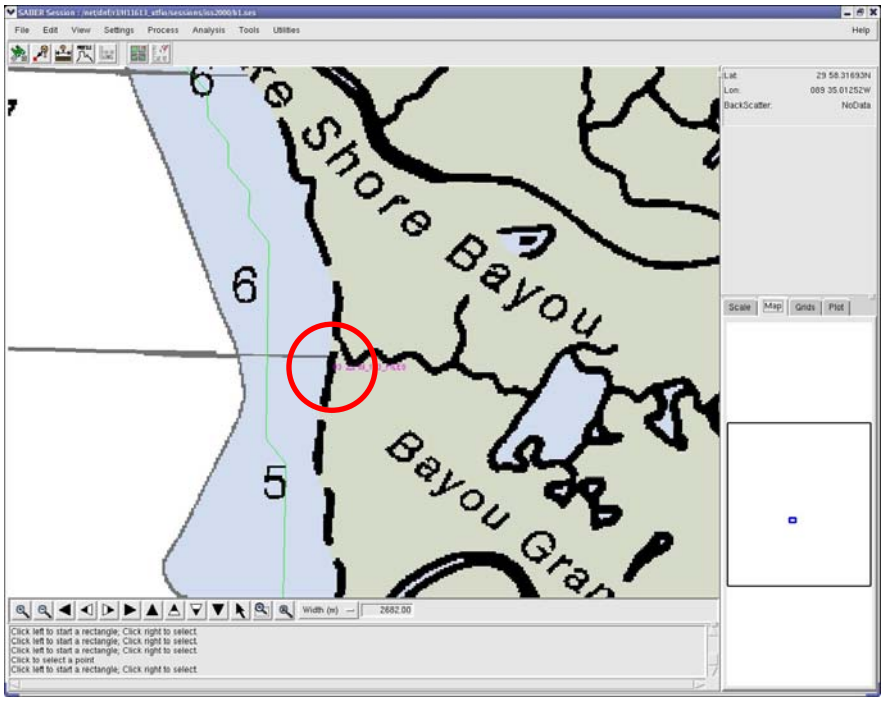


Figure 20 Chart 11371 Showing Location of Awash Piles within H11613 in 29° 58' 23.775"N 089° 34' 13.854"W.

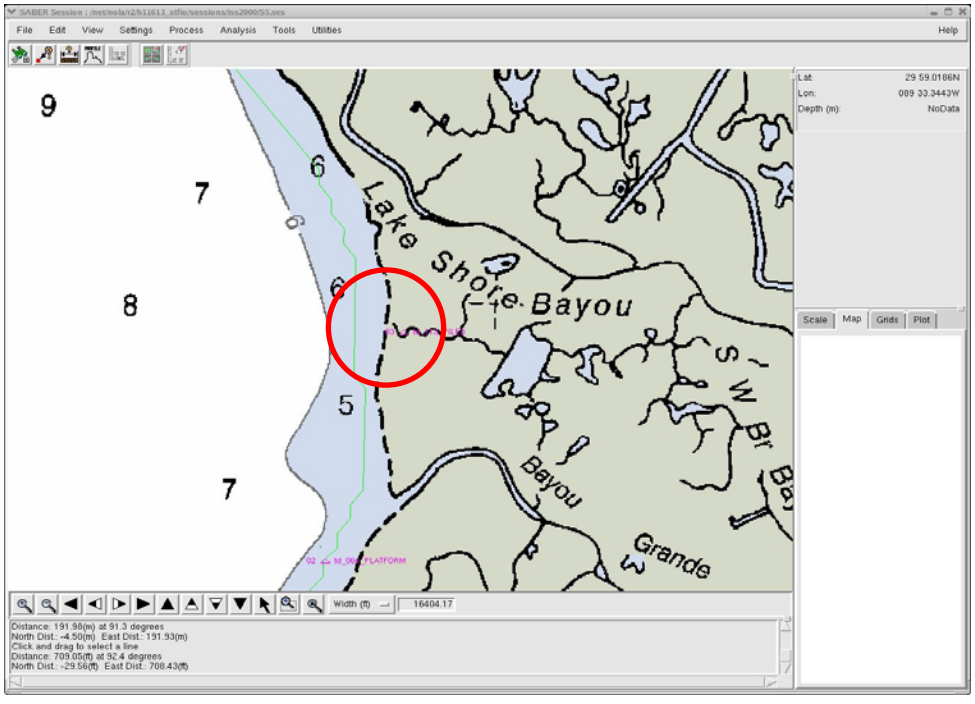


Figure 21 Chart 11364 Showing Location of Awash Piles within H11613 in 29° 58' 23.775"N 089° 34' 13.854"W

Figure 22 Photograph of Platform within H11613 in 29° 59' 02.676"N 089° 37' 15.036"W.

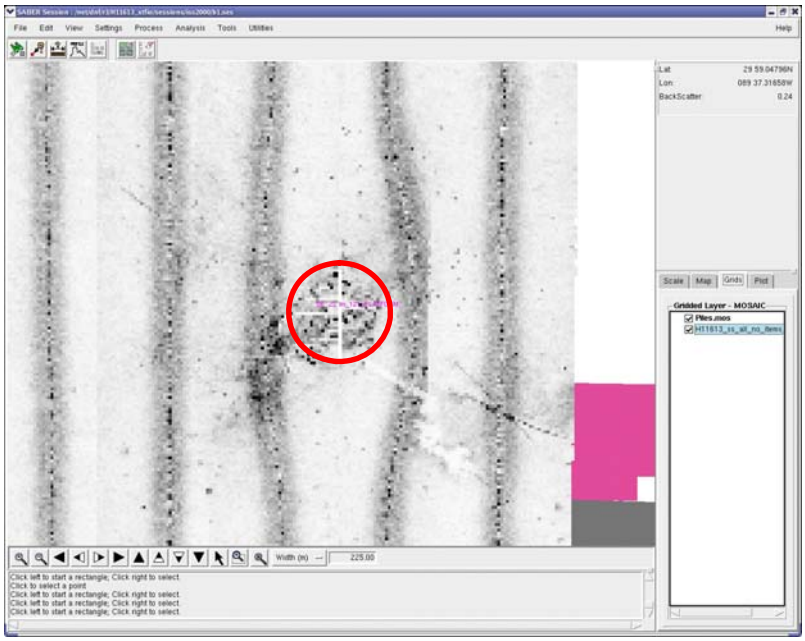


Figure 23 Side Scan Mosaic Showing Location of Platform within H11613 in 29° 59' 02.676"N 089° 37' 15.036"W.

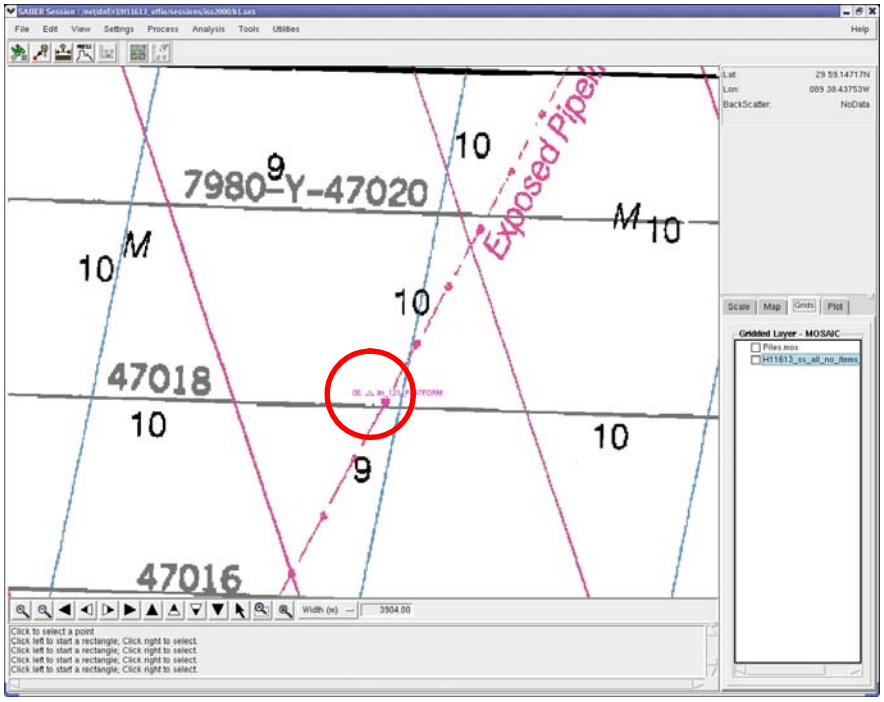


Figure 24 Chart 11371 Showing Location of Platform within H11613 in 29° 59' 02.676"N 089° 37' 15.036"W.

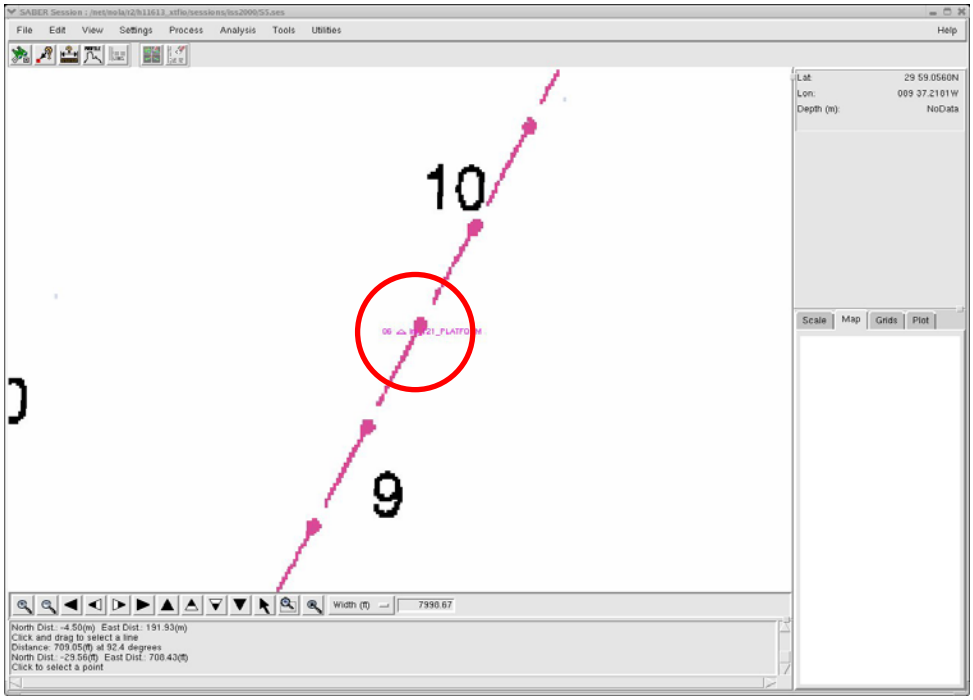


Figure 25 Chart 11364 Showing Location of Platform within H11613 in 29° 59' 02.676"N 089° 37' 15.036"W.

Danger to Navigation Report 3

Hydrographic Survey Registry Number: H11613

State: Louisiana

Locality: Lake Borgne

Sublocality: East

Project Number: S-J977-KR-SAIC

Survey Date: 05 May 2007

The following items were found during hydrographic survey operations:

Dolphins

Chart Number	Edition		Charted Horiz. Datum	Geographic Position	
	No.	Date		Latitude	Longitude
11371	37	10/01/04	NAD 83	30° 01’ 48.300”N	089° 36’ 17.912”W
11371	37	10/01/04	NAD 83	30° 01’ 47.281”N	089° 36’ 15.488”W
11371	37	10/01/04	NAD 83	30° 01’ 46.204”N	089° 36’ 12.890”W

Three closely spaced uncharted dolphins were noted during survey operations (Figure 26). The dolphins extend approximately 8 feet (2.4 meters) above chart datum. They are located approximately 300 meters north of a charted platform (Clayton Williams S/N 230155, Well #1) in 30° 01’ 36.734”N 089° 36’ 16.394”W (NAD 83). The charted platform has eight dolphins in two rows of four, extending approximately 125 meters to the northwest.

RECOMMENDATIONS:

Chart dolphin symbol (F20) in 30° 01’ 48.300”N 089° 36’ 17.912”W (NAD 83), 30° 01’ 47.281”N 089° 36’ 15.488”W (NAD 83), and 30° 01’ 46.204”N 089° 36’ 12.890”W (NAD 83) and label “Dols”.

Figure 26 Photograph of Dolphins Exposed Approximately 8 feet (2.4 meters) above Chart Datum within H11613.

Figure 27 Photograph of Charted Platform and Dolphins within H11613 in 30° 01' 37.519"N 089° 36' 20.167"W (NAD83).

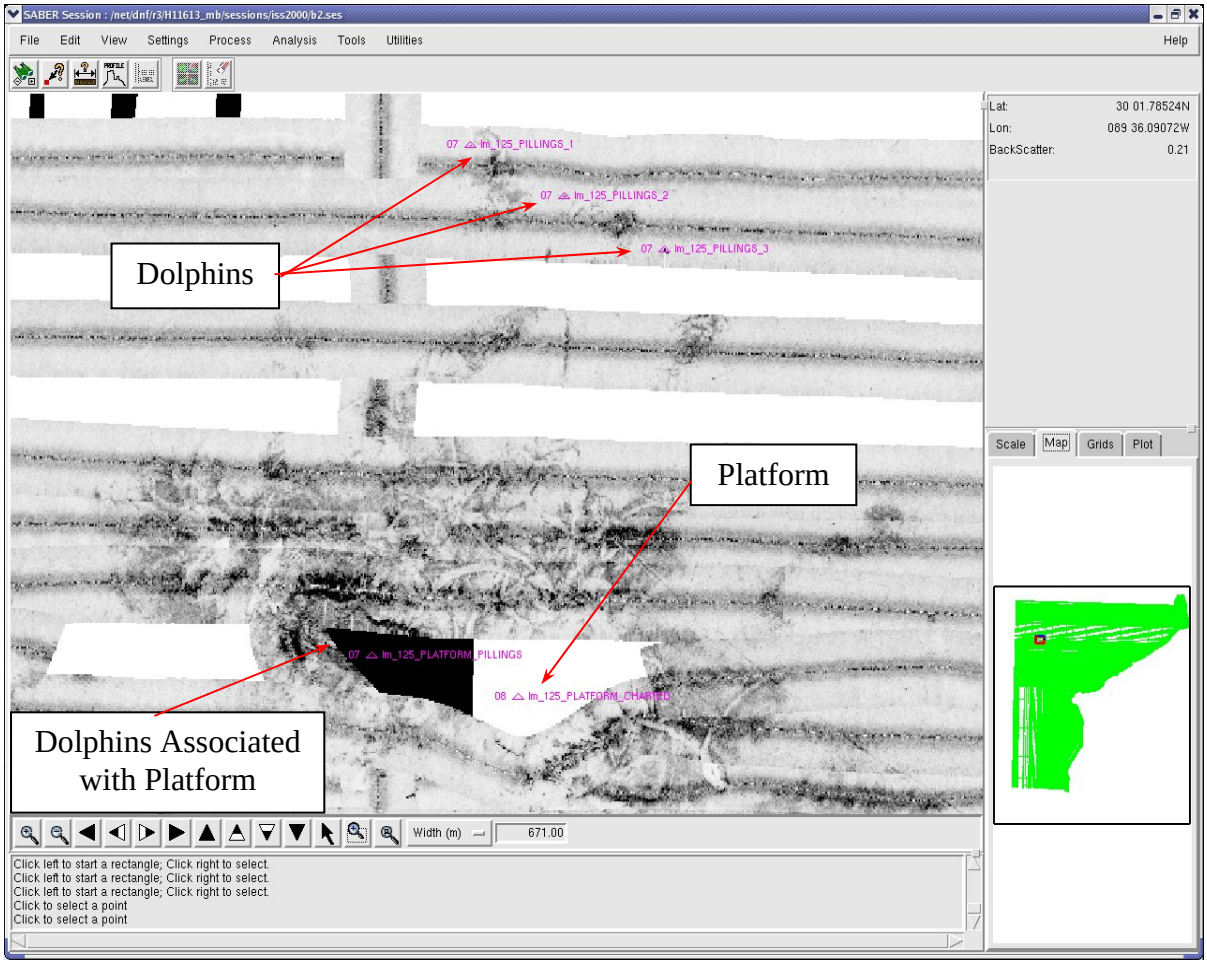


Figure 28 Side Scan Mosaic Showing Locations of Dolphins and the Charted Platform within H11613.

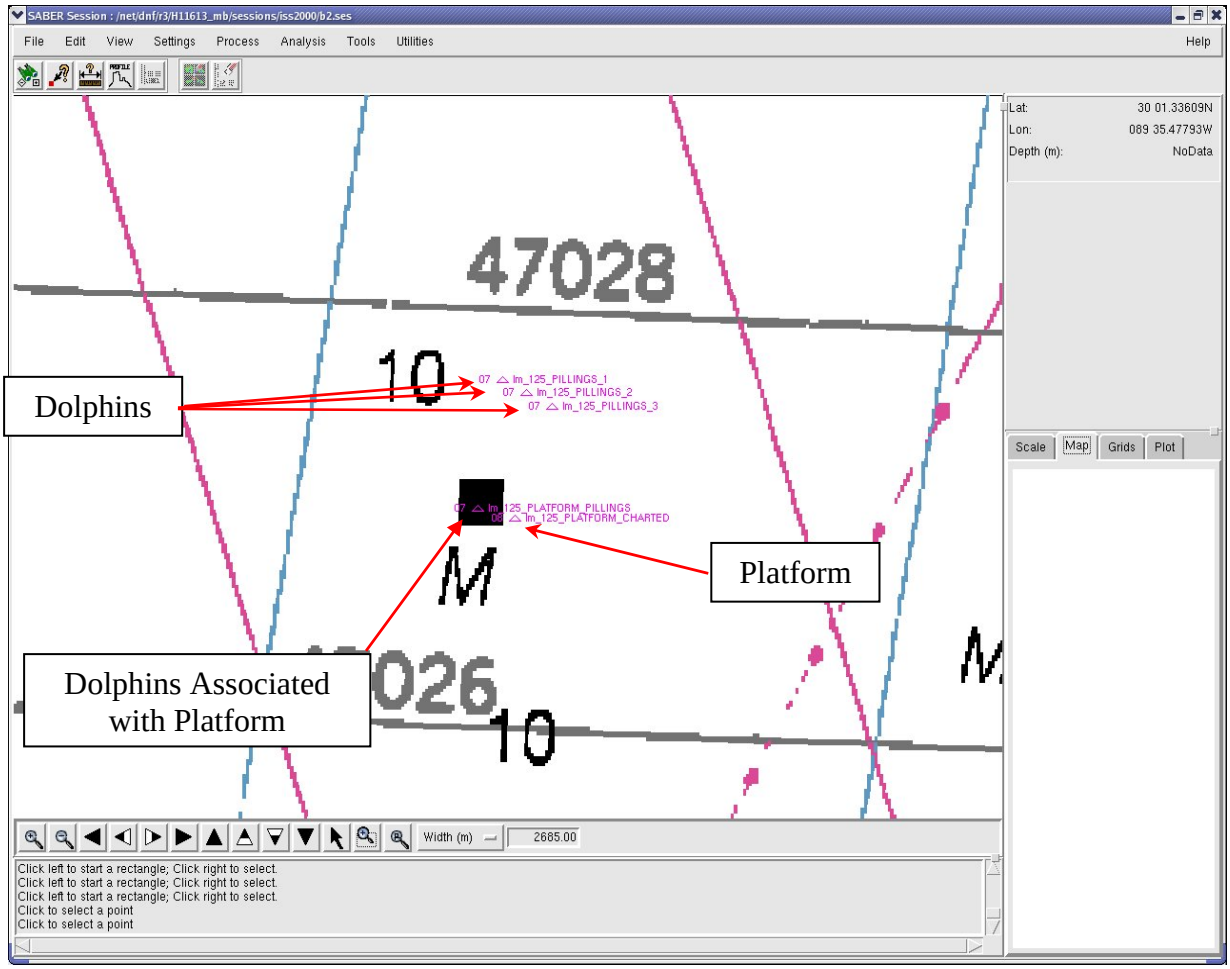


Figure 29 Chart 11371 Showing Locations of Dolphins and the Charted Platform within H11613.

Correspondence

The email correspondence presented below are: 1) 03 October 2007 Rebecca Quintal to Crescent Moegling and Mark Lathrop regarding SAICs September 2007 visit to AHB and the proposed Lake Borgne deliverables; 2) 30 May 2007 Crescent Moegling to Rod Evans regarding item investigations; 3) 09 January 2007 Crescent Moegling to Rod Evans regarding the format of images in the SOW; 4) 16 November 2006 Crescent Moegling to Rod Evans discussing the SOW and bottom samples; and 5) 25 October 2006 Crescent Moegling to Rebecca Quintal on changes to the SOW.

From: Quintal, Rebecca T.
Sent: Wednesday, October 03, 2007 1:38 PM
To: 'Crescent.Moegling@noaa.gov'; Mark.T.Lathrop@noaa.gov
Cc: 'Evans, Rhodri E.'; PAUL.L.DONALDSON@saic.com; 'gene_parker'; 'Shep.Smith@noaa.gov'
Subject: 25 September 2007 Meeting - AHB and SAIC

Mark and Crescent,

On Tuesday, 25 September 2007, SAIC and AHB had a very productive meeting regarding general data processing flow and specific questions about the Lake Borgne Debris Mapping deliveries and the DELMARVA deliveries. Below is a synopsis of our specific questions / discussions. Please advise if you concur with the conclusions which we collectively came to (AHB and SAIC personnel). If you have any questions or need more information we would be happy to set up a telecom to discuss.

Thank you,
-Rebecca

Lake Borgne Questions/Answers:

1. For contacts with no least depth (i.e. we don't have bathy but are estimating the depth from side scan instead) should use a QUASOU of 9 (Value reported, not confirmed).

2. MCOVR and MQUAL will be made from the outer perimeter of the bathy (GS+ and SB).

3. A single MQUAL will be made for an entire sheet. MQUAL will have a CATZOC of 2 (ZOC A2 - Full seafloor ensonification or sweep. All significant seafloor features detected and depths measured.) We decided on this because we do have full ensonification via the side scan and all features do have depths measured except where noted (see QUASOU of 9 above). Note that the S&D states that we should use a CATZOC of 6 (not assessed), but AHB have started accessing and would like us to as well.

4. The single MQUAL for an entire sheet will also have a TECSOU of 1, 2 and 3 (found by echo sounder, found by side scan and found by multi-beam, respectively).

5. Regarding Section 6.2 of the SOW below:
If an interferometric side scan is used, final depth data from the side scan shall be submitted as a Bathymetric Attributed Grid (BAG). The DR shall discuss the uncertainty and total propagated error (TPE) of the data and describe what portions of the swath (if any) meet IHO Order 1 specifications. The single beam soundings shall be submitted separately as part of the S-57 feature file.

We asked if they really wanted every valid sounding of every singlebeam file to be populated in the S-57 feature file. Shep ended up calling Gerd Glang and Jeff Ferguson about this issue to see what their true intentions were for the data as stated in the SOW. They stated that their intention was to have selected soundings of the SB data at survey scale be in the S-57 feature file. So we came to a conclusion that we would build 5-meter binned minimum grids of the SB data, build selected soundings at survey scale (same

as we did for smooth sheets), then deliver the XYZ file from the minimum grid and the selected soundings in the S-57 file. This approach precludes delivering every valid sounding of all SB files to be in the S-57 file.

We discussed Section 5.2.3 (Gridded Data Specifications) in the June 2006 S&D which states:

An example distribution of grid resolution;
- 0 to 15 meter depths; 0.5 meter grid resolution,
- 14 to 30 meter depths; 1.0 meter grid resolution,
- 29 to 60 meter depths; 2.0 meter grid resolution,
- 59 to 150 meter depths; 5.0 meter grid resolution,
- deeper than 149 meter depths; 10.0 meter grid resolution.

The hydrographer may adjust these values based on the bathymetry of the survey area, the type of multibeam sonar used and other factors.

All four Lake Borgne sheets fall in the water depths where the example node spacing is 0.5 meters. This will create very large grids representing a relatively flat seafloor. We discussed possibly delivering the Lake Borgne sheets at 1 meter node spacing due to the "bathymetry of the survey area".

DELMARVA Questions/Answers:

1. We discussed that depth contours and depth areas had been added into the S-57 feature file in the April 2007 S&D. We asked about contour interval and were given guidelines to make the contours and depth areas based on the depth intervals used in H-Cells (0, 3, 6, 12, 18 feet etc., only the metric equivalent (using the 0.75 rounding rule).

2. We should include the swim buoys encountered in DELMARVA in the S-57 feature file as BOYSPP (Buoy special purpose) and attribute them with CATSPM = 13 (private mark).

3. For the swim buoys we should try to get some images even if they are from Google Earth or something similar. We should also add as much information to the inform field about when they are out (ex: Memorial Day through Labor Day) etc.

General things we should/can change for all submissions:

1. We can just include the AWOIS descriptions in the AWOIS database in Appendix 2 of the DR. In Section D of the DR we will just say "see AWOIS database in Appendix 2". That way the information is only presented once. We do not need to include the Uncertainty value for the sounding in the AWOIS data base if it is presented elsewhere (in the Excel list of features for example).

2. We should put the DTN reports that AHB submit to MCD in Appendix 1 (Danger to Navigation Reports). We may (should) include our original DTN reports in Appendix 5 (Supplemental survey Records and Correspondence). AHB would like us to do this since they have to add in their submissions if we don't.

3. We discussed that all four Lake Borgne sheets fall in the water depths where the recommended node spacing is 0.5 meters. This will create very large grids. AHB are OK with us having to break up sheets due to grid file sizes. They stated that we should break our survey areas down to what ever size works for us, and if AHB have to they can break them down even further.

_____

Rebecca Quintal
Data Processing Manager
Science Applications International Corporation
221 Third Street

Newport, RI 02840 USA
401.847.4210
401.849.1585 (fax)

From: Crescent Moegling [Crescent.Moegling@noaa.gov]
Sent: Wednesday, May 30, 2007 5:02 PM
To: Evans, Rhodri E.
Cc: Mark.T.Lathrop@noaa.gov; Davis, Gary R.; Donaldson, Paul L.;
Quintal, Rebecca T.; Jeffrey Ferguson
Subject: Re: Item investigations: Lake Borgne Debris Survey

Hi Rod,

This approach is acceptable. Be sure to address in the Descriptive Report.

Crescent

Evans, Rhodri E. wrote:
Crescent,

On the Lake Borgne debris mapping survey we have the item surveys complied and we have put together a summary of the contacts versus additional item investigations (see attached file please).

In general we have not seen as much debris as we expected that is significant under the definition within the SOW, or what we would consider significant.

The SOW states that the 50 most significant items for the survey be investigated (we assume per sheet). The fewer than expected significant items identified leads to somewhat less than 50 items per sheet in general.

In general we have 58 items (76 contacts) for sheet A, 30 items (30 contacts) for sheet B, 14 items (14 contacts) on sheet C, and 45 items (54 contacts) for sheet D. This is an average of 36.75 items per sheet.

As we are now in the closing few days of survey, please confirm that this methodology is acceptable to you at your earliest convenience.

Regards, RE.

From: Crescent Moegling [Crescent.Moegling@noaa.gov]
Sent: Tuesday, January 09, 2007 9:55 AM
To: Evans, Rhodri E.
Cc: Quintal, Rebecca T.; PARKER, GARY C.
Subject: Re: Request for Proposal

Rod,

Either image format is acceptable. I apologize for the confusion.

Regards,

Crescent Moegling
NOAA Hydrographic Surveys Division
Physical Scientist
301.713.2698 x114

Evans, Rhodri E. wrote:
Crescent,

Please see the attached two files in Word format.

1.. The logistics and contact details for the SAIC operation in Slidell and Shell Beach, LA to aid you in your field visit;
2.. SoW comparison: prior to receipt of yesterday's SoW dated October 18th 2006, the only modified draft SoW SAIC had received was transmitted by you and dated September 25th 2006. Attached is a comparison of the differences between the two SoW's. The latest Oct 18th SOW includes the additional mosaic or survey boundary weekly submission. Also, the image format has changed to state jpeg now when we had discussed tiff images previously in place of geotiff. We can either put in a task to convert each image to jpg or ask you to confirm that tiff images are acceptable. Please advise us ASAP so that we can finalize the proposed costs.

I will try to call you shortly.

Regards, RE

Rod Evans Ph.D.,
Assistant Vice President,
Marine Survey Manager,
SAIC Marine Science and Technology Division,
221 Third Street,
Newport RI 02840
USA.
Tel (401) 848.4783.
Mobile (401) 439.1037.
Email: evansrh@saic.com
http://www.saic.com

From: Crescent Moegling [mailto:Crescent.Moegling@noaa.gov]
Sent: Monday, January 08, 2007 4:40 PM
To: Evans, Rhodri E.
Cc: Quintal, Rebecca T.; Linda D Brainard
Subject: Request for Proposal

Rod,

Please find attached the modified Statement of Work for S-J977-KR-SAIC. The only changes are to section 6.3. Please review and provide a cost estimate for the additional reporting requirements at your earliest convenience. For your information I have also attached the format sample for the weekly submission requirement.

Regards,
Crescent Moegling
NOAA Hydrographic Surveys Division
Physical Scientist
301.713.2698 x114

From: Crescent.Moegling@noaa.gov on behalf of Crescent Moegling [Crescent.Moegling@noaa.gov]
Sent: Thursday, November 16, 2006 5:55 PM
To: Evans, Rhodri E.
Cc: Mark.T.Lathrop@noaa.gov; PARKER, GARY C.; Donaldson, Paul L.; Quintal, Rebecca T.
Subject: Re: Lake Borgne SoW
Rod,

1. We will not require the collection of single-beam during interferometric acquisition.
2. We ask that you keep the bottom samples as other offices within NOAA have requested them for habitat mapping purposes. We are asking they be either refrigerated or frozen prior to shipping. A shipment address will be provided once survey operations begin.

Regards,

Crescent

PS: I trust the request for tide supplies has been addressed by Larry Neeson?

Evans, Rhodri E. wrote:
Crescent,

We have a couple of technical SoW questions in relation to the Lake Borgne survey:

1.. We will mobilize two vessels: One is equipped with a Klein side scan sonar and Odom single-beam echo sounder. The second vessel will deploy the GeoAcoustics interferometer (note that this system is equipped with a single beam transducer. However, we do not intend to log this separately due to the non-disciplined time tagging of the data) The second vessel will have a Klein side scan and Odom single beam available in case the GeoAcoustics system performance is not satisfactory (as described in our Work Plan that accompanied our proposal).

Our question: do we need to acquire time tagged single beam echo sounder data when we are acquiring the copious GeoAcoustics interferometer bathy data (which covers nadir as well)?;

2.. On past Task Orders, we have usually been given relief on storage of the bottom samples, and permitted to dispose of the samples immediately after recovering and describing the samples.

Our question: May we dispose of the bottom samples during the Lake Borgne survey, or should we be making arrangements to store these sample for future inspection by the COTR?

Many thanks, RE,

Regards, RE.
Rod Evans Ph.D.,

Assistant Vice President,
Marine Survey Manager,
SAIC Marine Science and Technology Division,
221 Third Street,
Newport RI 02840
USA.
Tel (401) 848.4783.
Mobile (401) 439.1037.
Email: evansrh@saic.com
http://www.saic.com

From: Crescent.Moegling@noaa.gov on behalf of Crescent Moegling [Crescent.Moegling@noaa.gov]
Sent: Wednesday, October 25, 2006 11:05 AM
To: Quintal, Rebecca T.
Cc: Evans, Rhodri E.; Mark Lathrop
Subject: Re: FW: Updated SOW
Rebecca,

Thank you for your patience in responding on the changes to the SOW for S-J977. I have reviewed your minutes and find them acceptable. Please find my comments and clarifications below:

1. While I have agreed that the Line Name is not required for the weekly feature submission, please include the field in your submission as the formatting of the spreadsheet is set up for a database which will require the column. You can use the entry NA for the column. I concur that the Search Track Number will not be required for the final deliverable.

2. I concur Towfish Layback field will not be required in the final deliverable.

3. I concur Contact Range field will not be required in the final deliverable.

4. I concur that the length and width for SAIC's images will not be the longest and shortest edge but rather the along and across track values.

5. An indication of scale will not be required for each contact image. This is addressed in the SOW. The requirement states that you can either indicate scale or include the center and outer edge of the waterfall so as to give the reviewer some indication of scale.

I would like to reiterate that these changes only apply to this project. Any data submissions outside of project S-J977 will require the submission as outlined in the SOW.

Regards,

Crescent Moegling
NOAA Hydrographic Surveys Division
Physical Scientist
301.713.2698 x114

Quintal, Rebecca T. wrote:
Crescent,

Hello. I am just checking in with you regarding the teleconference we had last week and the email of the minutes reproduced below. Please let me know if you have any questions or comments regarding this meeting summary.

Thanks,
-Rebecca

From: Quintal, Rebecca T.
Sent: Thursday, October 05, 2006 5:12 PM
To: 'Crescent.Moegling@noaa.gov'; 'Mark.T.Lathrop@noaa.gov'
Cc: 'RHODRI.E.EVANS@saic.com'; 'WALTER.S.SIMMONS@saic.com'
Subject: FW: Updated SOW

Crescent,

Thank you for discussing the new SOW and Specifications for the Debris Mapping work with us yesterday. Please find below minutes to the teleconference. Please make changes and/or additions if you feel I have missed something or stated it incorrectly.

A teleconference was held between NOAA and SAIC on Wednesday, 4 October 2006 at 5:00 PM Eastern time. In attendance were:

Crescent Moegling (NOAA)
Rod Evans (SAIC)
Walter Simmons (SAIC)
Rebecca Quintal (SAIC)

The topic of discussion was the string of emails reproduced below regarding the updated SOW for S-J977 Lake Borgne and, in addition, the Side Scan Sonar Contact file required for final delivery in the June 2006 Specifications and Deliverables.

Regarding Item #1 in the below email from Rebecca Quintal to Crescent Moegling (Monday, October 02, 2006 10:56 AM)

1. In both the FeatureFileFormat weekly submission and the Side Scan Sonar Contact List final deliverable, SAIC request that the Line Name (FeatureFileFormat) and the Search Track Number (Side Scan Sonar Contact List) column not be required. The contact number is annotated by Julian Day and time so a reviewer can always correlate a contact to a certain survey line, corresponding bathymetry file, etc.

It was discussed that SAIC do not name their data files after the search track number (line name). SAIC discussed that since all data files and contact files are named after Julian Day and time and the line names are not, that this column does not seem necessary. Crescent discussed that the assumption was that the search track (survey line name) and the data file names are the same. Crescent took the action item to decide whether this field in both the FeatureFileFormat weekly submission and the Side Scan Sonar Contact List final deliverable is indeed required for SAIC's deliverables.

To provide more clarification than was possible over the telephone, we have provided more information regarding our logs below.

SAIC name their bathymetry files with a 2 digit vessel ID, 3 digit sensor ID, 2 digit year and 3 digit Julian Day. For example in the example Navigation Log below the vessel was the: Atlantic Surveyor (AS), the sensor was: multibeam a (for single beam files this would be sba, etc.), the year was 2006 and the Julian Day was 105. SAIC typically name the side scan files (exact naming convention depends upon the acquisition system) with vessel ID, year, JD and 6 digit time or as in the case below vessel ID, year, JD, year, date and 6 digit time.

UTC TIME
LB/LE
SURVEY LINE
MB FILE
RPM
SS FILE
SURVEY LINE AZ.
NOTES

23:19:16
LB
K-205
ASMBA06105.D12
319.2
AS06105_060415231700

186.7
MAIN: FORCE ACQUIRED: PICKING UP PARTIAL LINE GOING SOUTH.

23:50:29
LE
K-205

23:54:55
LB
K_ITEM_06-26
ASMBA06105.D14
319.2
AS06105_060415235400
0.6
ITEM

23:55:20
LE
K_ITEM_06-26

Regarding Item #2 in the below email from Rebecca Quintal to Crescent Moegling (Monday, October 02, 2006 10:56 AM)

2. In the Side Scan Sonar Contact List, SAIC request that Towfish Layback column not be required. This seems to be a left over from when the contact positions were calculated by hand. For example, shadow length used to be required as well.

SAIC explained that the ping positions within the side scan files, and therefore the contact positions, are already corrected for layback by the acquisition system and therefore the layback information does not provide useful information. Crescent stated that layback was not required in the Side Scan Sonar Contact List as long as the method of towfish positioning was fully explained the DAPR.

Regarding Item #3 in the below email from Rebecca Quintal to Crescent Moegling (Monday, October 02, 2006 10:56 AM)

3. In the Side Scan Sonar Contact List, SAIC request that Contact Range column not be required. Since this information is not required in the FeatureFileFormat, SAIC would like to not include it for final submission as part of the Side Scan Contact List for simplicity.

Crescent stated that range was still required in the Side Scan Sonar Contact List.

Regarding Item #4 in the below email from Rebecca Quintal to Crescent Moegling (Monday, October 02, 2006 10:56 AM)

4. In the FeatureFileFormat weekly submission, SAIC request that the Target Length not be required to be the longest side and likewise that the Target Width not be required to be the shortest side. SAIC uses Isis to review side scan data. In Isis the length is always the along track dimension and the width is always the across track dimension. Therefore you can have a width measurement that is longer than the length measurement.

Crescent stated that Target Length will not be required to be the longest side, and likewise that the Target Width will not be required to be the shortest side, in the FeatureFileFormat.xls file due to limitations of the Isis sonar processing software as long as this methodology was fully explained in the DAPR. She also stated that the column headers will remain as indicated in the sample FeatureFileFormat.xls she provided on Monday, September 25, 2006.

Regarding the topic of whether the contact images to be delivered as part of the weekly delivery were required to have any geographic information associated with them (i.e. a geotiff or a tiff with a world file), Crescent stated that simple tiff images (containing no geographic information) would be acceptable as long as the image name was exactly the same as the contact name in the FeatureFileFormat.xls file.

Regarding the question of what was really being asked for in the Estimated Clearance columns in the FeatureFileFormat.xls file, Crescent explained that this column is really asking for the same information that is being requested in the Estimated Depth columns. Therefore the Estimated Least Depth and Estimated Clearance should always contain the same information. Crescent also stated that if an echosounder depth was not available "N/A" should be put in the Echosounder Depth columns and both of the Estimated Least Depth and Estimated Clearance columns should then be filled out. If an echosounder depth is available, then all three of the Echosounder Depth, Estimated Least Depth and Estimated Clearance columns should contain the same information.

Crescent also stated that the Associated Image Name column of the FeatureFileFormat.xls file does not have to contain a hotlink to the image as long as the image name is the same as the contact name in the Contact Name column.

One topic that was brought up in the email from Rebecca Quintal to Crescent Moegling (Wednesday, October 04, 2006 12:30 PM) that was not discussed in the teleconference yesterday was the requirement the tiff image have an indication of scale. This was called out in the email from Crescent Moegling (Friday, September 15, 2006 5:45 PM) but was not called out in the email from Crescent Moegling (Monday, September 25, 2006 2:09 PM). Crescent, can you please confirm that the indication of scale on the contact image is indeed not required?

We have attached a new FeatureFileFormat_Contact_List_Comment.xls document which outlines the changes discussed above. Note that the resolutions discussed above are in RED text.

Please let us know if you agree with these minutes or have any changes or additions to make.

Thank you,
-Rebecca

From: Quintal, Rebecca T.
Sent: Wednesday, October 04, 2006 1:32 PM
To: Crescent.Moegling@noaa.gov
Cc: Evans, Rhodri E.
Subject: RE: Updated SOW

Crescent,

We can make that time but may only be able to meet for 30-45 minutes. Hopefully that is plenty of time. We will have Walter Simmons calling in remotely so I will set up a telecon line for us all to call into. I'll email you with that info once it is set up.

Thanks,
-Rebecca

From: Crescent.Moegling@noaa.gov [mailto:Crescent.Moegling@noaa.gov]
Sent: Wednesday, October 04, 2006 12:30 PM
To: Quintal, Rebecca T.
Cc: Evans, Rhodri E.
Subject: Re: Updated SOW

Rebecca,

I know this is short notice but are you available for a telecon this afternoon at 5pm? I agree it would be easier to discuss these matters as you suggested.

Regards,

Crescent Moegling
NOAA Hydrographic Surveys Division
Physical Scientist
301.713.2698 x114

Quintal, Rebecca T. wrote:
Crescent,

Hello. SAIC has reviewed the updated SOW and the new FeatureFileFormat.xls spreadsheet that you sent out on Monday, 25 September. We have several questions. First we note that the FeatureFileFormat.xls spreadsheet differs from the Side Scan Sonar Contact List in section 8.4.2 in the Specifications and Deliverables. We also note that section 8.4.2 in the Specifications and Deliverables states: Suggested column entries are described below, along with a brief discussion of how each is to be derived. Specific entries may vary by hydrographer. The format should be reviewed by the COTR and/or Processing Branch before data collection is conducted. Likewise we note that your email of 25 September states: The Contractor is encouraged to present alternate means of quality assurance and quality control products in lieu of what is presented here. With the new SOW, this seems like a good time to discuss both deliverables. In the attached Excel file and outlined below we have suggestions for what SAIC would like to exclude from submission, or change, in both the weekly FeatureFileFormat and final deliverable Side Scan Sonar Contact List for simplicity. There is also one request for clarification in the FeatureFileFormat.xls file. We are still not exactly sure what is being requested in the Estimated Clearance columns. Is this really the drying height?

a.. In both the FeatureFileFormat weekly submission and the Side Scan Sonar Contact List final deliverable, SAIC request that the Line Name (FeatureFileFormat) and the Search Track Number (Side Scan Sonar Contact List) column not be required. The contact number is annotated by Julian Day and time so a reviewer can always correlate a contact to a certain survey line, corresponding bathymetry file, etc.

b.. In the Side Scan Sonar Contact List, SAIC request that Towfish Layback column not be required. This seems to be a left over from when the contact positions were calculated by hand. For example, shadow length used to be required as well.

c.. In the Side Scan Sonar Contact List, SAIC request that Contact Range column not be required. Since this information is not required in the FeatureFileFormat, SAIC would like to not include it for final submission as part of the Side Scan Contact List for simplicity.

d.. In the FeatureFileFormat weekly submission, SAIC request that the Target Length not be required to be the longest side and likewise that the Target Width not be required to be the shortest side. SAIC uses Isis to review side scan data. In Isis the length is always the along track dimension and the width is always the across track dimension. Therefore you can have a width measurement that is longer than the length measurement.

It is our hope that we can come to an agreeable format for both the weekly FeatureFileFormat submissions and final deliverable Side Scan Sonar Contact List that requires little reworking to go from one to the other. We are suggesting that the final deliverable Side Scan Sonar Contact List look very much like the weekly submissions only with the final bathymetry information and a statement about if the contact is included in the S-57 Feature File.

In addition to questions regarding the deliverable spreadsheets, we have a question regarding the tiff images of the contacts. SAIC does not currently produce geotiff images of the contacts, but rather simple tiff images (with no geographic information). Providing the geographic information would require a software modification. Would it be acceptable to deliver simple tiff images like the one I have attached (note the image is named 3 digit JD and 6 digit time)? Note that this type of tiff image was the agreed upon deliverable on past NOAA contracts such as TimeCharter. If geographic information is required, would a tiff image and associated world file be acceptable? Or is a Geotiff the only acceptable format? Also we

note that your email of 25 September did not require the tiff image have an indication of scale. Is this correct?

Please let us know if you would like to discuss any of these topics via a telecom as it might be easier than discussing via email. Thank you for considering these suggested changes to the deliverables. We look forward to working with you on this. Once we have agreed upon deliverables, SAIC can determine if the added scope of the weekly FeatureFileFormat.xls submissions can be achieved under current funding or if additional funding will be necessary.

-Rebecca

From: Crescent.Moegling@noaa.gov [mailto:Crescent.Moegling@noaa.gov]
Sent: Monday, September 25, 2006 2:09 PM
To: Evans, Rhodri E.; Quintal, Rebecca T.; Lepore, Christine A.
Subject: Updated SOW

Hello,

Please find attached an updated SOW for S-J977 Lake Borgne. Note changes to sections 6.3 with an added attachment #14 indicating the required Excel spreadsheet format which I've attached separately to this email. The sharepoint is being set up this week and I will be passing along information as soon as it comes available. In the meantime send all updates to me via email. The person I have listed to be given a login for you is Rod Evans and NOAA will require he perform an online security training prior to being given access to the Sharepoint.

6.3 Interim Deliverables

Interim deliverables are data analysis tools utilized by the COTR to evaluate and monitor the Contractor's field work and processing. These tools may include image files or graphics showing preliminary soundings, swath contours, multibeam and side scan coverage, and/or preliminary contacts. The Contractor shall make these products available to the COTR on a weekly basis. The weekly update shall include an Excel spreadsheet of all features noted the week prior. A sample of this format can be found in Appendix 14 with a key for each required field. In addition, Geotifs (or photos if the feature is above the water line) of these features shall be submitted and each Geotif hotlinked back to the Excel spreadsheet entry. The Geotifs or images shall be the same unique name as the feature in the Excel spreadsheet. The weekly update shall be made each Monday and placed on a web-based NOAA Share Point. The Contractor is encouraged to present alternate means of quality assurance and quality control products in lieu of what is presented here.

A few brief reminders this field season:

<!--[if !supportLists]-->- <!--[endif]-->All DTONs are to be sent to Atlantic Hydrographic Branch as stated in SOW Section 2.4.6.2. The email address is Castle.E.Parker@noaa.gov. Use the guidelines in the Specifications and Deliverables when determining a DTON and submit as soon as possible.
<!--[if !supportLists]-->- <!--[endif]-->Please send all completed survey outlines as stated in SOW Section 6.5. This should be done for all surveys completed under your contract with NOAA.

If you have any questions don't hesitate to contact me. I am out of the office Tuesday and Thursday until December so Monday, Wednesday or Friday is the best day to get in touch.

Regards,

--
Crescent Moegling
NOAA Hydrographic Surveys Division
Physical Scientist
301.713.2698 x114

Bottom Composition

There were 31 bottom samples taken to verify the bottom types charted for H11613 (Table App V-1). It is recommended that the bottom type charted be updated where necessary based on the information collected during the latest survey.

Table App. V-1. H11613 Bottom Sample Characteristics

H11613 Bottom Sample Position (NAD83)							
JD	**Sample Number**	**Latitude (N)**	**Longitude (W)**	**Observed Bottom Type**	**Depth of Bottom Sample (M)**	**Chart # 11371**	**Chart # 11364**
112	td_112_bs_113	30° 01' 5.8"	089° 36' 03.7"	M Sh	3.43	**x**	
112	td_112_bs_114	30° 01' 6.8"	089° 34' 49.0"	M Sh	3.35	**x**	
112	td_112_bs_115	30° 01' 7.5"	089° 33' 34.2"	M	2.82	**x**	
112	td_112_bs_116	30° 01' 8.6"	089° 32' 21.4"	M	3.16	**x**	
112	td_112_bs_117	30° 02' 7.0"	089° 30' 28.2"	M	2.47	**x**	
112	td_112_bs_118	30° 02' 6.4"	089° 31' 42.3"	M	3.09	**x**	
112	td_112_bs_119	30° 02' 5.7"	089° 32' 57.0"	M Sh	3.10	**x**	
112	td_112_bs_120	30° 02' 4.3"	089° 34' 11.5"	M	3.14	**x**	
112	td_112_bs_121	30° 02' 2.0"	089° 35' 26.1"	M Sh	3.28	**x**	
112	td_112_bs_135	30° 02' 58.2"	089° 34' 53.3"	M Sh	3.39	**x**	
112	td_112_bs_136	30° 02' 59.1"	089° 33' 39.2"	M	3.36	**x**	
112	td_112_bs_137	30° 03' 0.6"	089° 32' 24.0"	M	3.09	**x**	
112	td_112_bs_138	30° 03' 2.4"	089° 31' 07.2"	M	2.81	**x**	
112	td_112_bs_139	30° 03' 4.1"	089° 29' 53.5"	M	2.47	**x**	
113	td_113_bs_112	30° 01' 3.5"	089° 37' 17.6"	M	3.39	**x**	
113	td_113_bs_122	30° 02' 1.1"	089° 36' 41.6"	M	3.22	**x**	
113	td_113_bs_133	30° 02' 56.5"	089° 37' 19.3"	M	3.41	**x**	
113	td_113_bs_134	30° 02' 57.1"	089° 36' 05.2"	M Sh	3.40	**x**	
113	td_113_bs_34	29° 56' 23.6"	089° 36' 30.6"	M Sh	2.91	**x**	**x**
113	td_113_bs_35	29° 56' 25.6"	089° 35' 17.2"	M Sh	2.88	**x**	**x**
113	td_113_bs_36	29° 57' 22.1"	089° 34' 41.3"	M Sh	2.35	**x**	**x**
113	td_113_bs_37	29° 57' 21.1"	089° 35' 56.2"	M Sh	3.14	**x**	**x**
113	td_113_bs_38	29° 57' 19.3"	089° 37' 11.2"	M Sh	3.05	**x**	**x**
113	td_113_bs_74	29° 59' 11.4"	089° 37' 13.9"	M	3.22	**x**	**x**
113	td_113_bs_75	29° 58' 15.3"	089° 36' 34.9"	M	3.17	**x**	**x**
113	td_113_bs_76	29° 59' 13.6"	089° 35' 59.1"	M	3.42	**x**	**x**
113	td_113_bs_77	29° 58' 17.4"	089° 35' 20.0"	M Sh	2.95	**x**	**x**
113	td_113_bs_78	29° 59' 16.3"	089° 34' 51.8"	M Sh	2.79	**x**	**x**
113	td_113_bs_79	30° 00' 11.0"	089° 34' 08.3"	M	2.92	**x**	**x**
113	td_113_bs_80	30° 00' 10.3"	089° 35' 24.0"	M Sh	3.43	**x**	**x**
113	td_113_bs_81	30° 00' 8.6"	089° 36' 38.8"	M	3.42	**x**	**x**

Bathymetric Attributed Grid Nodes that Fail IHO Order 1

There were three 1-meter BAG files created for Sheet H11613. Some nodes in these BAG files have uncertainties that exceed IHO Order 1 uncertainty. Information for each of these nodes is presented in three text files (one for each BAG). These text files are:

- H11613_1_of_3_uncertainty_exceeds.txt
- H11613_2_of_3_uncertainty_exceeds.txt
- H11613_3_of_3_uncertainty_exceeds.txt

This Document is for Office Process use only and is intended to supplement, not supersede or replace, information/recommendations in the Descriptive or Evaluation Reports

AHB PRE-COMPILATION PROCESS

REGISTRY No.	H11613
PROJECT No.	S-J977-KR-SAIC
FIELD UNIT	SAIC
PRE-COMPILER	MATTHEW J. WILSON
LARGEST SCALE CHART	11371, 38th Edition, 071020
CHART SCALE	1:80,000
SURVEY SCALE	1:20,000
DATE OF SURVEY	20 February 2007 – 02 June 2007
CONTENT REVIEW DATE	10 September 2008

Components	File Names
Product Surface	PS_H11613_Combined.hns
Shifted Surface	H11613_Interpolated_Combined_Shifted.hns
Contour Layer	Contours.hob
Survey Scale Soundings	PS_Soundings.hob
Chart Scale Soundings	H11613_CS.hob
ENC Retain Soundings	N/A
Feature Layer	H11613_Features.hob
Meta-Objects Layer	H11613_MetaObjects.hob
Blue Notes	H11613_BlueNotes.hob

SPECIFICATIONS:

I. COMBINED SURFACE:
   a. File name: H11613_Combined.hns
   b. Resolution: 4m
   c. Final Grid Location: H:\Compilation\H11613_J977-SAIC\AHB_H11613\COMPILE\Working\Product Surface

II. PRODUCT SURFACE (SOUNDINGS):
   a. Scale: 1:20,000
   b. Radius: 50m
   c. Resolution: 4m
   d. Depth
      i. Minimum: 2.6 ft
      ii. Maximum: 12.4 ft

   PRODUCT SURFACE (CONTOURS):
   a. Scale: 1:20,000
   b. Radius: 200 m
   c. Resolution: 10 m

III. SHIFTED SURFACE:
   Single Shift Value: -0.229ft *[-0.229m (feet), (≤ 10 fathoms)]*
   [-1.372m (fathoms), (> 10 fathoms)]

IV. CONTOUR LAYER:
   a. Use a Depth List: H11613_NOAA_depth_curves_list.txt
      Depth List: 1.829m, 3,658m

b. Output Options:
   i. Create contour lines:
      1. Line Object: DEPCNT
      2. Value Attribute: VALDCO

V. SOUNDING SELECTION:

a. Selection Criteria:
   i. Radius
   ii. Shoal biased
   iii. Use Single-Defined Radius: 50 distance on ground (m)
   iv. Filter: Generalized !=1

VI. FEATURES:

a. Brought in from Survey
   Total No. 100
b. Brought in from ENC
   ENC: #
   Total No. 0

VII. META-OBJECTS:

a. M_COVR attributes

Acronym	Value
INFORM	H11613_Survey_Outline_LL_R12_MCOVR_CATCOV1_SB_MB_ALL_101707
SORDAT	20070602
CATCOV	Coverage available
SORIND	US,US,Nsurf,H11613

b. M_QUAL attributes

Acronym	Value
CATZOC	Zone of confidence A2
INFORM	H11613; S-J977-KR-SAIC
POSACC	10
SORDAT	20070602
SORIND	US,US,Nsurf,H11613
SUREND	20070602
SURSTA	20070220
TECSOU	Found by echo-sounder, side scan sonar, multibeam

c. DEPARE attributes

Acronym	Value
DRVALV 1	0.000 ft
DRVALV2	16.08 ft
SORDAT	20070602
SORIND	US,US,Nsurf,H11613
INFORM	H11613_Survey_Outline_LL_R12_MCOVR_CATCOV1_SB_MB_ALL_101707

d. M_CSCL attributes

Acronym	Value
CSCALE	
INFORM	
SORDAT	
SORIND	

VIII. NOTES:

ATLANTIC HYDROGRAPHIC BRANCH
EVALUATION REPORT to ACCOMPANY
SURVEY H11613 (2007)

This Evaluation Report has been written to supplement and/or clarify the original Descriptive Report. Sections in this report refer to the corresponding sections of the Descriptive Report.

A. AREA SURVEYED

No changes from DR.

B. DATA ACQUISITION AND PROCESSING

B.1 DATA PROCESSING

The following software was used to process data at the Atlantic Hydrographic Branch:

CARIS HIPS/SIPS version 6.1 SP2
FLEDERMAUS version 6.7
CARIS Bathy Manager version 2.1 SP1
DKART INSPECTOR, version 5.0 Build 707
CARIS HOM version 3.3 SP3
CARIS S57 Composer version 2.0

As noted in the DR, much of the post-processing was completed by SAIC prior to submission to AHB. The software used for this post-processing was GeoAcoustics GeoSwath Plus version 3.15a and SABER version 4.1.2 (from beginning of survey until JD 039 when version 4.1.5 was installed). The post-processing performed by SAIC included conversion of Raw Data Format (RDF) files to Generic Sensor Format (GSF), application of offsets, attitude, TPE, tides, sound velocity, conversion of PFM CUBE surfaces, and conversion to BAGs.

B.2. QUALITY CONTROL

B.2.1. H-Cell

The final products from this survey included 3 BAGs with 1m resolution which encompass the portion of the survey where interferometric sonar was utilized. In the remainder of the survey area, singlebeam sonar was utilized. In this area, a singlebeam surface was generated at a 2m resolution. The 3 BAGs and the singlebeam surface were combined at a 4m resolution for the combined surface. From this combined surface, a product surface was generated with a 10m resolution. The survey scale selected soundings were extracted from the 10m product surface. The chart scale selected soundings are a subset of the survey scale selected soundings.

Two sets of contours were generated, each by a different method. The first contour set was hand-drawn, referencing the survey scale sounding set. The second contour set was generated by the following means: to account for the gaps in the

singlebeam portion of the combined product surface, an interpolated surface was generated from the combined product surface. A shifted surface was then generated from this interpolated combined product surface, to account for NOAA's rounding method. From this shifted surface, the second contour set was generated by way of CARIS Base Editor's contouring algorithm. The curves were utilized during chart scale sounding selection and quality assurance efforts at AHB.

The pre-compilation products or components (Stand Alone HOB files (SAHOB)) are detailed in the Pre-Compile Process Log attached at the end of this document. The SAHOB files include sounding selection and chart sounding selection (SOUNDG), features (SBDARE, PILPNT, OBSTRN, BOYSPP), Meta objects (M_COVR, M_QUAL, DEPARE), and cartographic Blue Notes ($CSYMB, $LINES). With the exception of the chart sounding selection and Blue Notes, all of the remaining SAHOB files were inserted into one BASE Manager feature layer and exported to S57 format in order to create the H-Cell deliverable. The chart sounding selection and the Blue Notes were exported to S-57 format individually. The end result was three S-57 files, entitled H11613_CS_Meters.000, H11613_SS_Meters.000, and H11613_Bluenotes.000.

Quality assurance tests were performed on H11613_CS_Meters.000 using DKART INSPECTOR and S-57 Composer Validation. Next, CARIS HOM was utilized to convert the base cell units within the S-57 files from meters to feet. The final S-57 files, after conversion of base cell units, are entitled H11613_CS, H11613_SS, and H11613_Bluenotes.

Chart compilation was performed by Atlantic Hydrographic Branch personnel in Norfolk, Virginia. Compilation data will be forwarded to Marine Chart Division, Silver Spring, Maryland.

The H11613 CARIS H-Cell final deliverables include the following products:

H11613_CS.000	1:80,000 Scale	H11613 H-Cell with Chart Scale Selected Soundings
H11613_SS.000	1:20,000 Scale	H11613 Selected Soundings (Survey Scale)
H11613_Bluenotes.000	1:80,000 Scale	H11613 Cartographic Notes

B.22. Junctions

Survey H11613 (2007) junctions with survey H11612 to the North, H11614 to the south, and H11615 to the west. All junction surveys fall under the same statement of work, and all surveys were conducted by SAIC in 2007. All junction soundings compare favorably: 95% of H11615 survey soundings are within 25-30cm of H11613, 96% of H11614 are within 30-35cm of H11613, 94% of H11612 are within 30-35cm of H11613. Much more extensive information can be found in the DR.

C. VERTICAL AND HORIZONTAL CONTROL

A subordinate tide station (8761529 Martello Castle, LA) was installed by John Oswald and Associates and Lowe Engineers, under sub-contract to SAIC. Analysis of water levels obtained from tide station 8761529 and NOAA tide station 8747437 Bay Waveland Yacht Club, MS, were performed to determine final water level zoning

parameters. Zone boundaries were provided by NOAA. Tide station 8761529 was the source of verified water level heights for corrections to soundings.

Horizonal control was obtained by way of Trimble GPS Receivers. The survey data was collected in NAD-83, using geodetic coordinates, while data display and products used the UTM Zone 16 projection. Differential correctors utilized were from the U.S. Coast Guard Stations at English Turn, LA, and Mobile Point, AL.

D. RESULTS AND RECOMMENDATIONS

D.1 CHART COMPARISON

11371 (38th Edition)
Corrected by NTM through 10/20/07
Scale 1:80,000

ENC Comparison

US4MS10M
6th Edition
Issue Date 2007-12-28
Chart 11371

US4LA35M
14th Edition
Issue Date 2008-01-16
Chart 11364

D.1.1 Hydrography

There was a deviation from the statement of work on this survey. Singlebeam lines were not processed or provided with the survey deliverables in areas covered by the GeoSwath.

It should be noted that this survey (and the remaining SAIC Lake Borgne surveys) each require significant shoreline work. The charted shoreline along H11613 has migrated east and north and is no longer accurate. The 4 foot depth curve is over the charted land. This is especially true along the north shore of Pointe aux Marchettes where the 4 foot depth curve extends up to 300 meters over charted land. The charted shoreline should be updated to depict an approximate shoreline landward of the current survey data. Charted depths should be updated based on the current survey data.

Charting recommendation from the Field Unit and the AHB Reviewer can be found in the DR. These recommendations are reflected accordingly in the H-Cell submission products.

Table of H11613 Bluenotes

Acronym	Latitude	Longitude	Information
$CSYMB	30º 02' 31.3"	089º 29' 27.5"	Delete charted sounding at survey boundary.
$CSYMB	30º 03' 32.2"	089º 29' 53.5"	Delete charted sounding at survey boundary.
$CSYMB	29º 56' 32.9"	089º 37' 26.0"	Delete charted sounding at survey boundary.
$CSYMB	30º 03' 08.5"	089º 36' 19.5"	Delete Dols. Charted Dols were not found during this survey.
$CSYMB	30º 03' 02.2"	089º 35' 59.6"	Delete WK and text "PA" from chart. Disproved by interferometric sonar and %200 SSS.
$CSYMB	30º 02' 15.2"	089º 29' 52.4"	Delete Pipe. Disproved with singlebeam sonar and 200% SSS.
$CSYMB	30º 01' 21.7"	089º 31' 17.7"	Delete Obstrn. Disproved with 200% SSS.
$CSYMB	30º 00' 28.1"	089º 33' 37.6"	Navigation aid not observed during this survey, recommend contacting USCG to resolve.
$LINES			Charted pipeline location verified by Field Unit
$LINES			Presence of charted pipeline could not be confirmed by data from this survey. No recommended charting changes.
$CSYMB	30º 00' 43.3"	089º 32' 39.6"	New platform, defer charting recommendation to MCD.
$CSYMB	29º 57' 36.2"	089º 34' 29.9"	New platform, defer charting recommendation to MCD.
$CSYMB	29º 58' 39.9"	089º 35' 51.5"	New platform, defer charting recommendation to MCD.
$CSYMB	30º 00' 03.2"	089º 33' 21.8"	New platform, defer charting recommendation to MCD.
$CSYMB	29º 59' 02.7"	089º 37' 15.0"	New platform, defer charting recommendation to MCD.
$CSYMB	30º 01' 38.0"	089º 36' 20.6"	Platform observed as charted, and is a satellite well for the uncharted primary platform located nearby (denoted with a separate Bluenote). Recommend to retain this satellite well platform as charted.
$CSYMB	30º 01' 36.7"	089º 36' 16.4"	New platform. This uncharted platform is the primary platform for the nearby charted platform. Recommend charting platform in addition to the nearby charted platform.
$CSYMB	29º 58' 06.4"	089º 36' 58.0"	New platform. This is a wellhead platform, and a wellhead is located nearby. Recommend charting platform in this location.
$CSYMB	29º 58' 06.4"	089º 36' 58.9"	This is the wellhead for the nearby wellhead platform. Recommend not charting this wellhead.
$CSYMB	29º 59' 57.9"	089º 33' 49.0"	Delete Pipe and label from this position, and chart Pipe and label to new survey position where the contact was found with 100% SSS. Updated position and charting recommendation is noted as ab Obstrn in the H-Cell.

D.2. ADDITIONAL RESULTS

D.2.1. Aids to Navigation

Navigation aid for Bayou Biloxi in 30º 00’ 26.18”N 089º 33’ 36.66”W was not present during the survey.

D.3. MISCELLANEOUS

Chart compilation was done by Atlantic Hydrographic Branch personnel, in Norfolk, Virginia. Compilation data will be forwarded to Marine Chart Division, Silver Spring, Maryland. See Section D.1 of this report for a list of the Raster Charts and Electronic Navigation Charts (ENC) used for compiling the present survey:

D.4. ADEQUACY OF SURVEY

The present survey is adequate to supersede the charted bathymetry within the common area. Any features not specifically addressed either in the H-Cell BASE Cell File or the Blue Notes should be retained as charted. Refer to the Descriptive Report for further recommendations by the hydrographer.

APPROVAL SHEET
H11613

Initial Approvals:

The completed survey has been inspected with regard to survey coverage, delineation of depth curves, representation of critical depths, cartographic symbolization, and verification or disproval of charted data. All revisions and additions made to the H-Cell files during survey processing have been entered in the digital data for this survey. The survey records and digital data comply with National Ocean Service and Office of Coast Survey requirements except where noted in the Descriptive Report and the Evaluation Report.

All final products have undergone a comprehensive reviews per the Hydrographic surveys Division Office Processing Manual and are verified to be accurate and complete except where noted.

Matthew J Wilson

Digitally signed by Matthew J Wilson
DN: cn=Matthew J Wilson, c=US, o=NOAA, ou=Atlantic Hydrographic Branch, email=matthew.wilson@noaa.gov
Date: 2008.09.18 09:19:14 -04'00'

Matthew J. Wilson
Physical Scientist
Atlantic Hydrographic Branch

I have reviewed the H-Cell files, accompanying data, and reports. This survey and accompanying Marine Chart Division deliverables meet National Ocean Service requirements and standards for products in support of nautical charting except where noted.

Approved:

Shepard Smith
I am approving this document
2008.09.18 12:58:12 -04'00'

Shepard Smith
Lieutenant Commander, NOAA
Chief, Atlantic Hydrographic Branch

Mark Lathrop

Digitally signed by Mark Lathrop
DN: cn=Mark Lathrop, o=NOAA, ou=HSD, email=mark.t.lathrop@noaa.gov, c=US
Reason: AWOIS/Surf Check
Date: 2008.10.28 09:55:51 -04'00'