

Cover Sheet (NOAA Form 76-35A)

<p>NOAA FORM 76-35A</p> <p>U.S. DEPARTMENT OF COMMERCE NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION NATIONAL OCEAN SERVICE</p> <p>Horizontal & Vertical Control Report</p>
<p><i>Type of Survey</i> <u>HYDROGRAPHIC</u></p> <p><i>Field No</i> <u>OPR-K977-FU-08</u></p> <p><i>Registry No.</i> <u>H11804, H11805, H11806, H11807</u></p>
<p>LOCALITY</p> <p><i>State</i> <u>LOUISIANA</u></p> <p><i>General Locality</i> <u>GULF OF MEXICO</u></p> <p><i>Sublocality</i> <u>VICINITY OF CAMINADA PASS TO VICINITY OF GRAND BAYOU PASS</u></p> <p><u>2009</u></p> <p>CHIEF OF PARTY <u>ANDREW ORTHMANN</u></p>
<p>LIBRARY & ARCHIVES</p> <p>DATE</p>

U.S. GOV. PRINTING OFFICE: 1985—566-054

Title Sheet (NOAA Form 77-28)

NOAA FORM 77-28 (11-72) <div style="text-align: right; font-size: small;">U.S. DEPARTMENT OF COMMERCE NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION</div> <h3 style="text-align: center;">HYDROGRAPHIC TITLE SHEET</h3>	REGISTER NO. H11804, H11805, H11806, H11807
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.
<div style="margin-bottom: 10px;">State <u>LOUISIANA</u></div> <div style="margin-bottom: 10px;">General Locality <u>GULF OF MEXICO</u></div> <div style="margin-bottom: 10px;">Locality <u>VICINITY OF CAMINADA PASS TO VICINITY OF GRAND BAYOU PASS</u></div> <div style="display: flex; justify-content: space-between; margin-bottom: 10px;"> Scale <u>1:10000</u> Date of Survey <u>08/16/2008 – 04/05/2009</u> </div> <div style="display: flex; justify-content: space-between; margin-bottom: 10px;"> Instructions dated <u>MAY 28, 2008</u> Project No. <u>OPR-K977-FU-08</u> </div> <div style="margin-bottom: 10px;">Vessel <u>R/V LOCATOR (CF-4540-NB) and R/V CHINOOK (AK-1437-K)</u></div> <div style="margin-bottom: 10px;">Chief of party <u>ANDREW ORTHMANN</u></div> <div style="margin-bottom: 10px;">Surveyed by <u>BRIGGS, POECKERT, ORTHMANN, GILL, FARLEY, MOUNT, ROYKTA, GOSS, HOLLY, ET AL</u></div> <div style="margin-bottom: 10px;">Soundings taken by echo sounder, hand lead, pole <u>ODOM DF3200 SBES (HULL MOUNTED BOTH VESSELS), RESON SEABAT 8101 MBES (LOCATOR - POLE MOUNT)</u></div> <div style="margin-bottom: 10px;">Graphic record scaled by <u>FUGRO PELAGOS, INC. PERSONNEL</u></div> <div style="margin-bottom: 10px;">Graphic record checked by <u>FUGRO PELAGOS, INC. PERSONNEL</u></div> <div style="display: flex; justify-content: space-between; margin-bottom: 10px;"> Protracted by <u>N/A</u> Automated plot by <u>N/A</u> </div> <div style="margin-bottom: 10px;">Verification by _____</div> <div style="margin-bottom: 10px;">Soundings in _____ <u>METERS</u> at MLLW</div> <div style="padding-top: 20px;"> <p>REMARKS: The purpose of this work is to provide NOAA with a modern hydrographic and debris mapping survey in the Gulf of Mexico in the vicinity of Caminada Pass to vicinity of Grand Bayou Pass</p> <p>ALL TIMES ARE RECORDED IN UTC.</p> <div style="text-align: center;"> <p>FUGRO PELAGOS INC.</p> <p>3738 RUFFIN ROAD</p> <p>SAN DIEGO, CA 92123</p> </div> </div>	

**A-Vertical Control**

All sounding data were initially reduced to MLLW using observed tidal data from the tidal station located on Grand Isle, LA. During times of outage the nearby station at Port Fourchon, LA, was used. Both stations were owned and operated by the NOAA's National Ocean Service through the National Water Level Observation Program.

Table 1 - Tide Gauges

Gauge	Model	Gauge Type	Location	Latitude	Longitude	Operational
8761724	AquaTrak	Acoustic	Grand Isle, LA	29-15.8 N	89-57.4 W	N/A
8762075	AquaTrak	Acoustic	Port Fourchon, LA	29-06.8 N	90-11.9 W	N/A

Table 2 - Final Tide Zones

Zone	Gauge	Primary or Secondary	Time Offset	Range Ratio
CGM364	8761724	PRIM	-36	1.27
CGM369	8761724	PRIM	-42	1.27
CGM376	8761724	PRIM	-18	0.99
CGM377	8761724	PRIM	-30	0.99
CGM378	8761724	PRIM	-36	0.99
CGM380	8761724	PRIM	-24	1.08
CGM381	8761724	PRIM	-30	1.08
CGM382	8761724	PRIM	-42	1.08
CGM384	8761724	PRIM	-30	1.18
CGM385	8761724	PRIM	-36	1.18
CGM386	8761724	PRIM	-42	1.18
CGM389	8761724	PRIM	-36	1.27
CGM390	8761724	PRIM	-36	1.27
CGM391	8761724	PRIM	-42	1.32
CGM394	8761724	PRIM	-30	1.27
CGM400	8761724	PRIM	-24	1.18
CGM406	8761724	PRIM	-12	0.99
CGM364	8762075	SEC	-6	1.09
CGM369	8762075	SEC	-6	1.09
CGM376	8762075	SEC	12	0.85
CGM377	8762075	SEC	6	0.85
CGM378	8762075	SEC	-6	0.85
CGM380	8762075	SEC	6	0.93
CGM381	8762075	SEC	0	0.93
CGM382	8762075	SEC	-6	0.93
CGM384	8762075	SEC	6	1.01
CGM385	8762075	SEC	-6	1.01
CGM386	8762075	SEC	-12	1.01



Zone	Gauge	Primary or Secondary	Time Offset	Range Ratio
CGM389	8762075	SEC	0	1.09
CGM390	8762075	SEC	-6	1.09
CGM391	8762075	SEC	-12	1.13
CGM394	8762075	SEC	0	1.09
CGM400	8762075	SEC	6	1.01
CGM406	8762075	SEC	18	0.85

Observed tidal data was assembled from the National Water Level Observation Program accessed through the NOAA tides and currents website (<http://tidesandcurrents.noaa.gov/>). A cumulative file for the gauge in use was updated daily by appending the new data as it became available.

On April 12, 2009, verified tide data was acquired from the National Water Level Observation Program accessed through the NOAA tides and currents website (<http://tidesandcurrents.noaa.gov/>). The verified data was smoothed and applied to all sounding data in CARIS HIPS using tidal zones provided by NOAA¹. All sounding data was then remerged. The Grand Isle, LA (8761724) was used as the primary tidal station while Port Fourchon (8762075) was used as the secondary tidal station. Verified tidal data were used for all final Navigation Base Surfaces, soundings, and S-57 Feature files.

Unusual Tidal Conditions Encountered

Frequent issues were encountered with the Grand Isle tide station during this survey. During field operations recurrent outages were apparent in the observed data from this gauge, requiring the use of Port Fourchon tide station for preliminary and final tidal corrections during these periods. Outages were reported to COOPS through the COTR. On November 6th, 2008, zoning was provided by NOAA for Port Fourchon tide station to provide tide corrections during periods of downtime for the primary Grand Isle gauge.

The verified data for Grand Isle tide station downloaded from the NOAA tides and currents website on April 12, 2009 still contains three major outages that occurred within the time extents of this project. They are as follows (times are UTC):

- 09/05/2008 07:18 to 09/10/2008 16:48 (5.4 days)²
- 11/04/2008 09:00 to 11/08/2008 18:36 (4.4 days)
- 11/16/2008 01:06 to 11/22/2008 00:48 (6.0 days)

Note that the verified tidal data for both gauges shows extreme values due to storm surge from 9/1/2008 through 9/14/2008 due to hurricanes Gustav and Ike. However, this has no

¹ Tidal zone files provided by NOAA were modified slightly; see discussion concerning tidal zones.

² The 9/5 to 9/10 outage had no effect on the survey data as operations were shutdown during this period due to Hurricanes Gustav and Ike

effect on the survey data as operations were shutdown during this period (shutdown date 8/28/2009, restart date 9/19/08).

Tidal Zones

To facilitate the application of tidal corrections in CARIS HIPS holding Grand Isle as the primary tidal station and Port Fourchon as backup (to be used when outages occur in the primary), the zone files provided by NOAA for each gauge were merged and Port Fourchon marked as secondary tidal station.

Some crosslines extended past the edge of the tide zones. Therefore, the original zone file provided by NOAA for Grand Isle tide station had to be slightly modified to include the full extent of the crosslines. Zones CGM384, 406, 376, and 377 received minor modifications to their northern extents as follows:

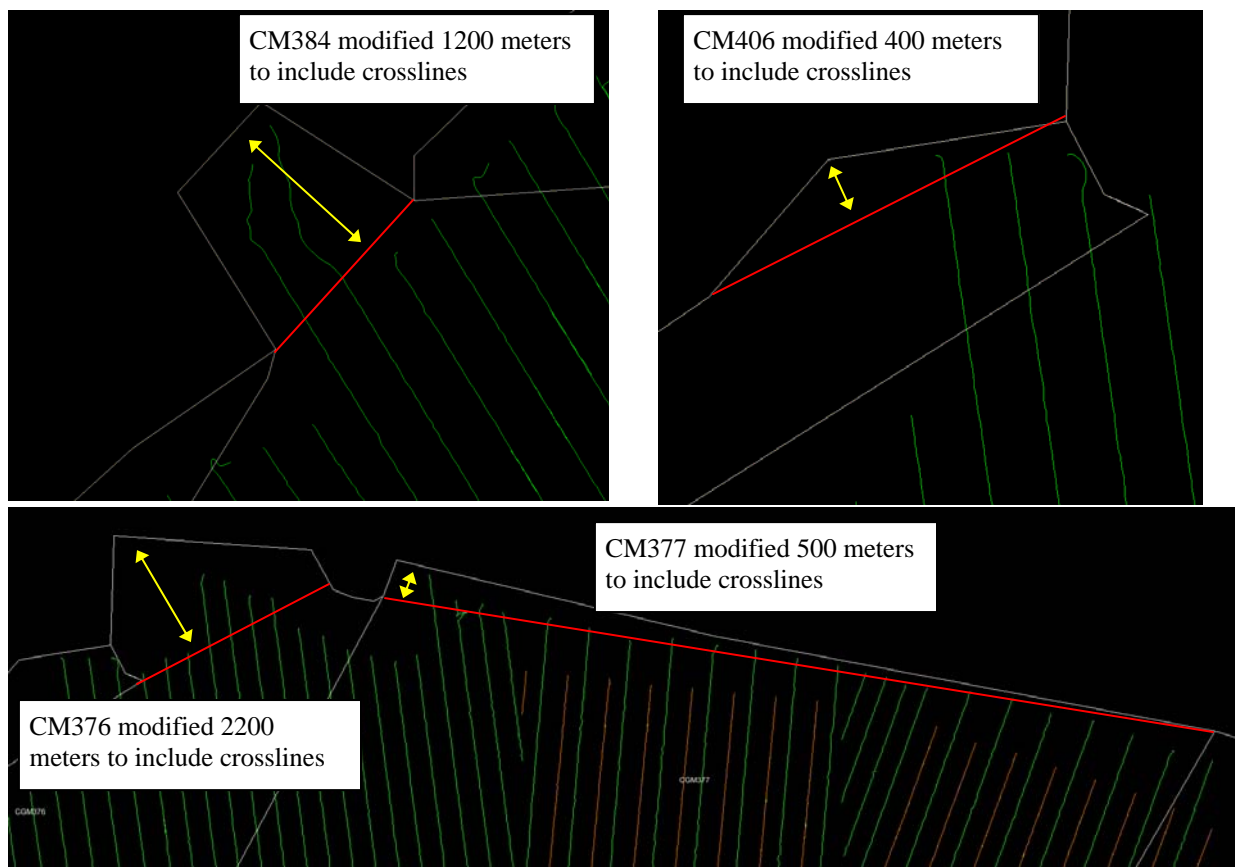


Figure 1 Tide Zone Modifications

Refer to Appendix I for tidal station descriptions.

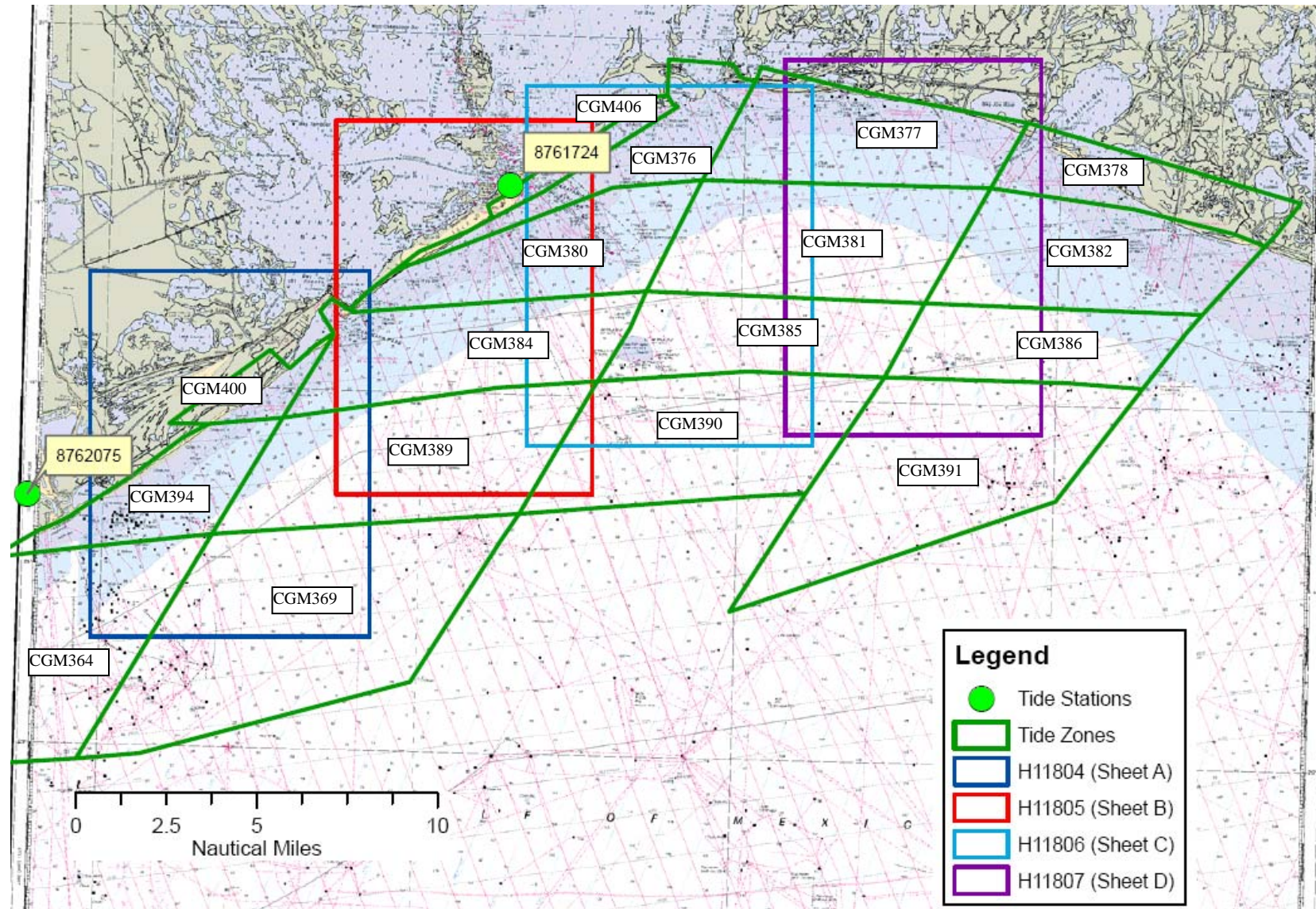


Figure 2 Tide Zoning



B-Horizontal Control

The horizontal control datum for this survey was the North American Datum of 1983 (NAD83). All real-time positioning as well as post-processed positioning was done on NAD83.

Vessel position was determined in real time using a Trimble Zephyr dual-frequency GPS antenna, which was connected to a Trimble BD950 dual-frequency GPS card in the POSMV. The POSMV was setup to accept USCG differential corrections, which were output from a CSI MBX-3S Coast Guard beacon receiver. Note: Though the POSMV collects uncorrected position data based on the WGS84 ellipsoid, the pseudorange corrections received by the POSMV are based on the NAD83 position of the reference station antenna position therefore all real-time positions were NAD 83. The USCG DGPS stations used are show in the table below.

Table 3 – USCG DGPS Stations

Station	ID	Latitude	Longitude	Frequency	Tx. Rate
Mobile Point	813	30°13.7 N	88°01.4' W	300 kHz	100 bps
English Turn	814	29-52.7 N	89-56.5 W	293 kHz	200 bps

Real-time positions were replaced in processing with a post-processed kinematic (PPK) solution of higher accuracy (also on NAD83). For this purpose Fugro Pelagos, Inc. established two GPS base stations and logged dual-frequency GPS data continuously during survey operations. The control data was then used in conjunction with the raw GPS data logged aboard each vessel to create the PPK solution. Refer to the Data Acquisition and Processing report for more information concerning procedures used.

The base stations were mobilized at the Fugro Pelagos office in Grand Isle, LA on August 16th, 2008. The stations were demobbed on August 28th due to approaching hurricane Gustav. On September 16th they were restarted at a temporary office location in Empire, LA, where they were operated until October 2nd when they were moved back to Grand Isle. They remained there until project completion. Therefore, there are three surveyed coordinate sets for the base stations that were used in processing. These are listed below.

Table 4 – Fugro Pelagos Base Stations

Grand Isle, LA, 08/16/2008 to 08/28/2008						
Station	ID	Latitude	Longitude	Height	Rec. Rate	Model
Receiver 0001	0001	29-12-57.82998 N	90-01-41.18961 W	-20.724	1 hz	Novatel DL4
Receiver 0004	0004	29-12-57.77183 N	90-01-41.12388 W	-20.793	1 hz	Novatel DL4
Empire, LA, 09/16/2008 to 10/02/2008						
Station	ID	Latitude	Longitude	Height	Rec. Rate	Model
Receiver 0001	0001	29-23-07.309362 N	89-36-06.748158 W	-16.074 m	1 hz	Novatel DL4
Receiver 0004	0004	29-23-07.33599 N	89-36-06.717244 W	-16.067 m	1 hz	Novatel DL4
Grand Isle, LA, 10/03/2008 to 04/06/2009						



Station	ID	Latitude	Longitude	Height	Rec. Rate	Model
Receiver 0001	0001	29-12-57.77185 N	90-01-41.12387 W	-20.777 m	1 hz	Novatel DL4
Receiver 0004	0004	29-12-57.83000 N	90-01-41.18976 W	-20.714 m	1 hz	Novatel DL4

The base station final positions were derived by uploading 24 hour sets of base station data to NGS' Online Positioning User Service (OPUS) and averaging the results of two or more OPUS position reports. The final positions were periodically checked throughout the survey against additional OPUS uploads to ensure the GPS antenna positions had not changed. OPUS reports and base station descriptions are available in Appendix II.

Positioning system confidence checks were conducted on a daily basis using the POS MV controller software. The controller software had numerous real time displays that were monitored throughout the survey to ensure the positional accuracies specified in the NOS Hydrographic Surveys Specifications and Deliverables (version May 2008) were achieved. These include, but are not limited to the following: GPS Status, Position Accuracy, Receiver Status (which included HDOP) and Satellite Status.

Since final positions were derived using the PPK process, as an independent check positions from a sample of lines were compared to positions of the same lines determined in real time using DGPS (USCG). Agreement was well within specifications.

C-Approval Sheet

Approval Sheet

For

H11804, H11805, H11806, and H11807

Standard field surveying and processing procedures were followed in producing this survey in accordance with the following documents:

OPR-K977-FU-08 Statement of Work
NOS Hydrographic Surveys Specifications and Deliverables (May 2008)
Fugro Pelagos, Inc. Acquisition Procedures (2008-NOAA-AcquisitionProcedures);
Fugro Pelagos, Inc. Processing Procedures (2008-NOAA-ProcessingProcedures);

The data were reviewed daily during acquisition and processing.

This report has been reviewed and approved. All records are forwarded for final review and processing to the Chief, Atlantic Hydrographic Branch.

Approved and forwarded,

Andrew Orthmann, ACSM Certified
Lead Hydrographer
Fugro Pelagos, Inc. Survey Party



Appendix I -Tides and Water Levels

Tide Station: 8761724

Grand Isle, LA

Latitude: 29° 15.8' N

Mean Range: **1.04 ft.**

Longitude: 89° 57.4' W

Diurnal Range: **1.06 ft.**

Established: Nov 9 1979

Present Installation: Mar 30 1990

NOAA Chart #: 11358

Time Meridian: 90 W

T I D A L D A T U M S

Tidal datums at GRAND ISLE, EAST POINT based on:

LENGTH OF SERIES:	5 YEARS
TIME PERIOD:	January 2002 - December 2006
TIDAL EPOCH:	1983-2001
CONTROL TIDE STATION:	

Elevations of tidal datums referred to Mean Lower Low Water (MLLW),
in METERS:

HIGHEST OBSERVED WATER LEVEL (08/29/2005)	=	1.705
MEAN HIGHER HIGH WATER (MHHW)	=	0.322
MEAN HIGH WATER (MHW)	=	0.320
MEAN SEA LEVEL (MSL)	=	0.163
MEAN TIDE LEVEL (MTL)	=	0.161
MEAN LOW WATER (MLW)	=	0.003
MEAN LOWER LOW WATER (MLLW)	=	0.000
LOWEST OBSERVED WATER LEVEL (12/24/1989)	=	-0.671

Bench Mark Elevation Information

In METERS above:

Stamping or Designation	MLLW	MHW
10	0.993	0.673
13 1975	1.018	0.698
11	1.018	0.698
1724 F 1992	1.137	0.817
1724 G 1992	1.185	0.865



Tide Station 874-1533

Port Fourchon, LA

Latitude: 29° 6.8' N

Mean Range: **1.21 ft.**

Longitude: 90° 11.9' W

Diurnal Range: **1.23 ft.**

Established: Jul 19 2003

Present Installation: Jul 18 2003

NOAA Chart #: 11357

Note that tidal datums information was not available at time of reporting from
<http://tidesandcurrents.noaa.gov>.

Note: All information provided by NOAA' s Center for Operational Oceanographic Products and Services at <http://tidesandcurrents.noaa.gov>.



Appendix II –Horizontal Control

Six control points were established during the survey for the purpose of collecting dual-frequency GPS data for final post-processed kinematic (PPK) positions.

To establish the position of each control point, a site was selected that had minimal to no GPS masking above 10 degrees. A dual-frequency GPS antenna attached to a Novatel DL4 GPS receiver was setup and the data logged. 24-hour sets of data from each position was then uploaded to NGS' Online Positioning Users Service (OPUS) and the OPUS reports were then examined for quality by examining the RMS error values. Additional days were then uploaded and the results averaged, using at least two OPUS solutions in the final average position that was used in processing.

Antenna height and type were not used in processing or inputted into OPUS as the antenna phase center itself was used for the control point position.

Grand Isle, LA, 08/16/2008 to 08/28/2008

Three OPUS solutions were used for the Receiver 0001:

OPUS Solution for Receiver 0001										
Julian Day	Ant Type	Ant Height	Latitude (NAD83)			Longitude (NAD83)			Ellip. Height(m)	
			Deg	Min	Sec	Deg	Min	Sec		
235	None	None	29	12	57.82999	90	1	41.18959	-20.730	
236	None	None	29	12	57.82999	90	1	41.18962	-20.719	
237	None	None	29	12	57.82997	90	1	41.18962	-20.722	
Average			29	12	57.82998333	90	1	41.18961	-20.724	

Three OPUS solutions were used for the Receiver 0004:

OPUS Solution for Receiver 0004										
Julian Day	Ant Type	Ant Height	Latitude (NAD83)			Longitude (NAD83)			Ellip. Height (m)	
			Deg	Min	Sec	Deg	Min	Sec		
235	None	None	29	12	57.77184	90	1	41.12385	-20.794	
236	None	None	29	12	57.77184	90	1	41.12393	-20.791	
237	None	None	29	12	57.77182	90	1	41.12385	-20.793	
Average			29	12	57.77183333	90	1	41.12387667	-20.793	

Dated: 1st June, 2009

NGS OPUS SOLUTION REPORT

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All computed coordinate accuracies are listed as peak-to-peak values.
For additional information: www.ngs.noaa.gov/OPUS/Using_OPUS.html#accuracy

USER: dbriggs@fugro.com
RINEX FILE: 00012350.08o

DATE: August 23, 2008
TIME: 18:25:53 UTC

SOFTWARE: page5 0612.06 master10.pl
EPHEMERIS: igr14935.eph [rapid]
NAV FILE: brdc2350.08n
ANT NAME: NONE NONE
ARP HEIGHT: 0.0
START: 2008/08/22 00:36:00
STOP: 2008/08/22 23:54:00
OBS USED: 56168 / 60220 : 93%
FIXED AMB: 200 / 221 : 90%
OVERALL RMS: 0.022(m)

REF FRAME: NAD_83(CORS96)(EPOCH:2002.0000)

ITRF00 (EPOCH:2008.6408)

X:	-2733.110(m)	0.020(m)	-2733.797(m)	0.020(m)
Y:	-5571169.756(m)	0.020(m)	-5571168.252(m)	0.020(m)
Z:	3094814.527(m)	0.009(m)	3094814.322(m)	0.009(m)
LAT:	29 12 57.82999	0.006(m)	29 12 57.84802	0.006(m)
E LON:	269 58 18.81041	0.020(m)	269 58 18.78495	0.020(m)
W LON:	90 1 41.18959	0.020(m)	90 1 41.21505	0.020(m)
EL HGT:	-20.730(m)	0.019(m)	-22.142(m)	0.019(m)
ORTHO HGT:	3.193(m)	0.074(m)	[NAVD88 (Computed using GEOID03)]	

	UTM COORDINATES	STATE PLANE COORDINATES
	UTM (Zone 15)	SPC (1702 LA S)
Northing (Y) [meters]	3235583.587	80096.899
Easting (X) [meters]	788926.349	1126913.970
Convergence [degrees]	1.45160036	0.65262912
Point Scale	1.00063023	1.00001883
Combined Factor	1.00063349	1.00002208

US NATIONAL GRID DESIGNATOR: 15RYN8892635584(NAD 83)

BASE STATIONS USED

PID	DESIGNATION	LATITUDE	LONGITUDE	DISTANCE(m)
DF5771	LMCN LUMCON CORS ARP	N291517.904	W0903940.652	61706.8
DH7121	GRIS GRAND ISLE CORS ARP	N291555.883	W0895726.262	8800.0
DE8091	BVHS BOOTHVILLE CORS ARP	N292012.489	W0892423.010	61881.4

NEAREST NGS PUBLISHED CONTROL POINT

AU1292	H 155	N291257.	W0900123.	491.6
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This position and the above vector components were computed without any knowledge by the National Geodetic Survey regarding the equipment or field operating procedures used.

2008-235 Results for Receiver 0001

Dated: 1st June, 2009

NGS OPUS SOLUTION REPORT

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All computed coordinate accuracies are listed as peak-to-peak values.
For additional information: www.ngs.noaa.gov/OPUS/Using_OPUS.html#accuracy

USER: dbriggs@fugro.com
RINEX FILE: 00012360.08o

DATE: August 25, 2008
TIME: 14:11:02 UTC

SOFTWARE: page5 0612.06 master12.pl
EPHEMERIS: igr14936.eph [rapid]
NAV FILE: brdc2360.08n
ANT NAME: NONE
ARP HEIGHT: 0.0

START: 2008/08/23 00:13:00
STOP: 2008/08/23 23:23:30
OBS USED: 56833 / 59904 : 95%
FIXED AMB: 212 / 237 : 89%
OVERALL RMS: 0.020(m)

REF FRAME: NAD_83(CORS96)(EPOCH:2002.0000) ITRF00 (EPOCH:2008.6435)

X:	-2733.111(m)	0.015(m)	-2733.798(m)	0.015(m)
Y:	-5571169.765(m)	0.011(m)	-5571168.261(m)	0.011(m)
Z:	3094814.532(m)	0.011(m)	3094814.327(m)	0.011(m)

LAT:	29 12 57.82999	0.004(m)	29 12 57.84802	0.004(m)
E LON:	269 58 18.81038	0.015(m)	269 58 18.78491	0.015(m)
W LON:	90 1 41.18962	0.015(m)	90 1 41.21509	0.015(m)
EL HGT:	-20.719(m)	0.015(m)	-22.132(m)	0.015(m)
ORTHO HGT:	3.204(m)	0.073(m)	[NAVD88 (Computed using GEOID03)]	

	UTM COORDINATES	STATE PLANE COORDINATES
	UTM (Zone 15)	SPC (1702 LA S)
Northing (Y) [meters]	3235583.587	80096.899
Easting (X) [meters]	788926.348	1126913.969
Convergence [degrees]	1.45160036	0.65262912
Point Scale	1.00063023	1.00001883
Combined Factor	1.00063349	1.00002208

US NATIONAL GRID DESIGNATOR: 15RYN8892635584(NAD 83)

BASE STATIONS USED

PID	DESIGNATION	LATITUDE	LONGITUDE	DISTANCE(m)
DF5771	LMCN LUMCON CORS ARP	N291517.904	W0903940.652	61706.8
DH7121	GRIS GRAND ISLE CORS ARP	N291555.883	W0895726.262	8800.0
DE8091	BVHS BOOTHVILLE CORS ARP	N292012.489	W0892423.010	61881.4

NEAREST NGS PUBLISHED CONTROL POINT

AU1292	H 155	N291257.	W0900123.	491.6
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This position and the above vector components were computed without any knowledge by the National Geodetic Survey regarding the equipment or field operating procedures used.

2008-236 Results for Receiver 0001



NGS OPUS SOLUTION REPORT

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All computed coordinate accuracies are listed as peak-to-peak values.
For additional information: www.ngs.noaa.gov/OPUS/Using_OPUS.html#accuracy

USER: dbriggs@fugro.com
RINEX FILE: 0001237b.08o

DATE: August 25, 2008
TIME: 20:25:14 UTC

SOFTWARE: page5 0612.06 master2.pl
EPHEMERIS: igr14940.eph [rapid]
NAV FILE: brdc2370.08n
ANT NAME: NONE
ARP HEIGHT: 0.0

START: 2008/08/24 01:26:00
STOP: 2008/08/24 23:37:30
OBS USED: 55416 / 58031 : 95%
FIXED AMB: 155 / 165 : 94%
OVERALL RMS: 0.016(m)

REF FRAME: NAD_83(CORS96)(EPOCH:2002.0000)

ITRF00 (EPOCH:2008.6463)

X:	-2733.111(m)	0.012(m)	-2733.798(m)	0.012(m)
Y:	-5571169.763(m)	0.011(m)	-5571168.259(m)	0.011(m)
Z:	3094814.530(m)	0.009(m)	3094814.325(m)	0.009(m)
LAT:	29 12 57.82997	0.005(m)	29 12 57.84800	0.005(m)
E LON:	269 58 18.81038	0.012(m)	269 58 18.78491	0.012(m)
W LON:	90 1 41.18962	0.012(m)	90 1 41.21509	0.012(m)
EL HGT:	-20.722(m)	0.013(m)	-22.134(m)	0.013(m)
ORTHO HGT:	3.201(m)	0.072(m)	[NAVD88 (Computed using GEOID03)]	

	UTM COORDINATES	STATE PLANE COORDINATES
	UTM (Zone 15)	SPC (1702 LA S)
Northing (Y) [meters]	3235583.586	80096.898
Easting (X) [meters]	788926.348	1126913.969
Convergence [degrees]	1.45160036	0.65262912
Point Scale	1.00063023	1.00001883
Combined Factor	1.00063349	1.00002208

US NATIONAL GRID DESIGNATOR: 15RYN8892635584(NAD 83)

BASE STATIONS USED

PID	DESIGNATION	LATITUDE	LONGITUDE	DISTANCE(m)
DF5771	LMCN LUMCON CORS ARP	N291517.904	W0903940.652	61706.8
DH7121	GRIS GRAND ISLE CORS ARP	N291555.883	W0895726.262	8800.0
DE8091	BVHS BOOTHVILLE CORS ARP	N292012.489	W0892423.010	61881.4

NEAREST NGS PUBLISHED CONTROL POINT

AU1292	H 155	N291257.	W0900123.	491.6
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This position and the above vector components were computed without any knowledge by the National Geodetic Survey regarding the equipment or field operating procedures used.

2008-237 Results for Receiver 0001

Dated: 1st June, 2009

NGS OPUS SOLUTION REPORT

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All computed coordinate accuracies are listed as peak-to-peak values.
For additional information: www.ngs.noaa.gov/OPUS/Using_OPUS.html#accuracy

USER: dbriggs@fugro.com
RINEX FILE: 00042350.08o

DATE: August 23, 2008
TIME: 18:29:41 UTC

SOFTWARE: page5 0612.06 master11.pl
EPHEMERIS: igr14935.eph [rapid]
NAV FILE: brdc2350.08n
ANT NAME: NONE
ARP HEIGHT: 0.0

START: 2008/08/22 00:35:00
STOP: 2008/08/22 23:54:00
OBS USED: 56203 / 59847 : 94%
FIXED AMB: 188 / 215 : 87%
OVERALL RMS: 0.022(m)

REF FRAME: NAD_83(CORS96)(EPOCH:2002.0000)

ITRF00 (EPOCH:2008.6408)

X:	-2731.335(m)	0.022(m)	-2732.022(m)	0.022(m)
Y:	-5571170.575(m)	0.031(m)	-5571169.071(m)	0.031(m)
Z:	3094812.933(m)	0.018(m)	3094812.728(m)	0.018(m)
LAT:	29 12 57.77184	0.006(m)	29 12 57.78987	0.006(m)
E LON:	269 58 18.87615	0.022(m)	269 58 18.85068	0.022(m)
W LON:	90 1 41.12385	0.022(m)	90 1 41.14932	0.022(m)
EL HGT:	-20.794(m)	0.036(m)	-22.206(m)	0.036(m)
ORTHO HGT:	3.129(m)	0.080(m)	[NAVD88 (Computed using GEOID03)]	

	UTM COORDINATES	STATE PLANE COORDINATES
	UTM (Zone 15)	SPC (1702 LA S)
Northing (Y) [meters]	3235581.841	80095.128
Easting (X) [meters]	788928.170	1126915.766
Convergence [degrees]	1.45160856	0.65263825
Point Scale	1.00063024	1.00001883
Combined Factor	1.00063351	1.00002210

US NATIONAL GRID DESIGNATOR: 15RYN8892835582(NAD 83)

		BASE STATIONS USED		
PID	DESIGNATION	LATITUDE	LONGITUDE	DISTANCE(m)
DF5771	LMCN LUMCON CORS ARP	N291517.904	W0903940.652	61708.7
DH7121	GRIS GRAND ISLE CORS ARP	N291555.883	W0895726.262	8799.7
DE8091	BVHS BOOTHVILLE CORS ARP	N292012.489	W0892423.010	61880.0

NEAREST NGS PUBLISHED CONTROL POINT			
AU1292	H 155	N291257.	W0900123.
			489.7

This position and the above vector components were computed without any knowledge by the National Geodetic Survey regarding the equipment or field operating procedures used.

2008-235 Results for Receiver 0004

Dated: 1st June, 2009

NGS OPUS SOLUTION REPORT

=====

All computed coordinate accuracies are listed as peak-to-peak values.
For additional information: www.ngs.noaa.gov/OPUS/Using_OPUS.html#accuracy

USER: dbriggs@fugro.com
RINEX FILE: 00042360.08o

DATE: August 25, 2008
TIME: 14:11:35 UTC

SOFTWARE: page5 0612.06 master10.pl
EPHEMERIS: igr14936.eph [rapid]
NAV FILE: brdc2360.08n
ANT NAME: NONE
ARP HEIGHT: 0.0

START: 2008/08/23 00:13:00
STOP: 2008/08/23 23:24:00
OBS USED: 56919 / 59598 : 96%
FIXED AMB: 207 / 225 : 92%
OVERALL RMS: 0.019(m)

REF FRAME: NAD_83(CORS96)(EPOCH:2002.0000) ITRF00 (EPOCH:2008.6435)

X:	-2731.337(m)	0.014(m)	-2732.024(m)	0.014(m)
Y:	-5571170.577(m)	0.005(m)	-5571169.073(m)	0.005(m)
Z:	3094812.934(m)	0.006(m)	3094812.729(m)	0.006(m)

LAT:	29 12 57.77184	0.003(m)	29 12 57.78986	0.003(m)
E LON:	269 58 18.87607	0.014(m)	269 58 18.85061	0.014(m)
W LON:	90 1 41.12393	0.014(m)	90 1 41.14939	0.014(m)
EL HGT:	-20.791(m)	0.007(m)	-22.204(m)	0.007(m)
ORTHO HGT:	3.132(m)	0.071(m)	[NAVD88 (Computed using GEOID03)]	

	UTM COORDINATES	STATE PLANE COORDINATES
	UTM (Zone 15)	SPC (1702 LA S)
Northing (Y) [meters]	3235581.841	80095.128
Easting (X) [meters]	788928.168	1126915.764
Convergence [degrees]	1.45160855	0.65263824
Point Scale	1.00063024	1.00001883
Combined Factor	1.00063351	1.00002210

US NATIONAL GRID DESIGNATOR: 15RYN8892835582(NAD 83)

		BASE STATIONS USED		
PID	DESIGNATION	LATITUDE	LONGITUDE	DISTANCE(m)
DF5771	LMCN LUMCON CORS ARP	N291517.904	W0903940.652	61708.7
DH7121	GRIS GRAND ISLE CORS ARP	N291555.883	W0895726.262	8799.7
DE8091	BVHS BOOTHVILLE CORS ARP	N292012.489	W0892423.010	61880.0

NEAREST NGS PUBLISHED CONTROL POINT			
AU1292	H 155	N291257.	W0900123. 489.7

This position and the above vector components were computed without any knowledge by the National Geodetic Survey regarding the equipment or field operating procedures used.

2008-236 Results for Receiver 0004

Dated: 1st June, 2009

NGS OPUS SOLUTION REPORT

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All computed coordinate accuracies are listed as peak-to-peak values.
For additional information: www.ngs.noaa.gov/OPUS/Using_OPUS.html#accuracy

USER: dbriggs@fugro.com
RINEX FILE: 0004237b.08o

DATE: August 25, 2008
TIME: 20:29:30 UTC

SOFTWARE: page5 0612.06 master30.pl
EPOCH: igr14940.eph [rapid]
NAV FILE: brdc2370.08n
ANT NAME: NONE
ARP HEIGHT: 0.0

START: 2008/08/24 01:26:00
STOP: 2008/08/24 23:37:30
OBS USED: 55082 / 57678 : 95%
FIXED AMB: 145 / 154 : 94%
OVERALL RMS: 0.016(m)

REF FRAME: NAD_83(CORS96)(EPOCH:2002.0000)

ITRF00 (EPOCH:2008.6463)

X:	-2731.335(m)	0.012(m)	-2732.022(m)	0.012(m)
Y:	-5571170.576(m)	0.012(m)	-5571169.072(m)	0.012(m)
Z:	3094812.933(m)	0.002(m)	3094812.728(m)	0.002(m)
LAT:	29 12 57.77182	0.005(m)	29 12 57.78985	0.005(m)
E LON:	269 58 18.87615	0.012(m)	269 58 18.85068	0.012(m)
W LON:	90 1 41.12385	0.012(m)	90 1 41.14932	0.012(m)
EL HGT:	-20.793(m)	0.012(m)	-22.205(m)	0.012(m)
ORTHO HGT:	3.130(m)	0.072(m)	[NAVD88 (Computed using GEOID03)]	

	UTM COORDINATES	STATE PLANE COORDINATES
	UTM (Zone 15)	SPC (1702 LA S)
Northing (Y) [meters]	3235581.841	80095.128
Easting (X) [meters]	788928.170	1126915.766
Convergence [degrees]	1.45160856	0.65263825
Point Scale	1.00063024	1.00001883
Combined Factor	1.00063351	1.00002210

US NATIONAL GRID DESIGNATOR: 15RYN8892835582(NAD 83)

BASE STATIONS USED

PID	DESIGNATION	LATITUDE	LONGITUDE	DISTANCE(m)
DF5771	LMCN LUMCON CORS ARP	N291517.904	W0903940.652	61708.7
DH7121	GRIS GRAND ISLE CORS ARP	N291555.883	W0895726.262	8799.7
DE8091	BVHS BOOTHVILLE CORS ARP	N292012.489	W0892423.010	61880.0

NEAREST NGS PUBLISHED CONTROL POINT

AU1292	H 155	N291257.	W0900123.	489.7
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This position and the above vector components were computed without any knowledge by the National Geodetic Survey regarding the equipment or field operating procedures used.

2008-237 Results for Receiver 0004

Empire, LA, 09/16/2008 to 10/02/2008

Five OPUS solutions were used for the Receiver 0001:

OPUS Solution for Receiver 0001									
Julian Day	Ant Type	Ant Height	Latitude (NAD83)			Longitude (NAD83)			Ellip. Height(m)
			Deg	Min	Sec	Deg	Min	Sec	
261	None	None	29	23	7.30979	89	36	6.7487	-16.073
262	None	None	29	23	7.30955	89	36	6.74814	-16.072
263	None	None	29	23	7.30919	89	36	6.74822	-16.060
264	None	None	29	23	7.30942	89	36	6.74777	-16.079
265	None	None	29	23	7.30886	89	36	6.74796	-16.085
Average			29	23	7.309362	89	36	6.748158	-16.074

Five OPUS solutions were used for the Receiver 0004:

OPUS Solution for Receiver 0004									
Julian Day	Ant Type	Ant Height	Latitude (NAD83)			Longitude (NAD83)			Ellip. Height(m)
			Deg	Min	Sec	Deg	Min	Sec	
261	None	None	29	23	7.33606	89	36	6.71744	-16.064
262	None	None	29	23	7.33599	89	36	6.71715	-16.069
263	None	None	29	23	7.33578	89	36	6.71734	-16.053
264	None	None	29	23	7.33625	89	36	6.717	-16.069
265	None	None	29	23	7.33587	89	36	6.71729	-16.079
Average			29	23	7.33599	89	36	6.717244	-16.067

Dated: 1st June, 2009

FILE: 00012610.080 000435902

1009 WARNING! No antenna type was selected. No antenna offsets or
1009 pattern will be applied. Coordinates with reduced accuracy
1009 will be returned for the antenna phase center.
1008 NOTE: Antenna offsets supplied by the user were zero. Coordinates
1008 returned will be for the antenna reference point (ARP).
1008

NGS OPUS SOLUTION REPORT
=====

All computed coordinate accuracies are listed as peak-to-peak values.
For additional information: www.ngs.noaa.gov/OPUS/Using_OPUS.html#accuracy

USER: amount@fugro.com
RINEX FILE: 0001261c.080

DATE: September 22, 2008
TIME: 22:21:14 UTC

SOFTWARE: page5 0612.06 master29.pl
EPHEMERIS: igr14973.eph [rapid]
NAV FILE: brdc2610.08n
ANT NAME: NONE NONE
ARP HEIGHT: 0.0
START: 2008/09/17 02:03:00
STOP: 2008/09/17 23:15:00
OBS USED: 51396 / 54495 : 94%
FIXED AMB: 165 / 177 : 93%
OVERALL RMS: 0.016(m)

REF FRAME: NAD_83(CORS96)(EPOCH:2002.0000) ITRF00 (EPOCH:2008.7119)

X:	38647.730(m)	0.018(m)	38647.041(m)	0.018(m)
Y:	-5561856.615(m)	0.013(m)	-5561855.111(m)	0.013(m)
Z:	3111181.307(m)	0.001(m)	3111181.103(m)	0.001(m)
LAT:	29 23 7.30979	0.008(m)	29 23 7.32806	0.008(m)
E LON:	270 23 53.25130	0.018(m)	270 23 53.22614	0.018(m)
W LON:	89 36 6.74870	0.018(m)	89 36 6.77386	0.018(m)
EL HGT:	-16.073(m)	0.011(m)	-17.488(m)	0.011(m)
ORTHO HGT:	8.120(m)	0.072(m)	[NAVD88 (Computed using GEOID03)]	

	UTM COORDINATES	STATE PLANE COORDINATES
	UTM (Zone 16)	SPC (1702 LA S)
Northing (Y) [meters]	3253496.492	99409.248
Easting (X) [meters]	247477.950	1168072.621
Convergence [degrees]	-1.27736784	0.86575132
Point Scale	1.00038691	0.99998303
Combined Factor	1.00038944	0.99998555

US NATIONAL GRID DESIGNATOR: 16RBT4747853496(NAD 83)

		BASE STATIONS USED		
PID	DESIGNATION	LATITUDE	LONGITUDE	DISTANCE(m)
DH9599	NOLA LOYOLA UNIVERSITY CORS ARP	N295603.732	W0900712.646	78874.5
DK3577	ENG5 ENGLISH TURN 5 CORS ARP	N295244.246	W0895630.197	63848.0
DE8091	BVHS BOOTHVILLE CORS ARP	N292012.489	W0892423.010	19729.4

NEAREST NGS PUBLISHED CONTROL POINT		
AT1109	EMPIRE MUNICIPAL TANK	N292316.216 W0893554.391 432.1

This position and the above vector components were computed without any knowledge by the National Geodetic Survey regarding the equipment or field operating procedures used.

2008-261 Results for Receiver 0001

Dated: 1st June, 2009

FILE: 00012620.080 000435910

1009 WARNING! No antenna type was selected. No antenna offsets or
1009 pattern will be applied. Coordinates with reduced accuracy
1009 will be returned for the antenna phase center.
1008 NOTE: Antenna offsets supplied by the user were zero. Coordinates
1008 returned will be for the antenna reference point (ARP).
1008

NGS OPUS SOLUTION REPORT
=====

All computed coordinate accuracies are listed as peak-to-peak values.
For additional information: www.ngs.noaa.gov/OPUS/Using_OPUS.html#accuracy

USER: amount@fugro.com DATE: September 22, 2008
RINEX FILE: 0001262a.080 TIME: 22:22:50 UTC

SOFTWARE: page5 0612.06 master10.pl START: 2008/09/18 00:14:00
EPHEMERIS: igr14974.eph [rapid] STOP: 2008/09/18 21:53:00
NAV FILE: brdc2620.08n OBS USED: 53538 / 56425 : 95%
ANT NAME: NONE NONE # FIXED AMB: 186 / 194 : 96%
ARP HEIGHT: 0.0 OVERALL RMS: 0.018(m)

REF FRAME: NAD_83(CORS96)(EPOCH:2002.0000) ITRF00 (EPOCH:2008.7144)

X:	38647.745(m)	0.022(m)	38647.056(m)	0.022(m)
Y:	-5561856.619(m)	0.018(m)	-5561855.115(m)	0.018(m)
Z:	3111181.301(m)	0.004(m)	3111181.097(m)	0.004(m)
LAT:	29 23 7.30955	0.010(m)	29 23 7.32782	0.010(m)
E LON:	270 23 53.25186	0.022(m)	270 23 53.22670	0.022(m)
W LON:	89 36 6.74814	0.022(m)	89 36 6.77330	0.022(m)
EL HGT:	-16.072(m)	0.016(m)	-17.487(m)	0.016(m)
ORTHO HGT:	8.121(m)	0.073(m)	[NAVD88 (Computed using GEOID03)]	

	UTM COORDINATES	STATE PLANE COORDINATES
	UTM (Zone 16)	SPC (1702 LA S)
Northing (Y) [meters]	3253496.484	99409.241
Easting (X) [meters]	247477.965	1168072.636
Convergence [degrees]	-1.27736777	0.86575140
Point Scale	1.00038691	0.99998303
Combined Factor	1.00038944	0.99998555

US NATIONAL GRID DESIGNATOR: 16RBT4747853496(NAD 83)

		BASE STATIONS USED		
PID	DESIGNATION	LATITUDE	LONGITUDE	DISTANCE(m)
DH9599	NOLA LOYOLA UNIVERSITY CORS ARP	N295603.732	W0900712.646	78874.6
DK3577	ENG5 ENGLISH TURN 5 CORS ARP	N295244.246	W0895630.197	63848.0
DE8091	BVHS BOOTHVILLE CORS ARP	N292012.489	W0892423.010	19729.4

NEAREST NGS PUBLISHED CONTROL POINT			
AT1109	EMPIRE MUNICIPAL TANK	N292316.216	W0893554.391 432.1

This position and the above vector components were computed without any knowledge by the National Geodetic Survey regarding the equipment or field operating procedures used.

2008-262 Results for Receiver 0001

Dated: 1st June, 2009

FILE: 00012630.080 000435913

1009 WARNING! No antenna type was selected. No antenna offsets or
1009 pattern will be applied. Coordinates with reduced accuracy
1009 will be returned for the antenna phase center.
1008 NOTE: Antenna offsets supplied by the user were zero. Coordinates
1008 returned will be for the antenna reference point (ARP).
1008

NGS OPUS SOLUTION REPORT
=====

All computed coordinate accuracies are listed as peak-to-peak values.
For additional information: www.ngs.noaa.gov/OPUS/Using_OPUS.html#accuracy

USER: amount@fugro.com DATE: September 22, 2008
RINEX FILE: 0001263p.080 TIME: 22:23:51 UTC

SOFTWARE: page5 0612.06 master23.pl START: 2008/09/19 15:46:00
EPHEMERIS: igr14975.eph [rapid] STOP: 2008/09/19 23:29:30
NAV FILE: brdc2630.08n OBS USED: 21016 / 22034 : 95%
ANT NAME: NONE NONE # FIXED AMB: 62 / 71 : 87%
ARP HEIGHT: 0.0 OVERALL RMS: 0.018(m)

REF FRAME: NAD_83(CORS96)(EPOCH:2002.0000) ITRF00 (EPOCH:2008.7180)

X:	38647.743(m)	0.024(m)	38647.054(m)	0.024(m)
Y:	-5561856.635(m)	0.038(m)	-5561855.131(m)	0.038(m)
Z:	3111181.297(m)	0.017(m)	3111181.093(m)	0.017(m)
LAT:	29 23 7.30919	0.008(m)	29 23 7.32746	0.008(m)
E LON:	270 23 53.25178	0.024(m)	270 23 53.22662	0.024(m)
W LON:	89 36 6.74822	0.024(m)	89 36 6.77338	0.024(m)
EL HGT:	-16.060(m)	0.041(m)	-17.475(m)	0.041(m)
ORTHO HGT:	8.133(m)	0.082(m)	[NAVD88 (Computed using GEOID03)]	

	UTM COORDINATES	STATE PLANE COORDINATES
	UTM (Zone 16)	SPC (1702 LA S)
Northing (Y) [meters]	3253496.473	99409.230
Easting (X) [meters]	247477.963	1168072.634
Convergence [degrees]	-1.27736777	0.86575139
Point Scale	1.00038691	0.99998303
Combined Factor	1.00038944	0.99998555

US NATIONAL GRID DESIGNATOR: 16RBT4747853496(NAD 83)

PID	DESIGNATION	BASE STATIONS USED	LATITUDE	LONGITUDE	DISTANCE(m)
DH9599	NOLA LOYOLA UNIVERSITY CORS ARP		N295603.732	W0900712.646	78874.6
DK3577	ENG5 ENGLISH TURN 5 CORS ARP		N295244.246	W0895630.197	63848.0
DE8091	BVHS BOOTHVILLE CORS ARP		N292012.489	W0892423.010	19729.4

NEAREST NGS PUBLISHED CONTROL POINT		
AT1109	EMPIRE MUNICIPAL TANK	N292316.216 W0893554.391 432.1

This position and the above vector components were computed without any knowledge by the National Geodetic Survey regarding the equipment or field operating procedures used.

2008-263 Results for Receiver 0001

Dated: 1st June, 2009

FILE: 00012640.080 000435922

1009 WARNING! No antenna type was selected. No antenna offsets or
1009 pattern will be applied. Coordinates with reduced accuracy
1009 will be returned for the antenna phase center.
1008 NOTE: Antenna offsets supplied by the user were zero. Coordinates
1008 returned will be for the antenna reference point (ARP).
1008

NGS OPUS SOLUTION REPORT
=====

All computed coordinate accuracies are listed as peak-to-peak values.
For additional information: www.ngs.noaa.gov/OPUS/using_OPUS.html#accuracy

USER: amount@fugro.com
RINEX FILE: 00012641.080

DATE: September 22, 2008
TIME: 22:31:07 UTC

SOFTWARE: page5 0612.06 master.pl
EPHEMERIS: igr14976.eph [rapid]
NAV FILE: brdc2640.08n
ANT NAME: NONE NONE
ARP HEIGHT: 0.0
START: 2008/09/20 11:15:00
STOP: 2008/09/21 11:18:00
OBS USED: 58314 / 61413 : 95%
FIXED AMB: 170 / 201 : 85%
OVERALL RMS: 0.026(m)

REF FRAME: NAD_83(CORS96)(EPOCH:2002.0000) ITRF00 (EPOCH:2008.7212)

X:	38647.755(m)	0.022(m)	38647.066(m)	0.022(m)
Y:	-5561856.615(m)	0.011(m)	-5561855.111(m)	0.011(m)
Z:	3111181.294(m)	0.003(m)	3111181.090(m)	0.003(m)
LAT:	29 23 7.30942	0.006(m)	29 23 7.32769	0.006(m)
E LON:	270 23 53.25223	0.022(m)	270 23 53.22707	0.022(m)
W LON:	89 36 6.74777	0.022(m)	89 36 6.77293	0.022(m)
EL HGT:	-16.079(m)	0.009(m)	-17.494(m)	0.009(m)
ORTHO HGT:	8.114(m)	0.072(m)	[NAVD88 (Computed using GEOID03)]	

	UTM COORDINATES	STATE PLANE COORDINATES
	UTM (Zone 16)	SPC (1702 LA S)
Northing (Y) [meters]	3253496.480	99409.237
Easting (X) [meters]	247477.975	1168072.646
Convergence [degrees]	-1.27736771	0.86575145
Point Scale	1.00038691	0.99998303
Combined Factor	1.00038944	0.99998555

US NATIONAL GRID DESIGNATOR: 16RBT4747853496(NAD 83)

		BASE STATIONS USED		
PID	DESIGNATION	LATITUDE	LONGITUDE	DISTANCE(m)
DJ9603	LWES LAKEWOOD ELEMENTARY CORS ARP	N295401.295	W0902057.833	92183.1
DH9599	NOLA LOYOLA UNIVERSITY CORS ARP	N295603.732	W0900712.646	78874.6
DK3577	ENG5 ENGLISH TURN 5 CORS ARP	N295244.246	W0895630.197	63848.0

		NEAREST NGS PUBLISHED CONTROL POINT	
PID	DESIGNATION	LATITUDE	LONGITUDE
AT1109	EMPIRE MUNICIPAL TANK	N292316.216	W0893554.391

This position and the above vector components were computed without any knowledge by the National Geodetic Survey regarding the equipment or field operating procedures used.

2008-264 Results for Receiver 0001

Dated: 1st June, 2009

FILE: 00012650.080 000435923

1009 WARNING! No antenna type was selected. No antenna offsets or
1009 pattern will be applied. Coordinates with reduced accuracy
1009 will be returned for the antenna phase center.
1008 NOTE: Antenna offsets supplied by the user were zero. Coordinates
1008 returned will be for the antenna reference point (ARP).
1008

NGS OPUS SOLUTION REPORT
=====

All computed coordinate accuracies are listed as peak-to-peak values.
For additional information: www.ngs.noaa.gov/OPUS/using_OPUS.html#accuracy

USER: amount@fugro.com DATE: September 22, 2008
RINEX FILE: 00012651.080 TIME: 22:35:15 UTC

SOFTWARE: page5 0612.06 master23.pl START: 2008/09/21 11:31:00
EPHEMERIS: igr14980.eph [rapid] STOP: 2008/09/21 23:59:00
NAV FILE: brdc2650.08n OBS USED: 32026 / 33527 : 96%
ANT NAME: NONE NONE # FIXED AMB: 94 / 99 : 95%
ARP HEIGHT: 0.0 OVERALL RMS: 0.018(m)

REF FRAME: NAD_83(CORS96)(EPOCH:2002.0000) ITRF00 (EPOCH:2008.7233)

X:	38647.750(m)	0.024(m)	38647.061(m)	0.024(m)
Y:	-5561856.618(m)	0.029(m)	-5561855.114(m)	0.029(m)
Z:	3111181.276(m)	0.042(m)	3111181.072(m)	0.042(m)

LAT:	29 23 7.30886	0.023(m)	29 23 7.32713	0.023(m)
E LON:	270 23 53.25204	0.024(m)	270 23 53.22688	0.024(m)
W LON:	89 36 6.74796	0.024(m)	89 36 6.77312	0.024(m)
EL HGT:	-16.085(m)	0.046(m)	-17.500(m)	0.046(m)
ORTHO HGT:	8.108(m)	0.085(m)	[NAVD88 (Computed using GEOID03)]	

	UTM COORDINATES	STATE PLANE COORDINATES
	UTM (Zone 16)	SPC (1702 LA S)
Northing (Y) [meters]	3253496.463	99409.220
Easting (X) [meters]	247477.970	1168072.641
Convergence [degrees]	-1.27736773	0.86575142
Point Scale	1.00038691	0.99998303
Combined Factor	1.00038944	0.99998555

US NATIONAL GRID DESIGNATOR: 16RBT4747853496(NAD 83)

BASE STATIONS USED				
PID	DESIGNATION	LATITUDE	LONGITUDE	DISTANCE(m)
DJ2347	VIC5 VICKSBURG 5 CORS ARP	N321953.087	W0905511.222	350044.6
DK3577	ENG5 ENGLISH TURN 5 CORS ARP	N295244.246	W0895630.197	63848.0
AF9559	MOB1 MOBILE POINT 1 CORS ARP	N301339.046	W0880126.752	178818.2

NEAREST NGS PUBLISHED CONTROL POINT			
AT1109	EMPIRE MUNICIPAL TANK	N292316.216	W0893554.391 432.1

This position and the above vector components were computed without any knowledge by the National Geodetic Survey regarding the equipment or field operating procedures used.

2008-265 Results for Receiver 0001

Dated: 1st June, 2009

FILE: 00042610.080 000435924

1009 WARNING! No antenna type was selected. No antenna offsets or
1009 pattern will be applied. Coordinates with reduced accuracy
1009 will be returned for the antenna phase center.
1008 NOTE: Antenna offsets supplied by the user were zero. Coordinates
1008 returned will be for the antenna reference point (ARP).
1008

NGS OPUS SOLUTION REPORT
=====

All computed coordinate accuracies are listed as peak-to-peak values.
For additional information: www.ngs.noaa.gov/OPUS/using_OPUS.html#accuracy

USER: amount@fugro.com DATE: September 22, 2008
RINEX FILE: 0004261c.080 TIME: 22:35:17 UTC

SOFTWARE: page5 0612.06 master.pl START: 2008/09/17 02:03:00
EPHEMERIS: igr14973.eph [rapid] STOP: 2008/09/17 23:15:00
NAV FILE: brdc2610.08n OBS USED: 51111 / 54482 : 94%
ANT NAME: NONE NONE # FIXED AMB: 153 / 164 : 93%
ARP HEIGHT: 0.0 OVERALL RMS: 0.016(m)

REF FRAME: NAD_83(CORS96)(EPOCH:2002.0000) ITRF00 (EPOCH:2008.7119)

X:	38648.570(m)	0.019(m)	38647.881(m)	0.019(m)
Y:	-5561856.220(m)	0.009(m)	-5561854.716(m)	0.009(m)
Z:	3111182.016(m)	0.005(m)	3111181.812(m)	0.005(m)

LAT:	29 23 7.33606	0.010(m)	29 23 7.35433	0.010(m)
E LON:	270 23 53.28256	0.019(m)	270 23 53.25739	0.019(m)
W LON:	89 36 6.71744	0.019(m)	89 36 6.74261	0.019(m)
EL HGT:	-16.064(m)	0.005(m)	-17.479(m)	0.005(m)
ORTHO HGT:	8.130(m)	0.071(m)	[NAVD88 (Computed using GEOID03)]	

	UTM COORDINATES	STATE PLANE COORDINATES
	UTM (Zone 16)	SPC (1702 LA S)
Northing (Y) [meters]	3253497.282	99410.069
Easting (X) [meters]	247478.811	1168073.451
Convergence [degrees]	-1.27736387	0.86575566
Point Scale	1.00038691	0.99998303
Combined Factor	1.00038943	0.99998555

US NATIONAL GRID DESIGNATOR: 16RBT4747953497(NAD 83)

		BASE STATIONS USED		
PID	DESIGNATION	LATITUDE	LONGITUDE	DISTANCE(m)
DH9599	NOLA LOYOLA UNIVERSITY CORS ARP	N295603.732	W0900712.646	78874.5
DK3577	ENG5 ENGLISH TURN 5 CORS ARP	N295244.246	W0895630.197	63847.7
DE8091	BVHS BOOTHVILLE CORS ARP	N292012.489	W0892423.010	19728.8

		NEAREST NGS PUBLISHED CONTROL POINT	
AT1109	EMPIRE MUNICIPAL TANK	N292316.216	W0893554.391 430.9

This position and the above vector components were computed without any knowledge by the National Geodetic Survey regarding the equipment or field operating procedures used.

2008-261 Results for Receiver 0004



FILE: 00042620.080 000435925

1009 WARNING! No antenna type was selected. No antenna offsets or
1009 pattern will be applied. Coordinates with reduced accuracy
1009 will be returned for the antenna phase center.
1008 NOTE: Antenna offsets supplied by the user were zero. Coordinates
1008 returned will be for the antenna reference point (ARP).
1008

NGS OPUS SOLUTION REPORT
=====

All computed coordinate accuracies are listed as peak-to-peak values.
For additional information: www.ngs.noaa.gov/OPUS/Using_OPUS.html#accuracy

USER: amount@fugro.com
RINEX FILE: 0004262a.080

DATE: September 22, 2008
TIME: 22:37:17 UTC

SOFTWARE: page5 0612.06 master10.pl
EPHEMERIS: igr14974.eph [rapid]
NAV FILE: brdc2620.08n
ANT NAME: NONE NONE
ARP HEIGHT: 0.0
START: 2008/09/18 00:14:00
STOP: 2008/09/18 21:53:00
OBS USED: 53869 / 57005 : 94%
FIXED AMB: 184 / 190 : 97%
OVERALL RMS: 0.016(m)

REF FRAME: NAD_83(CORS96)(EPOCH:2002.0000) ITRF00 (EPOCH:2008.7144)

X:	38648.578(m)	0.020(m)	38647.889(m)	0.020(m)
Y:	-5561856.217(m)	0.025(m)	-5561854.713(m)	0.025(m)
Z:	3111182.012(m)	0.004(m)	3111181.808(m)	0.004(m)
LAT:	29 23 7.33599	0.012(m)	29 23 7.35426	0.012(m)
E LON:	270 23 53.28285	0.020(m)	270 23 53.25769	0.020(m)
W LON:	89 36 6.71715	0.020(m)	89 36 6.74231	0.020(m)
EL HGT:	-16.069(m)	0.024(m)	-17.483(m)	0.024(m)
ORTHO HGT:	8.125(m)	0.075(m)	[NAVD88 (Computed using GEOID03)]	

	UTM COORDINATES	STATE PLANE COORDINATES
	UTM (Zone 16)	SPC (1702 LA S)
Northing (Y) [meters]	3253497.280	99410.068
Easting (X) [meters]	247478.819	1168073.460
Convergence [degrees]	-1.27736382	0.86575570
Point Scale	1.00038691	0.99998303
Combined Factor	1.00038943	0.99998555

US NATIONAL GRID DESIGNATOR: 16RBT4747953497(NAD 83)

		BASE STATIONS USED		
PID	DESIGNATION	LATITUDE	LONGITUDE	DISTANCE(m)
DH9599	NOLA LOYOLA UNIVERSITY CORS ARP	N295603.732	W0900712.646	78874.5
DK3577	ENG5 ENGLISH TURN 5 CORS ARP	N295244.246	W0895630.197	63847.7
DE8091	BVHS BOOTHVILLE CORS ARP	N292012.489	W0892423.010	19728.8

NEAREST NGS PUBLISHED CONTROL POINT			
PID	DESIGNATION	LATITUDE	LONGITUDE
AT1109	EMPIRE MUNICIPAL TANK	N292316.216	W0893554.391

430.9

This position and the above vector components were computed without any knowledge by the National Geodetic Survey regarding the equipment or field operating procedures used.

2008-262 Results for Receiver 0004

Dated: 1st June, 2009

FILE: 00042630.080 000435933

1009 WARNING! No antenna type was selected. No antenna offsets or
1009 pattern will be applied. Coordinates with reduced accuracy
1009 will be returned for the antenna phase center.
1008 NOTE: Antenna offsets supplied by the user were zero. Coordinates
1008 returned will be for the antenna reference point (ARP).
1008

NGS OPUS SOLUTION REPORT
=====

All computed coordinate accuracies are listed as peak-to-peak values.
For additional information: www.ngs.noaa.gov/OPUS/Using_OPUS.html#accuracy

USER: amount@fugro.com DATE: September 22, 2008
RINEX FILE: 0004263p.080 TIME: 22:48:39 UTC

SOFTWARE: page5 0612.06 master29.pl START: 2008/09/19 15:45:00
EPHEMERIS: igr14975.eph [rapid] STOP: 2008/09/19 23:30:00
NAV FILE: brdc2630.08n OBS USED: 21098 / 22142 : 95%
ANT NAME: NONE NONE # FIXED AMB: 72 / 83 : 87%
ARP HEIGHT: 0.0 OVERALL RMS: 0.018(m)

REF FRAME: NAD_83(CORS96)(EPOCH:2002.0000) ITRF00 (EPOCH:2008.7180)

X:	38648.573(m)	0.026(m)	38647.884(m)	0.026(m)
Y:	-5561856.234(m)	0.050(m)	-5561854.730(m)	0.050(m)
Z:	3111182.014(m)	0.018(m)	3111181.810(m)	0.018(m)
LAT:	29 23 7.33578	0.011(m)	29 23 7.35405	0.011(m)
E LON:	270 23 53.28266	0.027(m)	270 23 53.25750	0.027(m)
W LON:	89 36 6.71734	0.027(m)	89 36 6.74250	0.027(m)
EL HGT:	-16.053(m)	0.052(m)	-17.468(m)	0.052(m)
ORTHO HGT:	8.141(m)	0.088(m)	[NAVD88 (Computed using GEOID03)]	

	UTM COORDINATES	STATE PLANE COORDINATES
	UTM (Zone 16)	SPC (1702 LA 5)
Northing (Y) [meters]	3253497.273	99410.061
Easting (X) [meters]	247478.814	1168073.455
Convergence [degrees]	-1.27736385	0.86575567
Point Scale	1.00038691	0.99998303
Combined Factor	1.00038943	0.99998555

US NATIONAL GRID DESIGNATOR: 16RBT4747953497(NAD 83)

PID	DESIGNATION	BASE STATIONS USED		
		LATITUDE	LONGITUDE	DISTANCE(m)
DH9599	NOLA LOYOLA UNIVERSITY CORS ARP	N295603.732	W0900712.646	78874.5
DK3577	ENG5 ENGLISH TURN 5 CORS ARP	N295244.246	W0895630.197	63847.7
DE8091	BVHS BOOTHVILLE CORS ARP	N292012.489	W0892423.010	19728.8

NEAREST NGS PUBLISHED CONTROL POINT			
AT1109	EMPIRE MUNICIPAL TANK	N292316.216	W0893554.391 430.9

This position and the above vector components were computed without any knowledge by the National Geodetic Survey regarding the equipment or field operating procedures used.

2008-263 Results for Receiver 0004

Dated: 1st June, 2009

FILE: 00042640.080 000435926

1009 WARNING! No antenna type was selected. No antenna offsets or
1009 pattern will be applied. Coordinates with reduced accuracy
1009 will be returned for the antenna phase center.
1008 NOTE: Antenna offsets supplied by the user were zero. Coordinates
1008 returned will be for the antenna reference point (ARP).
1008

NGS OPUS SOLUTION REPORT
=====

All computed coordinate accuracies are listed as peak-to-peak values.
For additional information: www.ngs.noaa.gov/OPUS/Using_OPUS.html#accuracy

USER: amount@fugro.com
RINEX FILE: 00042641.080

DATE: September 22, 2008
TIME: 22:39:26 UTC

SOFTWARE: page5 0612.06 master23.pl
EPHEMERIS: igr14976.eph [rapid]
NAV FILE: brdc2640.08n
ANT NAME: NONE NONE
ARP HEIGHT: 0.0
START: 2008/09/20 11:15:00
STOP: 2008/09/21 11:18:00
OBS USED: 58049 / 61411 : 95%
FIXED AMB: 169 / 218 : 78%
OVERALL RMS: 0.025(m)

REF FRAME: NAD_83(CORS96)(EPOCH:2002.0000) ITRF00 (EPOCH:2008.7212)

X:	38648.582(m)	0.020(m)	38647.893(m)	0.020(m)
Y:	-5561856.213(m)	0.001(m)	-5561854.709(m)	0.001(m)
Z:	3111182.019(m)	0.003(m)	3111181.815(m)	0.003(m)
LAT:	29 23 7.33625	0.003(m)	29 23 7.35452	0.003(m)
E LON:	270 23 53.28300	0.020(m)	270 23 53.25784	0.020(m)
W LON:	89 36 6.71700	0.020(m)	89 36 6.74216	0.020(m)
EL HGT:	-16.069(m)	0.003(m)	-17.483(m)	0.003(m)
ORTHO HGT:	8.125(m)	0.071(m)	[NAVD88 (Computed using GEOID03)]	

	UTM COORDINATES	STATE PLANE COORDINATES
	UTM (Zone 16)	SPC (1702 LA S)
Northing (Y) [meters]	3253497.288	99410.076
Easting (X) [meters]	247478.823	1168073.463
Convergence [degrees]	-1.27736381	0.86575572
Point Scale	1.00038691	0.99998303
Combined Factor	1.00038943	0.99998555

US NATIONAL GRID DESIGNATOR: 16RBT4747953497(NAD 83)

		BASE STATIONS USED		
PID	DESIGNATION	LATITUDE	LONGITUDE	DISTANCE(m)
DJ9603	LWES LAKEWOOD ELMENTRY CORS ARP	N295401.295	W0902057.833	92183.3
DH9599	NOLA LOYOLA UNIVERSITY CORS ARP	N295603.732	W0900712.646	78874.5
DK3577	ENG5 ENGLISH TURN 5 CORS ARP	N295244.246	W0895630.197	63847.7

NEAREST NGS PUBLISHED CONTROL POINT			
AT1109	EMPIRE MUNICIPAL TANK	N292316.216	W0893554.391 430.9

This position and the above vector components were computed without any knowledge by the National Geodetic Survey regarding the equipment or field operating procedures used.

2008-264 Results for Receiver 0004

Dated: 1st June, 2009

FILE: 00042650.080 000435930

1009 WARNING! No antenna type was selected. No antenna offsets or
1009 pattern will be applied. Coordinates with reduced accuracy
1009 will be returned for the antenna phase center.
1008 NOTE: Antenna offsets supplied by the user were zero. Coordinates
1008 returned will be for the antenna reference point (ARP).
1008

NGS OPUS SOLUTION REPORT
=====

All computed coordinate accuracies are listed as peak-to-peak values.
For additional information: www.ngs.noaa.gov/OPUS/Using_OPUS.html#accuracy

USER: amount@fugro.com
RINEX FILE: 00042651.080

DATE: September 22, 2008
TIME: 22:50:33 UTC

SOFTWARE: page5 0612.06 master28.pl
EPHEMERIS: igr14980.eph [rapid]
NAV FILE: brdc2650.08n
ANT NAME: NONE
ARP HEIGHT: 0.0

START: 2008/09/21 11:31:00
STOP: 2008/09/21 23:59:00
OBS USED: 31976 / 33541 : 95%
FIXED AMB: 97 / 105 : 92%
OVERALL RMS: 0.019(m)

REF FRAME: NAD_83(CORS96)(EPOCH:2002.0000) ITRF00 (EPOCH:2008.7233)

X:	38648.574(m)	0.021(m)	38647.885(m)	0.021(m)
Y:	-5561856.210(m)	0.028(m)	-5561854.706(m)	0.028(m)
Z:	3111182.004(m)	0.041(m)	3111181.800(m)	0.041(m)
LAT:	29 23 7.33587	0.022(m)	29 23 7.35415	0.022(m)
E LON:	270 23 53.28271	0.021(m)	270 23 53.25754	0.021(m)
W LON:	89 36 6.71729	0.021(m)	89 36 6.74246	0.021(m)
EL HGT:	-16.079(m)	0.045(m)	-17.494(m)	0.045(m)
ORTHO HGT:	8.115(m)	0.084(m)	[NAVD88 (Computed using GEOID03)]	

	UTM COORDINATES	STATE PLANE COORDINATES
	UTM (Zone 16)	SPC (1702 LA S)
Northing (y) [meters]	3253497.276	99410.064
Easting (X) [meters]	247478.815	1168073.456
Convergence [degrees]	-1.27736384	0.86575568
Point Scale	1.00038691	0.99998303
Combined Factor	1.00038943	0.99998555

US NATIONAL GRID DESIGNATOR: 16RBT4747953497(NAD 83)

		BASE STATIONS USED		
PID	DESIGNATION	LATITUDE	LONGITUDE	DISTANCE(m)
DJ2347	VIC5 VICKSBURG 5 CORS ARP	N321953.087	W0905511.222	350044.1
DK3577	ENG5 ENGLISH TURN 5 CORS ARP	N295244.246	W0895630.197	63847.7
AF9559	MOB1 MOBILE POINT 1 CORS ARP	N301339.046	W0880126.752	178817.1

NEAREST NGS PUBLISHED CONTROL POINT	
AT1109	EMPIRE MUNICIPAL TANK
	N292316.216 W0893554.391 430.9

This position and the above vector components were computed without any knowledge by the National Geodetic Survey regarding the equipment or field operating procedures used.

2008-265 Results for Receiver 0004



Grand Isle, LA, 10/03/2008 to 04/06/2009

Two OPUS solutions were used for the Receiver 0001:

OPUS Solution for Receiver 0001									
Julian Day	Ant Type	Ant Height	Latitude (NAD83)			Longitude (NAD83)			Ellip. Height(m)
			Deg	Min	Sec	Deg	Min	Sec	
276	None	None	29	12	57.77187	90	1	41.12389	-20.777
278	None	None	29	12	57.77183	90	1	41.12385	-20.777
Average			29	12	57.77185	90	1	41.12387	-20.777

Two OPUS solutions were used for the Receiver 0004:

OPUS Solution for Receiver 0004									
Julian Day	Ant Type	Ant Height	Latitude (NAD83)			Longitude (NAD83)			Ellip. Height (m)
			Deg	Min	Sec	Deg	Min	Sec	
276	None	None	29	12	57.82998	90	1	41.1897	-20.718
278	None	None	29	12	57.83001	90	1	41.18981	-20.710
Average			29	12	57.829995	90	1	41.189755	-20.714

Dated: 1st June, 2009

FILE: 00012760.080 000445591

1009 WARNING! No antenna type was selected. No antenna offsets or
1009 pattern will be applied. Coordinates with reduced accuracy
1009 will be returned for the antenna phase center.
1008 NOTE: Antenna offsets supplied by the user were zero. Coordinates
1008 returned will be for the antenna reference point (ARP).
1008

NGS OPUS SOLUTION REPORT
=====

All computed coordinate accuracies are listed as peak-to-peak values.
For additional information: www.ngs.noaa.gov/OPUS/Using_OPUS.html#accuracy

USER: amount@fugro.com
RINEX FILE: 00012770.080

DATE: October 07, 2008
TIME: 14:41:32 UTC

SOFTWARE: page5 0612.06 master12.pl 080929 START: 2008/10/03 00:03:00
EPHEMERIS: igr14995.eph [rapid] STOP: 2008/10/04 00:03:00
NAV FILE: brdc2770.08n OBS USED: 58554 / 61783 : 95%
ANT NAME: NONE NONE # FIXED AMB: 188 / 207 : 91%
ARP HEIGHT: 0.0 OVERALL RMS: 0.015(m)

REF FRAME: NAD_83(CORS96)(EPOCH:2002.0000) ITRF00 (EPOCH:2008.7555)

X:	-2731.336(m)	0.018(m)	-2732.025(m)	0.018(m)
Y:	-5571170.589(m)	0.015(m)	-5571169.085(m)	0.015(m)
Z:	3094812.942(m)	0.007(m)	3094812.737(m)	0.007(m)
LAT:	29 12 57.77187	0.008(m)	29 12 57.78990	0.008(m)
E LON:	269 58 18.87611	0.018(m)	269 58 18.85057	0.018(m)
W LON:	90 1 41.12389	0.018(m)	90 1 41.14943	0.018(m)
EL HGT:	-20.777(m)	0.016(m)	-22.189(m)	0.016(m)
ORTHO HGT:	3.146(m)	0.073(m)	[NAVD88 (Computed using GEOID03)]	

	UTM COORDINATES	STATE PLANE COORDINATES
	UTM (Zone 15)	SPC (1702 LA S)
Northing (Y) [meters]	3235581.842	80095.129
Easting (X) [meters]	788928.169	1126915.765
Convergence [degrees]	1.45160856	0.65263824
Point Scale	1.00063024	1.00001883
Combined Factor	1.00063351	1.00002209

US NATIONAL GRID DESIGNATOR: 15RYN8892835582(NAD 83)

		BASE STATIONS USED		
PID	DESIGNATION	LATITUDE	LONGITUDE	DISTANCE(m)
DF5771	LMCN LUMCON CORS ARP	N291517.904	W0903940.652	61708.7
DK3577	ENG5 ENGLISH TURN 5 CORS ARP	N295244.246	W0895630.197	73954.7
DE8091	BVHS BOOTHVILLE CORS ARP	N292012.489	W0892423.010	61880.0

		NEAREST NGS PUBLISHED CONTROL POINT		
PID	DESIGNATION	LATITUDE	LONGITUDE	DISTANCE(m)
AU1292	H 155	N291257.	W0900123.	489.7

This position and the above vector components were computed without any knowledge by the National Geodetic Survey regarding the equipment or field operating procedures used.

2008-276 Results for Receiver 0001

Dated: 1st June, 2009

FILE: 00012780.080 000445593

1009 WARNING! No antenna type was selected. No antenna offsets or
1009 pattern will be applied. Coordinates with reduced accuracy
1009 will be returned for the antenna phase center.
1008 NOTE: Antenna offsets supplied by the user were zero. Coordinates
1008 returned will be for the antenna reference point (ARP).
1008

NGS OPUS SOLUTION REPORT
=====

All computed coordinate accuracies are listed as peak-to-peak values.
For additional information: www.ngs.noaa.gov/OPUS/Using_OPUS.html#accuracy

USER: amount@fugro.com DATE: October 07, 2008
RINEX FILE: 0001278k.080 TIME: 14:42:54 UTC

SOFTWARE: page5 0612.06 master10.pl 080929 START: 2008/10/04 10:55:00
EPHEMERIS: igr14996.eph [rapid] STOP: 2008/10/05 10:48:00
NAV FILE: brdc2780.08n OBS USED: 59136 / 61600 : 96%
ANT NAME: NONE NONE # FIXED AMB: 176 / 205 : 86%
ARP HEIGHT: 0.0 OVERALL RMS: 0.016(m)

REF FRAME: NAD_83(CORS96)(EPOCH:2002.0000) ITRF00 (EPOCH:2008.7594)

X:	-2731.335(m)	0.005(m)	-2732.024(m)	0.005(m)
Y:	-5571170.590(m)	0.009(m)	-5571169.086(m)	0.009(m)
Z:	3094812.941(m)	0.012(m)	3094812.736(m)	0.012(m)
LAT:	29 12 57.77183	0.013(m)	29 12 57.78985	0.013(m)
E LON:	269 58 18.87615	0.005(m)	269 58 18.85061	0.005(m)
W LON:	90 1 41.12385	0.005(m)	90 1 41.14939	0.005(m)
EL HGT:	-20.777(m)	0.008(m)	-22.189(m)	0.008(m)
ORTHO HGT:	3.146(m)	0.071(m)	[NAVD88 (Computed using GEOID03)]	

	UTM COORDINATES	STATE PLANE COORDINATES
	UTM (Zone 15)	SPC (1702 LA S)
Northing (Y) [meters]	3235581.841	80095.128
Easting (X) [meters]	788928.170	1126915.766
Convergence [degrees]	1.45160856	0.65263825
Point Scale	1.00063024	1.00001883
Combined Factor	1.00063351	1.00002209

US NATIONAL GRID DESIGNATOR: 15RYN8892835582(NAD 83)

		BASE STATIONS USED		
PID	DESIGNATION	LATITUDE	LONGITUDE	DISTANCE(m)
DG5315	HOUM HOUMA CORS ARP	N293532.109	W0904324.988	79345.1
DF5771	LMCN LUMCON CORS ARP	N291517.904	W0903940.652	61708.7
DE8091	BVHS BOOTHVILLE CORS ARP	N292012.489	W0892423.010	61880.0

		NEAREST NGS PUBLISHED CONTROL POINT	
PID	DESIGNATION	LATITUDE	LONGITUDE
AU1292	H 155	N291257.	W0900123.

This position and the above vector components were computed without any knowledge by the National Geodetic Survey regarding the equipment or field operating procedures used.

2008-278 Results for Receiver 0001

Dated: 1st June, 2009

FILE: 00042760.080 000445635

1009 WARNING! No antenna type was selected. No antenna offsets or
1009 pattern will be applied. Coordinates with reduced accuracy
1009 will be returned for the antenna phase center.
1008 NOTE: Antenna offsets supplied by the user were zero. Coordinates
1008 returned will be for the antenna reference point (ARP).
1008

NGS OPUS SOLUTION REPORT
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All computed coordinate accuracies are listed as peak-to-peak values.
For additional information: www.ngs.noaa.gov/OPUS/using_OPUS.html#accuracy

USER: amount@fugro.com
RINEX FILE: 00042770.080

DATE: October 07, 2008
TIME: 15:05:42 UTC

SOFTWARE: page5 0612.06 master3.pl 0809291 START: 2008/10/03 00:03:00
EPHEMERIS: igr14995.eph [rapid] STOP: 2008/10/04 00:03:00
NAV FILE: brdc2770.08n OBS USED: 58569 / 62091 : 94%
ANT NAME: NONE NONE # FIXED AMB: 198 / 209 : 95%
ARP HEIGHT: 0.0 OVERALL RMS: 0.016(m)

REF FRAME: NAD_83(CORS96)(EPOCH:2002.0000) ITRF00 (EPOCH:2008.7555)

X:	-2733.113(m)	0.019(m)	-2733.802(m)	0.019(m)
Y:	-5571169.766(m)	0.027(m)	-5571168.262(m)	0.027(m)
Z:	3094814.532(m)	0.013(m)	3094814.327(m)	0.013(m)
LAT:	29 12 57.82998	0.008(m)	29 12 57.84801	0.008(m)
E LON:	269 58 18.81030	0.019(m)	269 58 18.78477	0.019(m)
W LON:	90 1 41.18970	0.019(m)	90 1 41.21523	0.019(m)
EL HGT:	-20.718(m)	0.030(m)	-22.131(m)	0.030(m)
ORTHO HGT:	3.205(m)	0.077(m)	[NAVD88 (Computed using GEOID03)]	

	UTM COORDINATES	STATE PLANE COORDINATES
	UTM (Zone 15)	SPC (1702 LA S)
Northing (Y) [meters]	3235583.587	80096.898
Easting (X) [meters]	788926.346	1126913.967
Convergence [degrees]	1.45160035	0.65262910
Point Scale	1.00063023	1.00001883
Combined Factor	1.00063349	1.00002208

US NATIONAL GRID DESIGNATOR: 15RYN8892635584(NAD 83)

		BASE STATIONS USED		
PID	DESIGNATION	LATITUDE	LONGITUDE	DISTANCE(m)
DF5771	LMCN LUMCON CORS ARP	N291517.904	W0903940.652	61706.8
DK3577	ENG5 ENGLISH TURN 5 CORS ARP	N295244.246	W0895630.197	73953.2
DE8091	BVHS BOOTHVILLE CORS ARP	N292012.489	W0892423.010	61881.4

		NEAREST NGS PUBLISHED CONTROL POINT		
AU1292	H 155	N291257.	W0900123.	491.6

This position and the above vector components were computed without any knowledge by the National Geodetic Survey regarding the equipment or field operating procedures used.

2008-276 Results for Receiver 0004

Dated: 1st June, 2009

FILE: 00042780.080 000445639

1009 WARNING! No antenna type was selected. No antenna offsets or
1009 pattern will be applied. Coordinates with reduced accuracy
1009 will be returned for the antenna phase center.
1008 NOTE: Antenna offsets supplied by the user were zero. Coordinates
1008 returned will be for the antenna reference point (ARP).
1008

NGS OPUS SOLUTION REPORT
=====

All computed coordinate accuracies are listed as peak-to-peak values.
For additional information: www.ngs.noaa.gov/OPUS/Using_OPUS.html#accuracy

USER: amount@fugro.com
RINEX FILE: 0004278k.080

DATE: October 07, 2008
TIME: 15:07:49 UTC

SOFTWARE: page5 0612.06 master10.pl 080929 START: 2008/10/04 10:49:00
EPHEMERIS: igr14996.eph [rapid] STOP: 2008/10/05 10:48:00
NAV FILE: brdc2780.08n OBS USED: 59279 / 62154 : 95%
ANT NAME: NONE NONE # FIXED AMB: 190 / 209 : 91%
ARP HEIGHT: 0.0 OVERALL RMS: 0.015(m)

REF FRAME: NAD_83(CORS96)(EPOCH:2002.0000) ITRF00 (EPOCH:2008.7594)

X:	-2733.116(m)	0.012(m)	-2733.805(m)	0.012(m)
Y:	-5571169.773(m)	0.017(m)	-5571168.269(m)	0.017(m)
Z:	3094814.537(m)	0.010(m)	3094814.332(m)	0.010(m)
LAT:	29 12 57.83001	0.011(m)	29 12 57.84804	0.011(m)
E LON:	269 58 18.81019	0.012(m)	269 58 18.78466	0.012(m)
W LON:	90 1 41.18981	0.012(m)	90 1 41.21534	0.012(m)
EL HGT:	-20.710(m)	0.016(m)	-22.122(m)	0.016(m)
ORTHO HGT:	3.213(m)	0.073(m)	[NAVD88 (Computed using GEOID03)]	

	UTM COORDINATES	STATE PLANE COORDINATES
	UTM (Zone 15)	SPC (1702 LA S)
Northing (Y) [meters]	3235583.588	80096.899
Easting (X) [meters]	788926.343	1126913.964
Convergence [degrees]	1.45160033	0.65262909
Point Scale	1.00063023	1.00001883
Combined Factor	1.00063348	1.00002208

US NATIONAL GRID DESIGNATOR: 15RYN8892635584(NAD 83)

		BASE STATIONS USED		
PID	DESIGNATION	LATITUDE	LONGITUDE	DISTANCE(m)
DG5315	HOUM HOUMA CORS ARP	N293532.109	W0904324.988	79342.6
DF5771	LMCN LUMCON CORS ARP	N291517.904	W0903940.652	61706.8
DE8091	BVHS BOOTHVILLE CORS ARP	N292012.489	W0892423.010	61881.4

NEAREST NGS PUBLISHED CONTROL POINT			
AU1292	H 155	N291257.	W0900123.
			491.6

This position and the above vector components were computed without any knowledge by the National Geodetic Survey regarding the equipment or field operating procedures used.

2008-278 Results for Receiver 0004