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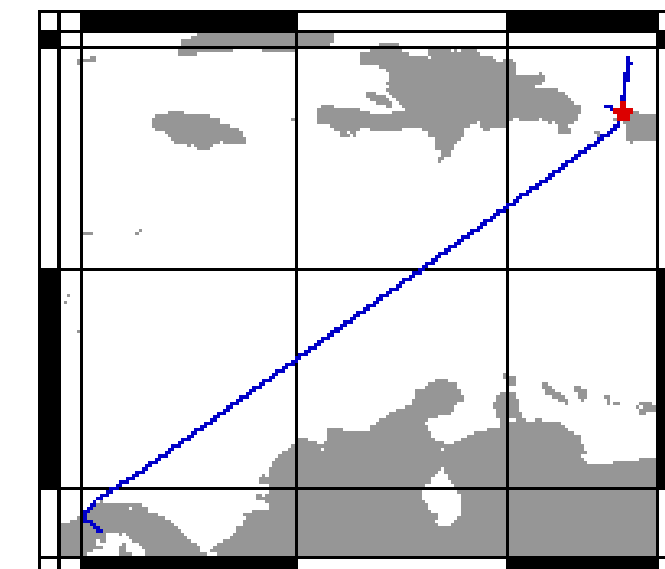
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R/V Maurice Ewing Data Reduction Summary

EW–0105: Hydrosweep Upgrade Balboa, Panama – San Juan, Puerto Rico

Date	Julian Date	Time	Port
May 22, 2001	142	17:00:00	Balboa, Panama
May 29, 2001	149	08:43:00	San Juan, Puerto Rico



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Michael Spruill	3 rd A/Engineer	
Bailey, James	A/B	
Benjamin, Aubrey	A/B	
Floendo, Rodlofo	Oiler	
Matos, Francisco	Electrician	
Mecketsy, Meredith	A/B	
Moqo, Luke	Utility	
Ruegg, Bryan	A/B	
Smith, John	Steward	
Sypongco, Arnold	O/S	
Taylor, Kelly	Cook	
Tomas, Kelly	A/B	
Uribe, Fernando	Oiler	
Wyatt, Richard	Oiler	

Cruise Notes

Overview

The purpose of this cruise was to upgrade our Hydrosweep multibeam sonar from DS (Deep Sea) to DS-2 and to install the POS/MV.

The Hydrosweep event involved significant hardware enhancements, most notably, the retirement of our relic console, our EPR-1300 computer, and their peripherals. A rack mountable Interface Processor (aka IP) and two Linux based Hewlett-Packard PC's serve as their replacements. Benefits of the upgrade include increased swath width from 90 degrees to 120 degrees, an increase in the number of beams per ping from 59 to 118, and the addition of sidescan-like data.

The POS/MV is a very high end vertical and heading reference that uses a pair of GPS receivers and an inertial measurement unit. The POS/MV employs two processors in a 3U chassis that have been rack mounted along with the IP.

– Excerpts from an email from Dale Chayes

All data in this report is logged using GMT time and Julian days in order to avoid confusion with local time changes.

Spectra

The Spectra system was not used during the cruise.

Gravity

There were no gravity data interruptions.

Seismic Acquisition

No seismic data was acquired during the transit.

Hydrosweep

As a result of work associated with the upgrade, hydrosweep data acquisition was spotty. However, by the end of the cruise, the upgraded 59 "hard" beam version of HSDS was working reliably at a significant improvement over the old system.

Data Logging

The R/V Maurice Ewing data logging system is run on a Sparc Ultra Enterprise Server. Attached are 48 serial ports via 3 16-port Digi International SCSI Terminal Servers. Generally, all data logged by the Ewing Data Acquisition System (DAS) is time stamped with the CPU time of the server, and broadcast to the Ewing network using UDP packet broadcasts. The CPU time of the server is synchronized once every half hour to a Datum UTC gps time clock.

GPS times are also time-tagged with cpu time, although the time of the GPS position is from the GPS fix itself.

The following tables describe the data instruments which performed logging during this cruise. The tables associated with the instruments describe logging periods and data losses for that instrument.

Time Reference

Datum StarTime 9390-1000

logging interval: 30 minutes
file id: tr2

Used as the CPU synchronization clock. This clock is polled once every half hour to synchronize the CPU clock of the data logger to UTC time. The logger (octopus) is responsible for updating the times of the other CPUs.

GPS Receivers

GPS data is usually logged at 10 second intervals. The NMEA strings GPGGA and GPVTG are logged for position, speed, and heading fixes. This data was logged constantly throughout the cruise.

The Tasmon GPS was the primary GPS for this cruise.

Trimble Tasmon P/Y Code Receiver

logging interval: 10 seconds
file id: gp1

The Tasmon is the primary GPS receiver for the Ewing Logging system and the primary GPS for Spectra fixes. The accuracy is around 15 meters. There were no interruptions during this cruise.

Trimble NT300D

logging interval: 10 seconds
file id: gp2

The Trimble is the secondary receiver for GPS data. Data is logged at 10 second intervals and is also used as an input to Spectra, although it is weighed at a lower value than the Tasmon receiver.

Tailbuoy Garmin GP8

logging interval: 10 seconds
file id: tb1

The tailbuoy was not deployed during this cruise.

Speed and Heading

Furuno CI-30 Dual Axis Speed Log Sperry MK-27 Gyro

logging interval: 6 seconds
file id: fu

The Furuno and Gyro are combined to output speed, heading and course information to a raw Furuno file, as well as an NMEA VDVHW signal used as an input to various systems including steering and Spectra.

Gravity

Bell Aerospace BGM-3 Marine Gravity Meter System

logging interval: 1 second
file id: vc. (raw), vt. (processed)
drift per day: 0.035

The BGM consists of a forced feedback accelerometer mounted on a gyro stabilized platform. The gravity meter outputs raw counts approximately once per second which are logged and processed to provide real-time gravity displays during the course of the cruise as well as adjusted gravity data at the end of the cruise.

Bathymetry

Krupp Atlas Hydrosweep–DS

logging interval: variable based on water depth
file id: hb (centerbeam), hs (swath)

As a result of the hydrosweep system upgrade, centerbeam and full swath data was spotty during the cruise. Centerbeam data is extracted and processed separately. The centerbeam operates at a logging frequency dependent on the water depth.

The full swath data is not routinely processed, but can be processed with the MB–System software which can be downloaded for free. For instructions, use the website:
<http://www.ldeo.columbia.edu/MB–System>.

MBSystem, version 4.6.10 is necessary to process data after Jan 1, 2000.

Weather Station

RM Young Precision Meteorological Instruments, 26700 series

logging interval: 1 minute
file id: wx

The weather station is used to log wind speed, direction, air temperature, and barometric pressure. We log this information at 1–minute intervals.

Magnetics

Varian Magnetometer

logging interval: 12 seconds
file id: mg

Gravity Ties

Balboa, Panama

EW0104 Balboa, Panama

Pier/Ship Latitude Longitude
08 57.250N 079 34.006N

Dry Dock between Pier 14 and Pier 15

Reference Latitude Longitude
09 21.28N 79 54.59 W

Cruise Ship terminal

	Id	Julian	Date	Mistie	Drift/Day	Prev Mistie
Pre Cruise	Transit	104	14. Apr 01	8.99	0.08	8.25
Post Cruise	EW0104	139	19. May 01	9.82	0.024	8.99
Total Days			35.00	0.83		

Time	Entry	Value	
1310	CDeck Level BELOW Pier	1.57	
1310	Pier 1 L&R Value	1919.60	L&R
1330	Reference L&R Value	1920.81	L&R
1335	Pier 2 L&R Value	1919.25	L&R
	Reference Gravity	978224.17	mGals
	Gravity Meter Value (BGM Reading)	978248.30	mGals
	Potsdam Corrected	1	1 if corrected

Gravity meter is 5.5 meters below CDeck

Difference in meters between Gravity Meter and Pier 7.02 meters
 Height Cor = Pier Height* FAA Constant
 7.02 0.31 2.18 mGals/min

Difference in mGals between Pier and Gravity Meter
 Pier (avg) - Reference *1.06 L&R/mGal Delta L&R
 1919.43 1920.81 1.06 -1.47 mGals

Gravity in mGals at Pierside
 Reference + Delta mGals [+ Potsdam] Pier Gravity
 978224.17 -1.47 13.60 978236.30 mGals

Gravity in mGals at Meter
 Pier Gravity+ Height Correction Gravity@meter
 978236.30 2.18 978238.48 mGals

Current Mistie
 BGM Reading Calculated Gravity Current Mistie
 978248.30 978238.48 9.82 mGals

Gravity Ties

San Juan, Puerto Rico

EW0105 San Juan, Puerto Rico

Pier/Ship	Latitude	Longitude
	18 27.84N	66 06.36W
Pier 8		
Reference	Latitude	Longitude
	18 27.8N	66 05.5W
Cruise Ship terminal		

	Id	Julian	Date	Mistie	Drift/Day	Prev Mistie
Pre Cruise	EW0104	139	19. May 01	9.82	0.02	8.99
Post Cruise	EW0105	151	31. May 01	11.63	0.151	9.82
Total Days			12.00	1.81		

Time	Entry	Value	
1446	CDeck Level BELOW Pier	0.00	
1446	Pier 1 L&R Value	2332.11	L&R
1446	Reference L&R Value	2334.21	L&R
	Pier 2 L&R Value	2332.11	L&R
	Reference Gravity	978680.69	mGals
	Gravity Meter Value (BGM Reading)	978691.80	mGals
	Potsdam Corrected	0	1 if corrected

Gravity meter is 5.5 meters below CDeck

Difference in meters between Gravity Meter and Pier	5.50	meters
Height Cor = Pier Height* FAA Constant	5.50	0.31
		1.71 mGals/min

Difference in mGals between Pier and Gravity Meter

Pier (avg) - Reference * 1.06 L&R/mGal	2332.11	2334.21	1.06	Delta L&R	-2.23	mGals
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Gravity in mGals at Pierside

Reference + Delta mGals [+ Potsdam]	978680.69	-2.23	0.00	Pier Gravity	978678.46	mGals
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Gravity in mGals at Meter

Pier Gravity+ Height Correction	978678.46	1.71	Gravity@meter	978680.17	mGals
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Current Mistie

BGM Reading	978691.80	Calculated Gravity	978680.17	Current Mistie	11.63	mGals
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