Data Formats for Healy Underweigh Instruments

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Datalog:

/aft_a_frame - Wire tension, wire out, and wire speed for the Aft A frame sheaves.

/air_temp_f - Temperature data from the RM Young wind sensor in Fahrenheit. Data is derived from data from files in the rmyoung_air directory

/ashtech_attitude - Attitude in NMEA format from the Ashtech ADU5 GPS receiver

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/gyro - Heading data in NMEA HDT format from the Sperry gyrocompass

/ibs_waypoints - Waypoints from the Healy's Integrated Bridge System

/knudsen - Depth data in a proprietary PKEL format received from Knudsen 320 B/R serial output

/par- Photosynthetic Active Radiation volts from the surface par sensor

/par_derived - Photosynthetic Active Radiation, Microeinstens/m2 sec from surface par sensor

/pcode_aft_gga - Position data in NMEA GGA format from the Trimble Centurion receiver located in the Computer lab

/pcode_aft_gll - Position data in NMEA GLL format from the Trimble Centurion receiver located in the Computer lab

/pcode_aft_vtg - Course and speed over ground in NMEA VTG format from the Trimble Centurion receiver located in the Computer lab

/pcode_aft_zda - Time and date data in the NMEA ZDA format. Data retrieved from the Trimble Centurion receiver located in the Computer lab

/pcode_bridge_gga - Position data in NMEA GGA format from the Trimble GPS receiver located on the bridge.

/pcode_bridge_gll - Position data in NMEA GLL format from the Trimble GPS receiver located on the bridge.

/pcode_bridge_vtg - Course and speed over ground data in NMEA VTG format from the Trimble GPS receiver located on the bridge.

/posmv_gga - Position data in NMEA GGA format from the POS/MV

/posmv_gst - Pseudorange error statistics in NMEA GST format from the POS/MV

/posmv_hdt - Heading data in NMEA HDT format from the POS/MV

/posmv_pashr - Roll, pitch and heave from POS MV inertial navigation system.

/posmv_vtg - Course and speed over ground in NMEA VTG format from the POS/MV

/posmv_zda - Time and date data in NMEA ZDA format from the POS/MV

/rmyoung_air - Temperature, humidity, air pressure data in NMEA XDR format from the RM Young meteorological system

/rmyportwind - Wind speed and direction data in NMEA WMV format from the RM Young weather vane on the port side of the Healy.

/rmystbdwind - Wind speed and direction data in NMEA WMV format from the RM Young weather vane on the starboard side of the Healy.

/sbd_a_frame - Wire tension, wire out, and wire speed for the starboard A frame sheaves.

/seabeam_center - Center depth data from the Seabeam 2112

/sperry_speedlogvbw - ground/water speed data from the Sperry Speed Log

/sv2000 - Sound Velocity data from the SV2000 sound velocimeter located in the ADCP BB150 sonar well

/true_wind_port - True wind speed data derived from gyro data and rmyportwind

/true_wind_stbd - True wind speed data derived from gyro data and rmystbdwind

/tsg_aft - Thermosalinograph and fluoromter data from the instruments in the Aft Fuel Hose room

/tsg_flow - Flow meter data just upstream of the TSG and Fluorometer

/tsg_fwd - Thermosalinograph and fluorometer data from the instruments in the Bio/Chem Lab

/winch_data - Line out and speed data from the winch system

Extra files in the directory Datalog:

ACQLOG.LOG - Contains the data as to what occurred with SCS data. It shows when data collection was started and stopped.

Incidents_YYYYMMDD-TTTTTT.DTM - Contains any incident data which were triggered in SCS 3.3b.

sensor_YYYYMMDD-TTTTTT.scf - Contains the configuration file for data collection as configured by SCS 3.3b.

Metadata:

/elog - Contains the technician's narrative of important events, which occurred both to the network and to individual sensors.

/Systems_Calibration_Data - Contains calibration for various instruments.

/Chelsea Fluorometers

/C-Star Transmissometers

/HLY0702

/Seabird Instruments

/Other

/Bridge_Logs

DDMMMYY.doc - The "smooth log" containing events recorded by the bridge watch.

DDMMMYYWX.xls - Weather log recorded by the watch.

DDMMMYYNAV.xls - Navigation logs recorded by the watch.

Raw:

/adcp75 - 75 KHz ADCP data

/adcp150 - 150 Khz ADCP data

/ctd - CTD data in directories by Cast number.

/knudsenraw - Knudsen 320B/R data

/pos_mv - POS/MV and other navigation data

/seabeam - Seabeam 2112 data in the raw format.

/tsg_fwd - Thermosalinograph/Fluorometer data from instruments in the Bio/Chem Lab in their raw format.

/tsg_aft - Thermosalinograph/Fluorometer data from instruments in the aft fuel hose room in their raw format.

/xbt - Expendable Bathythermograph data.

/Optode - Oxygen Concentration Sensor

Images:

Contains directories of Terascan, alotconn and fantail cameras.

/AloftConCam - Contains picture files separated by folders named by YearJulian (YYYYJJJ). . The picture files are in JPEG format.

/FantailCam - Contains picture files separated by folders named by YearJulian (YYYYJJJ). Folder names are labeled as instrument name and string type of data collected. The files are rolled over at midnight GMT. The base folder contains different files as well.

/Satellite_Image - Contains satellite imagery in jpeg format

/dmsp - dmsp folders labeled by Year, Month, Day

/hrpt - hrpt folders labeled by Year, Month, Day

Merged Data

SCS One Minute Data File

The data are summarized into a one (1) minute data file in the SCS data logging system. The data are the raw values as they are logged. There has been no quality control done on these files. Those wishing more accurate and quality controlled values should process the data in the directories described below in the document.

This one minute data file was started at 4/14/07 at 06:00 UTC. Before this it was run intermittently with varying formats.

OneMinute_006.elg

24945,2007/04/28 04:33,-169.866590,56.651784,11.4,21.7,20.9,82.3,1.998,2.847,32.12,1.668,2.416, 0.403,0.557,0.279,22,02,-200,26,0,01,-130,-5,0,-1.55,70,-6.33,1003.60,3.91,72.2,4.56,87.4, 532722.519

24946,2007/04/28 04:34,-169.864457,56.654721,11.4,22.0,21.1 81.8,1.980,2.845,32.11,1.648,2.352, 0.392,0.554,0.277,22,02,-200,26,0,01,-140,-5,0,-1.60,70,-6.33,1003.60,4.53,62.7,4.91,79.9, 519890.107

24947,2007/04/28 04:35,-169.862317,56.657645,11.4,22.0,20.8,81.0,1.971,2.844,32.11,1.649,2.261, 0.377,0.550,0.275,22,02,-200,26,0,01,-140,-5,0,-1.59,70,-6.40,1003.60,4.12,56.7,4.48,71.5, 514033.101

Field	DATA	Example	UNITS
01	SCS Logged Date	04/17/2007	
02	SCS Logged Time	02:12:02	GMT
03	POSMV-Year	2007	yyyy
04	POSMV-Month	,04	MM
05	POSMV-Day	17	DD
06	POSMV-Time	021202.0012	HHMMSS.ss
07	POSMV-Heading-Accuracy	0.011	deg
08	POSMV-Heading	349.5	deg
09	Gyro-HDT	352.423	deg
10	ADU-HDT	349.824	deg
11	POSMV-COG	347.1	deg
12	POSMV-SOG	10.7	Knots
13	POSMV-LAT	60.47765	deg
14	POSMV-LON	,-173.62502	deg
15	SB-Depth	65.33	Meters
16	PAR-derived-Value	751547.2602	uEinstein/m2.s
17	RMY-Temp	,-11.61	Deg. C
18	RMY-Humidity	71	Percent
19	RMY-Baro	1005.79	millibars
20	SCUFA-MG/L	2.381	ppm
21	TSGF-SST	-1.711	C
22	TSGF-IntTemp	-1.175	C
23	TSGF-Cond	2.580	
24	TSGF-Sal	31.95	ppt
25	StbdWndSpd-R	015.3	Knots
26	StbdWndDir-R	041	Deg
27	StbdWnd-T-Speed	10.52	
28	StbdWnd-T-Direction	74.83	
29	PortWndDir-R	033	Deg
30	PortWndSpd-R	018.2	Knots
31	PortWnd-T-Direction	57.33	
32	PortWnd-T-Speed	10.33	

LDEO Averaged One Minute Data File

The data are summarized into an averaged one (1) minute data file by the LDEO technican. This file takes the average vale centered around the minute, (30 seconds either side of the whole minute). The data are the raw values as they are logged. There has been no quality control done on these files. Those wishing more accurate and quality controlled values should process the data in the directories described below in the document.

HLY0702_one_minute.data

24945,2007/04/28 04:33,-169.866590,56.651784,11.4,21.7,20.9,82.3,1.998,2.847,32.12,1.668,2.416, 0.403,0.557,0.279,22,02,-200,26,0,01,-130,-5,0,-1.55,70,-6.33,1003.60,3.91,72.2,4.56,87.4, 532722.519
24946,2007/04/28 04:34,-169.864457,56.654721,11.4,22.0,21.1 81.8,1.980,2.845,32.11,1.648,2.352, 0.392,0.554,0.277,22,02,-200,26,0,01,-140,-5,0,-1.60,70,-6.33,1003.60,4.53,62.7,4.91,79.9, 519890.107
24947,2007/04/28 04:35,-169.862317,56.657645,11.4,22.0,20.8,81.0,1.971,2.844,32.11,1.649,2.261, 0.377,0.550,0.275,22,02,-200,26,0,01,-140,-5,0,-1.59,70,-6.40,1003.60,4.12,56.7,4.48,71.5, 514033.101

Field	DATA	Example	UNITS
01	ID	24950	samplecount
02	date	2007/04/28 04:38	date&timeUTC (year/month/dayhour:minute)
03	lon	-169.855928	POSMVLongitude (decimaldegrees)
04	lat	56.666416	POSMVLatitude (decimaldegrees)
05	sog	11.4	POSMVSpeedOverGround (Knots,1minuteaverage)
06	cog	22.0	POSMVCourseOverGround (angulardistancefrom0 (North) clockwisethrough360,1minuteaverage)
07	heading	20.7	POSMVshipheading (angulardistancefrom0 (North) clockwisethrough360,1minuteaverage)
08	depth	80.3	Seabeamcenterbeamdepth (meters,1minuteaverage)
09	TSGF_InTemp	1.968	SBE21internaltemperature (Celsius,1minuteaverage)
10	TSGF_Cond	2.843	Conductivity (Siemens/meter,1minuteaverage)
11	TSGF_Sal	32.10	Salinity (PSU,1minuteaverage)
12	TSGF_SST	1.612	RemoteTemperature,SeaChestintake (Celsius,1minuteaverage)
13	SCUFA_CHL	2.111	SCUFAFluorometer (Ug/l,1minuteaverage)
14	SCUFA_Fl_V	0.352	SCUFAFluorometer (Volts,1minuteaverage)*
15	SCUFA_Turb	0.540	SCUFATurbidity (NTU,1minuteaverage)
16	Turb_Volts	0.270	SCUFATurbidity (Volts,1minuteaverage)**
17	tsg_flow	22	FlowmeterfeedingTSGandFLUOR (Liters/minute)
18	WinchAft	02	AftA-FrameWinchnumber
19	TensionAft	-200	AftA-FrameWinchWiretension (Pounds)
20	WireOutAft	26	AftA-FrameWinchWireout(Meters)
21	SpeedAft	0	AftA-FrameWinchWirespeed (Meters/minute)
22	WinchSbd	01	StarboardA-FrameWinchnumber
23	TensionSbd	-120	StarboardA-FrameWinchWiretension (Pounds)
24	WireOutSbd	-11	StarboardA-FrameWinchWireout (Meters)
25	SpeedSbd	0	StarboardA-FrameWinchWirespeed (Meters/minute)
26	RMYTemp	-1.70	RMYoungAirTemperature (Celsuis,1minuteaverage)
27	RMYHumidity	69	RMYoungRelativeHumidity (Precent,1minuteaverage)
28	RMYDewPt	-6.58	RMYoungDewPointTemperature (Celcius,1minuteaverage)
29	RMYBaro	1003.55	RMYoungBarometer (hPa,1minuteaverage)
30	PortWndSpdT	4.57	RMYoungWindSpeed,port (Knots,1minuteaverage)
31	PortWndDirT	62.7	RMYoungWindDirection,port (angulardistancefrom0 (North) clockwisethrough360,1minuteaverage)
32	StbdWndSpdT	4.83	RMYoungWindSpeed,starboard (Knots,1minuteaverage)
33	StbdWndDirT	81.5	RMYoungWindDirection,starboard (angulardistancefrom0 (North) clockwisethrough360,1minuteaverage)
34	PARderived	505144.287	DerivedsurfacePAR (Microeinstens/m2sec,1minuteaverage)

Underway Sensors

Sensor	Description		Status
Meteorology & Radiometers			
Port Anemometer	RM Young 09101	Continuous	Collected
Stbd Anemometer	RM Young 5106	Continuous	Collected
Barometer	RM Young 61201	Continuous	Collected
Air Temp/Rel. Hum.	RM Young 41382VC	Continuous	Collected
Helo shack PAR	BSI QSR-2200	Continuous	Collected
Underway Ocean			
TSG	SeaBird SBE21	Continuous	Collected
Remote Sea Temp	SeaBird SBE3S	Continuous	Collected
Fluorometer	Turner SCUFA	Continuous	Collected
Sonars			
Knudsen-subbottom	320 B/R	Continuous	Collected
ADCP 150 kHz	Broad Band (BB150)	Continuous	Not Collected
ADCP 75 kHz	Ocean Surveyor	Continuous	Collected
Multibeam	Seabeam 2112	Continuous	Collected
Speed log	Sperry	Continuous	Collected
Navigation			
P-Code GPS (aft)	Trimble Centurion	Continuous	Collected
Attitude GPS	Ashtech ADU5	Continuous	Collected
DGPS	Trimble AGGPS-AG132	Continuous	Collected
POSMV	Model- MV V4	Continuous	Collected
P-Code GPS (fwd)	?	Continuous	Collected
Glonass	?	Continuous	Collected
GYRO 1	Sperry MK25	Continuous	Collected
GYRO 2	Sperry MK25	Continuous	Collected

File Formats of Data Collected Underweigh

In the sections below for each data type the directory name is listed, then an example file name, and then 3 lines from that file. This part is followed by a table that lists the data contained in the string.

./Datalog

The following data types are to be found in the DataLog directory.

Underweigh Data

Meteorology Data

R. M. Young Sensors

R.M. Young Air Temperatures

Temperature, humidity, air pressure data in NMEA XDR format from the RM Young meteorological system.

./rmyoung_air

RMYoung-Air_20070414-182437.Raw

04/14/2007,18:24:40.693,$WIXDR,C, -6.62,C,1,H, 89,P,1,C, -8.06,C,1,P, 994.24,B,2,D,-35,M,3hh

04/14/2007,18:24:46.677,$WIXDR,C, -6.49,C,1,H, 89,P,1,C, -7.93,C,1,P, 994.32,B,2,D,-35,M,3hh

04/14/2007,18:24:49.678,$WIXDR,C, -6.49,C,1,H, 89,P,1,C, -7.93,C,1,P, 994.24,B,2,D,-35,M,3hh

FIELD	DATA	Example	UNITS
1	SCS logged Date	04/14/2007	mm/dd/year
2	SCS logged Time GMT	18:24:49.678	hh:mm:ss.sss
3	NMEA header	,$WIXDR	
4	Data type for field 5	C	Temperature
5	Air Temperature	-6.49	Celsius
8	Data Type for field 9	H	
9	Relative Humidity	89	Percent
12	Data type for field 13	C	
13	Dew Point Temperature	-7.93	Celcius
16	Data type for field 17	P	Pressure
17	Barometer	994.24	hPa
20	Data type for field 20	D	
21	Elevation	-35	Meters

R.M. Young Air Temperatures, Fahrenheit (Derived)

Temperature data from the RM Young wind sensor in Fahrenheit. Data is derived from data from files in the rmyoung_air directory.

./ air_temp_f

AirTemp-F_20070413-000000.Raw

04/13/2007,00:00:02.074,$DERIV,28.83,-1.76,

04/13/2007,00:00:05.074,$DERIV,28.62,-1.88,

04/13/2007,00:00:08.074,$DERIV,28.62,-1.88,

FIELD	DATA	Example	UNITS
1	SCS logged Date	04/14/2007	mm/dd/year
2	SCS logged Time GMT	18:24:49.678	hh:mm:ss.sss
3	NMEA header	$DERIV	
4	Air Temperature	28.83	Fahrenheit
5	Air Temperature	-1.76	Celsius

R.M. Young Wind. Port

Wind speed and direction data in NMEA WMV format from the RM Young weather vane on the port side of the Healy.

./rmyportwind

RMYPortWind_20070414-182437.Raw

04/14/2007,18:24:38.490,$WIMWV,033,R,028.1,N,A*36

04/14/2007,18:24:39.505,$WIMWV,041,R,028.7,N,A*35

04/14/2007,18:24:40.521,$WIMWV,034,R,029.4,N,A*35

FIELD	DATA	Example	UNITS
1	SCS logged Date	04/14/2007	mm/dd/year
2	SCS logged Time GMT	18:24:40.521	hh:mm:ss.sss
3	NMEA header	$WIMWV	
4	Wind Direction	034	Degrees
5	R= Relative	R	
6	Wind Speed	029.4	Knots
7	N= Knots	N	
8	A= Valid Data	A	
9	Check sum	*35	

R.M. Young Wind, Starboard

Wind speed and direction data in NMEA WMV format from the RM Young weather vane on the starboard side of the Healy.

./rmstbwind

RMYStbdWind_20070414-182437.Raw

04/14/2007,18:24:38.677,$WIMWV,044,R,025.4,N,A*3E

04/14/2007,18:24:39.693,$WIMWV,045,R,025.6,N,A*3D

04/14/2007,18:24:40.724,$WIMWV,042,R,025.2,N,A*3E

FIELD	DATA	Example	UNITS
1	SCS logged Date	04/14/2007	mm/dd/year
2	SCS logged Time GMT	18:24:40.724	hh:mm:ss.sss
3	NMEA header	$WIMWV	
4	Wind Direction	042	Degrees
5	R= Relative	R	
6	Wind Speed	025.2	Knots
7	N= Knots	N	
8	A= Valid Data	A	
9	Check sum	*3E	

R.M. Young Wind True, Port (Derived)

True wind speed data derived from gyro data and rmyportwind.

./true_wind_port

PortWnd-T_20070415-000000.Raw

04/15/2007,00:00:03.927,$DERIV,18.59,4.57,30.6,12,12.5,343.7,344.2,

04/15/2007,00:00:05.927,$DERIV,19.69,10.28,31.4,16,12.5,344.2,344.2,

04/15/2007,00:00:07.927,$DERIV,19.85,3.73,31.8,12,12.4,344.1,344.2,

FIELD	DATA	Example	UNITS
1	SCS logged Date	04/15/2007	mm/dd/year
2	SCS logged Time GMT	00:00:07.927	hh:mm:ss.sss
3	NMEA header	$DERIV	
4	Wind Speed derived	19.85	knots
5	Wind Directions derived	3.73	degrees
6	Wind Speed relative	31.8	knots
7	Wind Direction relative	12	direction
8	Speed over ground (pos mv)	12.4	knots
9	Course over ground (pos mv)	344.1	Degrees
10	Heading (pos mv)	344.2	Degrees

R.M. Young Wind True, Starboard (Derived)

True wind speed data derived from gyro data and rmystbdwind.

./true_wind_stbd

StbdWnd-T_20070415-000000.Raw

04/15/2007,00:00:03.396,$DERIV,17.33,3.47,29.4,11,12.5,343.7,344.2,

04/15/2007,00:00:05.396,$DERIV,17.05,15.29,28.5,18,12.5,344.2,344.2,

04/15/2007,00:00:07.396,$DERIV,19.99,13.31,31.4,18,12.4,344.1,344.2,

FIELD	DATA	Example	UNITS
1	SCS logged Date	04/15/2007	mm/dd/year
2	SCS logged Time GMT	00:00:07.396	hh:mm:ss.sss
3	NMEA header	$DERIV	
4	Wind Speed derived	19.99	knots
5	Wind Directions derived	13.31	degrees
6	Wind Speed relative	31.4	knots
7	Wind Direction relative	18	direction
8	Speed over ground (pos mv)	12.4	knots
9	Course over ground (pos mv)	344.1	Degrees
10	Heading (pos mv)	344.2	degrees

Dew Point (Derived)

Dew Point derived from rmyoung_air.

./dew_point_f

DewPt-F_20070414-182437.Raw

04/14/2007,18:24:41.099,$DERIV,17.49,-8.06,

04/14/2007,18:24:44.099,$DERIV,17.73,-7.93,

04/14/2007,18:24:47.099,$DERIV,17.73,-7.93,

FIELD	DATA	Example	UNITS
1	SCS logged Date	04/14/2007	mm/dd/year
2	SCS logged Time GMT	18:24:47.099	hh:mm:ss.sss
3	NMEA header	$DERIV	
4	Air Temperature	17.73	Fahrenheit
5	Air Temperature	-7.93	Celsius

Photosynthetic Active Radiation (PAR) Sensor

PAR

Photosynthetic Active Radiation volts from the surface par sensor.

./par

PAR_20070415-000000.Raw

04/15/2007,00:00:03.068,+01126.24

04/15/2007,00:00:04.068,+01133.28

04/15/2007,00:00:05.068,+01140.96

FIELD	DATA	Example	UNITS
1	SCS logged Date	04/15/2007	mm/dd/year
2	SCS logged Time GMT	00:00:05.505	hh:mm:ss.sss
3	PAR	+01140.96	mVolts

PAR (Derived)

Photosynthetic Active Radiation, Microeinstens/m2 sec from surface par sensor.

Par_derived

PAR-derived_20070415-000000.Raw

04/15/2007,00:00:03.146,$DERIV,1865353.0198,1126.24,

04/15/2007,00:00:09.146,$DERIV,1909343.4448,1152.8,

04/15/2007,00:00:15.146,$DERIV,1881518.176,1136,

FIELD	DATA	Example	UNITS
1	SCS logged Date	04/15/2007	mm/dd/year
2	SCS logged Time GMT	00:00:05.193	hh:mm:ss.sss
3	NMEA header	$DERIV	
4	Derived surface PAR	1881518.176	Microeinstens/m2 sec
5	PAR volts	1136	mVolts

SAMOS (Shipboard Automated Meteorological and Oceanographic Systems)

Data formatted to be sent to the U.S. Research Vessel Surface Meteorology Data Assembly Center (DAC).

These data are in files that have only a single value. Every variable sent into SAMOS is in a separate file. The name of the file should tell the user what the variable is. There are two types of formats used. One if for data that is in degrees and the other for the rest of the data. The data for degrees has the date, time, a NMEA header for derived data, the mean data for the minute found using the arc tangent of the sine and cosine of the data, the last data value for the minute, the mean of the sums of the sin of the data, the mean of the sum of the cosines of the data and the number of values used to get the mean. The rest of the data has the date, time, a NMEA header for derived data, the mean data for the minute, the last value used in the minute, the total of all the values for the minute and the number of values used to get the mean.

Format for data in Degrees

FIELD	DATA	Example	UNITS
1	SCS logged Date	04/15/2007	mm/dd/year
2	SCS logged Time GMT	00:00:05.505	hh:mm:ss.sss
3	NMEA header	$DERIV	
4	Arctangent of the Sums	79.39	
5	Last value used	93.174	
6	Mean of the Sines	57.4453621646971	
7	Mean of the Cosines	10.7645427712987	
8	number of values	59	

Format for other variables

FIELD	DATA	Example	UNITS
1	SCS logged Date	06/04/2007	mm/dd/year
2	SCS logged Time GMT	00:00:04.732	hh:mm:ss.sss
3	NMEA header	$DERIV	
4	mean value	2.55	
5	Last value used	2.71	
6	sum of values	51.08	
7	number of values	20	

SAMOS-AIRTEMP_20070604-000000.Raw
06/04/2007,00:00:04.732,$DERIV,2.55,2.71,51.08,20,
06/04/2007,00:00:05.732,$DERIV,2.55,2.71,51.08,20,
06/04/2007,00:00:06.732,$DERIV,2.56,2.58,53.66,21,

SAMOS-BARO_20070604-000000.Raw
06/04/2007,00:00:04.888,$DERIV,1009.89,1009.85,20197.79,20,
06/04/2007,00:00:05.888,$DERIV,1009.89,1009.85,20197.79,20,
06/04/2007,00:00:06.888,$DERIV,1009.88,1009.77,21207.56,21,

SAMOS-COG_20070604-000000.Raw
06/04/2007,00:00:04.747,$DERIV,256,266.2,15360,60,
06/04/2007,00:00:05.763,$DERIV,256.35,269,15380.9,60,
06/04/2007,00:00:06.763,$DERIV,256.73,268.7,15403.9,60,

SAMOS-Depth_20070604-000000.Raw
06/04/2007,00:00:04.732,$DERIV,48.35,47.73,1547.29,32,
06/04/2007,00:00:05.732,$DERIV,48.35,48.23,1547.09,32,
06/04/2007,00:00:06.732,$DERIV,48.35,48.23,1547.09,32,

SAMOS-DewPt_20070604-000000.Raw
06/04/2007,00:00:04.763,$DERIV,-0.19,-0.07,-3.71,20,
06/04/2007,00:00:05.763,$DERIV,-0.19,-0.07,-3.71,20,
06/04/2007,00:00:06.763,$DERIV,-0.19,-0.24,-3.95,21,

SAMOS-FLOW_20070604-000000.Raw
06/04/2007,00:00:04.888,$DERIV,19.73,19,1184,60,
06/04/2007,00:00:05.888,$DERIV,19.72,19,1183,60,
06/04/2007,00:00:06.888,$DERIV,19.72,20,1203,61,

SAMOS-GYRO_20070604-000000.Raw
06/04/2007,00:00:04.747,$DERIV,79.39,93.174,57.4453621646971,10.7645427712987,59,
06/04/2007,00:00:05.747,$DERIV,79.62,93.657,58.4433259328868,10.7007594084164,60,
06/04/2007,00:00:06.763,$DERIV,80.3,94.163,57.6017409411294,9.84189063347194,59,

SAMOS-HDT_20070604-000000.Raw

06/04/2007,00:00:04.951,$DERIV,75.66,89.6,57.5759234493574,14.7194505202793,60,
06/04/2007,00:00:05.951,$DERIV,76.11,90.1,57.6865055529794,14.2606072648547,60,
06/04/2007,00:00:06.951,$DERIV,76.57,90.6,57.7938649038928,13.799257940049,60,

SAMOS-Humidity_20070604-000000.Raw
06/04/2007,00:00:04.951,$DERIV,82.05,82,1641,20,
06/04/2007,00:00:05.951,$DERIV,82.05,82,1641,20,
06/04/2007,00:00:06.951,$DERIV,82.05,82,1723,21,

SAMOS-LAT_20070604-000000.Raw
06/04/2007,00:00:04.732,$DERIV,65.59509,65.5950468333333,3935.70535966667,60,
06/04/2007,00:00:05.732,$DERIV,65.59509,65.5950465,3935.70524833333,60,
06/04/2007,00:00:06.732,$DERIV,65.59509,65.5950463333333,3935.70513966667,60,

SAMOS-LON_20070604-000000.Raw
06/04/2007,00:00:04.747,$DERIV,-168.94876,-168.949358166667,-10136.9255943333,60,
06/04/2007,00:00:05.763,$DERIV,-168.94878,-168.9493785,-10136.9267596667,60,
06/04/2007,00:00:06.763,$DERIV,-168.9488,-168.949398666667,-10136.9279298333,60,

SAMOS-PAR_20070604-000000.Raw
06/04/2007,00:00:04.747,$DERIV,1971523.4717,1938228.7238,120262931.7745,61,
06/04/2007,00:00:05.763,$DERIV,1969668.4538,1956778.903,120149775.6813,61,
06/04/2007,00:00:06.763,$DERIV,1967657.0409,1947238.8109,120027079.496,61,

SAMOS-Remote-SSTemp_20070604-000000.Raw
06/04/2007,00:00:04.747,$DERIV,1.644,1.601,16.439,10,
06/04/2007,00:00:05.763,$DERIV,1.644,1.601,16.439,10,
06/04/2007,00:00:06.763,$DERIV,1.632,1.603,16.324,10,

SAMOS-SLFA_20070604-000000.Raw
06/04/2007,00:00:04.747,$DERIV,-2.79,-2.61,-170.34,61,
06/04/2007,00:00:05.747,$DERIV,-2.79,-2.6,-170.01,61,
06/04/2007,00:00:06.763,$DERIV,-2.78,-2.62,-166.88,60,

SAMOS-SOG_20070604-000000.Raw
06/04/2007,00:00:04.763,$DERIV,1.79,1.8,107.3,60,
06/04/2007,00:00:05.763,$DERIV,1.79,1.8,107.6,60,
06/04/2007,00:00:06.763,$DERIV,1.8,1.8,107.9,60,

SAMOS-SPPS_20070604-000000.Raw
06/04/2007,00:00:04.763,$DERIV,0.76,0.97,46.5,61,
06/04/2007,00:00:05.763,$DERIV,0.77,0.93,46.94,61,
06/04/2007,00:00:06.763,$DERIV,0.78,0.87,47,60,

SAMOS-TSG-Conductivity_20070604-000000.Raw
06/04/2007,00:00:04.888,$DERIV,2.939,2.938,29.389,10,
06/04/2007,00:00:05.888,$DERIV,2.939,2.938,29.389,10,
06/04/2007,00:00:06.888,$DERIV,2.939,2.938,29.387,10,

SAMOS-TSG-Flourometer_20070604-000000.Raw
06/04/2007,00:00:04.747,$DERIV,11.794,12,117.941,10,
06/04/2007,00:00:05.763,$DERIV,11.794,12,117.941,10,
06/04/2007,00:00:06.763,$DERIV,11.824,11.905,118.242,10,

SAMOS-TSG-Salinity_20070604-000000.Raw
06/04/2007,00:00:04.888,$DERIV,32.64,32.64,326.35,10,
06/04/2007,00:00:05.888,$DERIV,32.64,32.64,326.35,10,
06/04/2007,00:00:06.888,$DERIV,32.63,32.63,326.34,10,

SAMOS-TSG-Temp_20070604-000000.Raw
06/04/2007,00:00:04.747,$DERIV,2.604,2.59,26.039,10,
06/04/2007,00:00:05.763,$DERIV,2.604,2.59,26.039,10,
06/04/2007,00:00:06.763,$DERIV,2.601,2.588,26.011,10,

SAMOS-TSG-Turbidity_20070604-000000.Raw
06/04/2007,00:00:04.951,$DERIV,1.572,1.57,15.721,10,
06/04/2007,00:00:05.951,$DERIV,1.572,1.57,15.721,10,
06/04/2007,00:00:06.951,$DERIV,1.573,1.573,15.726,10,

SAMOS-WDPR_20070604-000000.Raw
06/04/2007,00:00:04.888,$DERIV,189.3,177,11547,61,
06/04/2007,00:00:05.888,$DERIV,188.9,176,11523,61,
06/04/2007,00:00:06.888,$DERIV,188.48,176,11497,61,

SAMOS-WDPT_20070604-000000.Raw
06/04/2007,00:00:04.732,$DERIV,9.22,9.6,553.11,60,

06/04/2007,00:00:05.732,$DERIV,9.21,9.2,552.73,60,
06/04/2007,00:00:06.732,$DERIV,9.21,9,561.73,61,

SAMOS-WDSR_20070604-000000.Raw
06/04/2007,00:00:04.747,$DERIV,205.9,185,12354,60,
06/04/2007,00:00:05.763,$DERIV,205.53,197,12332,60,
06/04/2007,00:00:06.763,$DERIV,204.88,179,12293,60,

SAMOS-WDST_20070604-000000.Raw
06/04/2007,00:00:04.951,$DERIV,286.06,279,17163.86,60,
06/04/2007,00:00:05.951,$DERIV,286.24,296.75,17460.61,61,
06/04/2007,00:00:06.951,$DERIV,285.97,270.11,17444.32,61,

SAMOS-WSPR_20070604-000000.Raw
06/04/2007,00:00:04.763,$DERIV,10.96,11,668.8,61,
06/04/2007,00:00:05.763,$DERIV,10.96,10.8,668.6,61,
06/04/2007,00:00:06.763,$DERIV,10.96,10.8,668.6,61,

SAMOS-WSPT_20070604-000000.Raw
06/04/2007,00:00:04.888,$DERIV,9.21,9.2,552.73,60,
06/04/2007,00:00:05.888,$DERIV,9.21,9,561.73,61,
06/04/2007,00:00:06.888,$DERIV,9.2,9,561.36,61,

SAMOS-WSSR_20070604-000000.Raw
06/04/2007,00:00:04.763,$DERIV,10.79,5.2,647.3,60,
06/04/2007,00:00:05.763,$DERIV,10.68,5,640.7,60,
06/04/2007,00:00:06.763,$DERIV,10.57,5,634.3,60,

SAMOS-WSST_20070604-000000.Raw
06/04/2007,00:00:04.747,$DERIV,9.36,4.87,561.73,60,
06/04/2007,00:00:05.763,$DERIV,9.24,3.43,554.32,60,
06/04/2007,00:00:06.763,$DERIV,9.14,3.34,557.66,61,

Oceanographic Data

Thermosalinograph / Fluorometer

AFT Theromsalinograph / Fluorometer

Thermosalinograph and Fluoromter data from the instruments in the Aft Fuel Hose room.

./tsg_aft

TSGAFT_20070414-182437.Raw

NO DATA

Forward Theromsalinograph Flowmeter

Flowmeter data from the instruments in the Bio/Chem Lab.

./tfg_flow.

TSGF-FlowMeter_20070415-000000.Raw

04/15/2007,00:00:02.974, 11.

04/15/2007,00:00:09.255, 11.

04/15/2007,00:00:15.537, 11.

FIELD	DATA	Example	UNITS
1	SCS logged Date	04/15/2007	mm/dd/year
2	SCS logged Time GMT	00:00:15.537	hh:mm:ss.sss
3	Flowmeter feeding TSG and FLUOR	11.	Liters/minute

Forward Thermosalinograph / Fluorometer

Thermosalinograph and Fluorometer data from instruments in the Bio Chem Lab.

Before 4/13/07 05:26

./tsg_fwd

TSGFWD_20070413-000000.Raw

Prior to output changes made on 4-13-07 at 5:26:00 (see elog for details)

04/13/2007,05:22:22.767, 11 0.021 2.663 31.79 -0.397 1443.001 9.921

04/13/2007,05:22:28.767, 12 0.019 2.663 31.80 -0.398 1443.002 9.786

04/13/2007,05:22:34.767, 13 0.020 2.663 31.79 -0.397 1443.004 9.695

FIELD	DATA	Example	UNITS
1	SCS logged Date	04/13/2007	mm/dd/year
2	SCS logged Time GMT	05:22:34.767	hh:mm:ss.sss
3	Scan number	13	
4	SBE 21 internal temperature	0.020	Celsius
5	Conductivity	2.663	Siemens/meter
6	Salinity	31.79	PSU
7	RemoteTemperature (Sea Chest intake)	-0.397	Celsius
8	Sound Velocity	1443.004	Meters per Second (m/s)
9	Fluorometer (SCUFA)	9.695	Ug/l

After 4/13/07 05:26

./tsg_fwd

TSGFWD_20070415-000000.Raw

After output changes made on 4-13-07 at 5:26:00 (see elog for details)

04/15/2007,00:00:04.255, 25269 -0.838 2.577 31.56 -1.457 1437.661 3.321 0.664 4.617 4.617

04/15/2007,00:00:10.287, 25270 -0.850 2.577 31.57 -1.458 1437.672 3.474 0.695 5.000 5.000

04/15/2007,00:00:16.255, 25271 -0.848 2.577 31.56 -1.458 1437.664 3.339 0.668 4.927 4.927

FIELD	DATA	Example	UNITS
1	SCS logged Date	04/15/2007	mm/dd/year
2	SCS logged Time GMT	00:00:16.255	hh:mm:ss.sss
3	Scan number	25271	
4	SBE 21 internal temperature	-0.848	Celsius
5	Conductivity	2.577	Siemens/meter
6	Salinity	31.56	PSU
7	RemoteTemperature (Sea Chest intake)	-1.458	Celsius
8	Sound Velocity	1437.664	Meters per Second (m/s)
9	Fluorometer (SCUFA)	3.339	Ug/l
10	Fluorometer (SCUFA)	0.668	Volts
11	Turbidity (SCUFA)	4.927	NTU
12	Turbidity (SCUFA)	4.927	Volts

Sonar Data

Seabeam 2112 Center Beam

Center depth data derived from the Seabeam 2112 data on the POSMVNAV computer.

./seabeam_center

Seabeam-Centerbeam_20070414-182437.Raw

04/14/2007,18:24:38.427,$SBCTR,2007,4,14,18:24:35.713,58.119110,-169.839278,70.70,60*00

04/14/2007,18:24:40.177,$SBCTR,2007,4,14,18:24:37.213,58.119152,-169.839367,70.49,61*00

04/14/2007,18:24:40.615,$SBCTR,2007,4,14,18:24:38.734,58.119193,-169.839452,70.92,60*00

FIELD	DATA	Example	UNITS
1	SCS logged Date	04/14/2007	mm/dd/year
2	SCS logged Time GMT	18:24:40.615	hh:mm:ss.sss
3	NMEA header	,$SBCTR	
4-6	Seabeam Date	2007,4,14	Year,month,day
7	Seabeam Time	18:24:38.734	hh:mm:ss.sss
8	Latitude	58.119193	Degrees
9	Longitude	-169.839452	Degrees
10	Depth	70.92	meters
11	Number of Beams	60	
12	Check sum	*00	

Knudsen

3.5 kHz

Depth data in a proprietary PKEL format received from Knudsen 320 B/R serial output.

./knudsen

Knudsen_20070414-182437.Raw

04/14/2007,18:24:38.099,$PKEL99,------,14042007,182524.248,00192,HF,00.00,0,+008.50,LF,73.24,1,+008.50,1500,------,----,58 07.123897N,169 50.315830W,1060*12

04/14/2007,18:24:38.349,$PKEL99,------,14042007,182525.759,00191,HF,00.00,0,+008.50,LF,73.22,1,+008.50,1500,------,----,58 07.127267N,169 50.322883W,0565*1F

04/14/2007,18:24:39.865,$PKEL99,------,14042007,182527.269,00191,HF,00.00,0,+008.50,LF,73.22,1,+008.50,1500,------,----,58 07.128948N,169 50.326409W,1078*10

FIELD	DATA	Example	UNITS
1	SCS logged Date	04/14/2007	mm/dd/year
2	SCS logged Time GMT	18:24:39.865	hh:mm:ss.sss
3	NMEA header	$PKEL99	KEL Proprietary Data String
4	Record Number???	------	
5	Knudsen Date	14042007	DDMMYYYY
6	Knudsen Time	182527.269	HHMMSS.sss
7		00191	
8	HF Header (12 kHz)	HF	
9	HF Depth to Surface	00.00	Meters *
10	HF Draft	,+008.50	Meters
11	LF Header	LF	
12	LF Depth to Surface	73.22	Meters *
13	LF Depth Valid Flag	1	
14	LF Draft	+008.50	Meters
15	Sound Speed	1500	Meters Per Second**
18	Latitude	58 07.128948N	DD MM.MMMMMM***
19	Longitude	169 50.326409W	DDD MM.MMMMMM***
20	Position Latency	1078	
21	Checksum	*10	

* Knudsen depth is currently set for Meters

** Knudsen default sound speed *** Current GPS source is the POS/MV

Winch data

Starboard A-Frame Winch Data

1 second data from the Starboard A Frame winch data output.

./sbd_a_frame

Stbd-A-Frame_20070418-000000.Raw

04/18/2007,06:13:18.281,01, 890, , 36, , -27, ,0000

04/18/2007,06:13:19.250,01, 890, , 35, , -28, ,0000

04/18/2007,06:13:20.235,01, 900, , 35, , -28, ,0000

FIELD	DATA	Example	UNITS
1	SCS logged Date	04/18/2007	mm/dd/year
2	SCS logged Time GMT	06:13:20.235	hh:mm:ss.sss
3	Winch number	01	
4	Wire tension	900	Pounds
5	Wire out	35	Meters
7	Wire speed	-28	Meters/minute

Aft A-Frame Winch Data

1 second data from the Aft A Frame winch data output.

./aft_a_frame

Aft-A-Frame_20070418-000000.Raw

04/18/2007,08:46:45.844,02, -160, , 31, , 58, ,0000

04/18/2007,08:46:46.844,02, -160, , 32, , 60, ,0000

04/18/2007,08:46:47.812,02, -160, , 33, , 60, ,0000

FIELD	DATA	Example	UNITS
1	SCS logged Date	04/18/2007	mm/dd/year
2	SCS logged Time GMT	08:46:47.812	hh:mm:ss.sss
3	Winch number	02	
4	Wire tension	-160	Pounds
5	Wire out	33	Meters
7	Wire speed	60	Meters/minute

Navigational Data

POSMV

POSMV GGA

Position data in NMEA GGA format from the POS/MV.

./posmv_gga

POSMV-GGA_20070415-000000.Raw

04/15/2007,00:00:03.052,$INGGA,000002.737,5830.47054,N,17012.64182,W,2,08,1.0,1.80,M,,,4,0297*07

04/15/2007,00:00:04.052,$INGGA,000003.737,5830.47385,N,17012.64365,W,2,08,1.0,1.76,M,,,5,0297*0A

04/15/2007,00:00:05.052,$INGGA,000004.737,5830.47716,N,17012.64550,W,2,08,1.0,1.71,M,,,6,0297*07

FIELD	DATA	Example	UNITS
1	SCS logged Date	04/15/2007	mm/dd/year
2	SCS logged Time GMT	00:00:05.052	hh:mm:ss.sss
3	NMEA header	$INGGA	
4	GPS time at position GMT	000004.737	hhmmss.sss
5	Latitude	5830.47716	ddmm.mmmmm
6	North (N) or South(S)	N	
7	Longitude	17012.64550	dddmm.mmmmm
8	East (E) or West (W)	W	
9	GPS Quality: 1 = GPS2=DGPS	2	
10	Number of GPS Satellites Used	08	
11	HDOP (horizontal dilution of precision)	1.0	
12	Antenna height	1.71	meters
13	M for Meters	M	
14	Geoidal Height		meters
15	M for Meters		
16	Differential reference station ID	0297	
17	Checksum	*07	

POSMV Psuedo Noise

Psuedorange error statistics in NMEA GST format from the POS/MV.

./posmv_gst

POSMV-Pseudo-Noise_20070415-000000.Raw

04/15/2007,00:00:02.990,$INGST,000002.737,,0.6,0.4,22.3,0.4,0.6,0.8*63

04/15/2007,00:00:03.990,$INGST,000003.737,,0.6,0.4,22.3,0.4,0.6,0.8*62

04/15/2007,00:00:04.990,$INGST,000004.737,,0.6,0.4,22.3,0.4,0.6,0.8*65

FIELD	DATA	Example	UNITS
1	SCS logged Date	04/15/2007	mm/dd/year
2	SCS logged Time GMT	00:00:05.052	hh:mm:ss.sss
3	NMEA header	$INGST	
4	GPS time at position GMT	000004.737	hhmmss.sss
5			
6	Smjr.smjr	0.6	
7	Smnr.smnr	0.4	
8	000.0	22.3	
9	ll	0.4	
10	y.y	0.6	
11	Standard deviation of altitude (a.a)	0.8	meters
12	Checksum	*65	

POSMV HDT

Heading data in NMEA HDT format from the POS/MV.

./posmv_hdt

POSMV-HDT_20070415-000000.Raw

04/15/2007,00:00:03.083,$INHDT,344.2,T*24

04/15/2007,00:00:04.083,$INHDT,344.2,T*24

04/15/2007,00:00:05.083,$INHDT,344.2,T*24

FIELD	DATA	Example	UNITS
1	SCS logged Date	04/15/2007	mm/dd/year
2	SCS logged Time GMT	00:00:05.083	hh:mm:ss.sss
3	NMEA header	$INHDT	
4	Heading	344.2	Degrees
5	True(T) or Magnetic (M)	T	
6	Checksum	*24	

POSMV PASHR

Pitch and Roll data in NMEA PASHR format from the POS/MV.

./posmv_pashr

POSMV-PASHR_20070415-000000.Raw

04/15/2007,00:00:02.912,$PASHR,000002.737,344.17,T,-0.21,0.10,-0.02,0.017,0.017,0.011,2,1*17

04/15/2007,00:00:03.912,$PASHR,000003.737,344.19,T,-0.22,0.10,-0.02,0.017,0.017,0.011,2,1*1B

04/15/2007,00:00:04.912,$PASHR,000004.737,344.20,T,-0.24,0.10,-0.02,0.017,0.017,0.011,2,1*10

FIELD	DATA	Example	UNITS
1	SCS logged Date	04/15/2007	mm/dd/year
2	SCS logged Time GMT	00:00:05.052	hh:mm:ss.sss
3	NMEA header	$PASHR	
4	Time GMT	000004.737	hhmmss.sss
5	Heading	344.20	heading
6	True	T	
7	Roll	-0.24	Degrees
8	Pitch	0.10	Degrees
9	Heave	-0.02	Degrees
10	Accuracy roll	0.017	Degrees
11	Accuracy pitch	0.017	Degrees
12	Accuracy heading	0.011	Degrees
13	Accuracy of heading 0-no aiding, 1-GPS 2= GPS & GAMS	2	
14	IMU 0= out 1= satisfactory	1	
15	Check Sum	*10	

POSMV VTG

Course and speed over ground in NMEA VTG format from the POS/MV.

./posmv_vtg

POSMV-VTG_20070415-000000.Raw

04/15/2007,00:00:03.130,$INVTG,343.7,T,,M,12.5,N,23.1,K*75

04/15/2007,00:00:04.130,$INVTG,344.0,T,,M,12.5,N,23.1,K*75

04/15/2007,00:00:05.115,$INVTG,344.2,T,,M,12.5,N,23.1,K*77

FIELD	DATA	Example	UNITS
1	SCS logged Date	04/15/2007	mm/dd/year
2	SCS logged Time GMT	00:00:05.115	hh:mm:ss.sss
2	NMEA header	$INVTG	
3	Heading	344.2	Degrees
4	Degrees true (T)	T	
5	Heading		Degrees
6	Degrees magnetic	M	
7	Ship Speed	12.5	knots
8	N=Knots	N	
9	Ship Speed	23.1	km/hr
10	K=KM per hour	K	
11	Check sum	*77	

POSMV ZDA

Time and date data in NMEA ZDA format from the POS/MV.

./posm_zda

POSMV-ZDA_20070415-000000.Raw

04/15/2007,00:00:03.162,$INZDA,000003.0016,15,04,2007,,*77

04/15/2007,00:00:04.162,$INZDA,000004.0016,15,04,2007,,*70

04/15/2007,00:00:05.162,$INZDA,000005.0016,15,04,2007,,*71

FIELD	DATA	Example	UNITS
1	SCS logged Date	04/15/2007	mm/dd/year
2	SCS logged Time GMT	00:00:05.162	hh:mm:ss.sss
2	NMEA header	$INZDA	
3	Time UTC	000005.0016	HHMMSS.ssss
4	Day	15	DD
5	Month	04	MM
6	Year	2007	Year
7	??		??
8	??	00	??
9	Checksum	*71	

Ashtech GPS

Ashtech Attitude

Attitude in NMEA format from the Ashtech ADU5 GPS receiver.

./ashtech_attiude

Ashtech-Attitude_20070415-000000.Raw

04/15/2007,00:00:03.490,$GPPAT,000003.00,5830.44196,N,17012.62728,W,00030.21,344.3730,000.25,-000.01,0.0015,0.0074,0*42

04/15/2007,00:00:04.490,$GPPAT,000004.00,5830.44527,N,17012.62914,W,00030.23,344.3537,000.20,-000.06,0.0015,0.0071,0*4A

04/15/2007,00:00:05.490,$GPPAT,000005.00,5830.44859,N,17012.63099,W,00030.23,344.3431,000.22,-000.07,0.0014,0.0077,0*41

FIELD	DATA	Example	UNITS
1	SCS logged Date	04/15/2007	mm/dd/year
2	SCS logged Time GMT	00:00:05.490	hh:mm:ss.sss
3	NMEA header	$GPPAT	
4	GPS time at position GMT	000005.00	hhmmss.ss
5	Latitude	5830.44859	ddmm.mmmmm
6	North (N) or South(S)	N	
7	Longitude	17012.63099	dddmm.mmmmm
8	East (E) or West (W)	W	
9	Altitude	00030.23	Meters
10	Heading	344.3431	Degrees
11	Pitch	000.22	Degrees
12	Roll	-000.07	degrees
13	Attitude phase measurement rms error, MRMS	0.0014	meters
14	Attitude baseline length rms error, BRMS	0.0077	meters
15	Attitude reset flag (0:good attitude, 1:rough estimate or bad attitude)	0	
16	Check sum	*41	

Ashtech GGA

Position data in NMEA GGA format from the Ashtech ADU5 GPS receiver.

./ashtech_gga

Ashtech-GGA_20070415-000000.Raw

04/15/2007,00:00:02.333,$GPGGA,000002.00,5830.43864,N,17012.62542,W,1,13,0.7,20.74,M,9.47,M,,*73

04/15/2007,00:00:03.333,$GPGGA,000003.00,5830.44196,N,17012.62728,W,1,13,0.7,20.75,M,9.47,M,,*7E

04/15/2007,00:00:04.333,$GPGGA,000004.00,5830.44527,N,17012.62914,W,1,13,0.7,20.76,M,9.47,M,,*75

FIELD	DATA	Example	UNITS
1	SCS logged Date	04/15/2007	mm/dd/year
2	SCS logged Time GMT	00:00:04.333	hh:mm:ss.sss
3	NMEA header	$GPGGA	
4	GPS time at position GMT	000004.00	hhmmss.ss
5	Latitude	5830.44527	ddmm.mmmmm
6	North (N) or South(S)	N	
7	Longitude	17012.62914	dddmm.mmmmm
8	East (E) or West (W)	W	
9	GPS Quality: 1 = GPS2=DGPS	1	
10	Number of GPS Satellites Used	13	
11	HDOP (horizontal dilution of precision)	0.7	
12	Antenna height	20.76	meters
13	M for Meters	M	
14	Geoidal Height	9.47	meters
15	M for Meters	M	
16	Differential reference station ID (no data in sample string)		
17	Checksum	*75	

Ashtech GGL

Position data in NMEA GLL format from the Ashtech ADU5 GPS receiver.

./ashtech_ggl

Ashtech-GLL_20070415-000000.Raw

04/15/2007,00:00:03.271,$GPGLL,5830.44196,N,17012.62728,W,000003.00,A,A*74

04/15/2007,00:00:04.255,$GPGLL,5830.44527,N,17012.62914,W,000004.00,A,A*7C

04/15/2007,00:00:05.255,$GPGLL,5830.44859,N,17012.63099,W,000005.00,A,A*74

FIELD	DATA	Example	UNITS
1	SCS logged Date	04/15/2007	mm/dd/year
2	SCS logged Time GMT	00:00:05.255	hh:mm:ss.sss
3	NMEA header	$GPGLL	
4	Latitude	5830.44859	ddmm.mmmmm
5	North or South	N	
6	Longitude	17012.63099	dddmm.mmmmm
7	East or West	W	
8	GMT of Position	000005.00	hhmmss.ss
9	Status of data (A=valid)	A	
10	???	A	
11	Checksum	*74	

Ashtech HDT

Heading data in NMEA HDT format from the Ashtech ADU5 GPS receiver.

./ashtexh_hdt

Ashtech-HDT_20070415-000000.Raw

04/15/2007,00:00:03.505,$GPHDT,344.373,T*31

04/15/2007,00:00:04.505,$GPHDT,344.354,T*34

04/15/2007,00:00:05.505,$GPHDT,344.343,T*32

FIELD	DATA	Example	UNITS
1	SCS logged Date	04/15/2007	mm/dd/year
2	SCS logged Time GMT	00:00:05.505	hh:mm:ss.sss
3	NMEA header	$GPHDT	
4	Heading	344.343	Degrees
5	True(T) or Magnetic(M)	T	
6	Checksum	*32	

PCode

PCode AFT

PCode Aft GGA

Position data in NMEA GGA format from the Trimble Centurion receiver located in the Computer lab.

./pcode_aft_gga

PCode-AFT-GGA_20070415-000000.Raw

04/15/2007,00:00:03.443,$GPGGA,000002.522,5830.4417,N,17012.6249,W,1,04,1.5,019.8,M,-008.9,M,,*51

04/15/2007,00:00:04.427,$GPGGA,000003.522,5830.4450,N,17012.6267,W,1,04,1.5,019.8,M,-008.9,M,,*5F

04/15/2007,00:00:05.427,$GPGGA,000004.522,5830.4483,N,17012.6286,W,1,04,1.5,019.8,M,-008.9,M,,*59

FIELD	DATA	Examples	UNITS
1	SCS logged Date	04/15/2007	mm/dd/year
2	SCS logged Time GMT	00:00:05.427	h:mm:ss.sss
3	NMEA header	$GPGGA	
4	GPS time at position GMT	000004.522	hhmmss.ss
5	Latitude	5830.4483	ddmm.mmmm
6	North (N) or South(S)	N	
7	Longitude	17012.6286	dddmm.mmmm
8	East (E) or West (W)	W	
9	GPS Quality: 1 = GPS2=DGPS	1	
10	Number of GPS Satellites Used	04	
11	HDOP (horizontal dilution of precision)	1.5	
12	Antenna height	019.8	meters
13	M for Meters	M	
14	Geoidal Height	-008.9	meters
15	M for Meters	M	
16	Differential reference station ID (no data in sample string)		
17	Checksum	*59	

PCode Aft GLL

Position data in NMEA GLL format from the Trimble Centurion receiver located in the Computer lab.

./pcode_aft_gll

Pcode-AFT-GLL_20070415-000000.Raw

04/15/2007,00:00:03.474,$GPGLL,5830.4417,N,17012.6249,W,000002.522,A*25

04/15/2007,00:00:04.474,$GPGLL,5830.4450,N,17012.6267,W,000003.522,A*2

04/15/2007,00:00:05.490,$GPGLL,5830.4483,N,17012.6286,W,000004.522,A*2D

FIELD	DATA	Example	UNITS
1	SCS logged Date	04/15/2007	mm/dd/year
2	SCS logged Time GMT	00:00:05.490	hh:mm:ss.sss
3	NMEA header	$GPGLL	
4	Latitude	5830.4483	ddmm.mmmm
5	North or South	N	
6	Longitude	17012.6286	dddmm.mmmm
7	East or West	W	
8	GMT of Position	000004.522	hhmmss.sss
9	Status of data (A=valid)	A	
10	Checksum	*2D	

PCode AFT VTG

Course and speed over ground in NMEA VTG format from the Trimble Centurion receiver located in the Computer lab.

./pcode_aft_vtg

Pcode-AFT-VTG_20070415-000000.Raw

04/15/2007,00:00:03.537,$GPVTG,343.7,T,331.4,M,012.4,N,023.0,K*4E

04/15/2007,00:00:04.537,$GPVTG,343.6,T,331.3,M,012.5,N,023.1,K*48

04/15/2007,00:00:05.537,$GPVTG,343.6,T,331.3,M,012.4,N,023.0,K*48

FIELD	DATA	Example	UNITS
1	SCS logged Date	04/15/2007	mm/dd/year
2	SCS logged Time GMT	00:00:05.537	hh:mm:ss.sss
2	NMEA header	$GPVTG	
3	Heading	343.6	Degrees
4	Degrees true (T)	T	
5	Heading	331.3	Degrees
6	Degrees magnetic	M	
7	Ship Speed	012.4	knots
8	N=Knots	N	
9	Ship Speed	023.0	km/hr
10	K=KM per hour	K	
11	Check sum	*48	

PCode AFT ZDA

Time and date data in the NMEA ZDA format. Data retrieved from the Trimble Centurion receiver located in the Computer lab.

./pcode_aft_zda

Pcode-AFT-ZDA_20070415-000000.Raw

04/15/2007,00:00:03.224,$GPZDA,000003.00,15,04,2007,00,00,*4C

04/15/2007,00:00:04.224,$GPZDA,000004.00,15,04,2007,00,00,*4B

04/15/2007,00:00:05.224,$GPZDA,000005.00,15,04,2007,00,00,*4A

FIELD	DATA	Example	UNITS
1	SCS logged Date	04/15/2007	mm/dd/year
2	SCS logged Time GMT	00:00:05.537	hh:mm:ss.sss
2	NMEA header	$GPZDA	
3	Time UTC	000005.00	hhmmss.sss
4	Day	15	DD
5	Month	04	MM
6	Year	2007	Year
7	??	00	??
8	??	00	??
9	Checksum	*4A	

PCode Bridge

PCode Bridge GGA

Position data in NMEA GGA format from the Trimble GPS receiver located on the bridge.

./pcode_bridge_gga

PCode-Bridge-GGA_20070415-000000.Raw

04/15/2007,00:00:03.037,$GPGGA,000002.00,5830.469,N,17012.644,W,1,04,2.666,32.15,M,8.930,M,,*4D

04/15/2007,00:00:05.037,$GPGGA,000004.00,5830.476,N,17012.648,W,1,04,2.667,31.82,M,8.930,M,,*45

04/15/2007,00:00:07.052,$GPGGA,000006.00,5830.482,N,17012.651,W,1,04,2.668,31.55,M,8.930,M,,*41

FIELD	DATA	Example	UNITS
1	SCS logged Date	04/15/2007	mm/dd/year
2	SCS logged Time GMT	00:00:07.052	hh:mm:ss.sss
3	NMEA header	$GPGGA	
4	GPS time at position GMT	000006.00	hhmmss.ss
5	Latitude	5830.482	ddmm.mmm
6	North (N) or South(S)	N	
7	Longitude	17012.651	dddmm.mmm
8	East (E) or West (W)	W	
9	GPS Quality: 1 = GPS2=DGPS	1	
10	Number of GPS Satellites Used	04	
11	HDOP (horizontal dilution of precision)	2.668	
12	Antenna height	31.55	meters
13	M for Meters	M	
14	Geoidal Height	8.930	meters
15	M for Meters	M	
16	Differential reference station ID (no data in sample string)		
17	Checksum	*41	

PCode Bridge GLL

Position data in NMEA GLL format from the Trimble GPS receiver located on the bridge.

./pcode_bridge_gll

Pcode-Bridge-GLL_20070415-000000.Raw

04/15/2007,00:00:03.099,$GPGLL,5830.469,N,17012.644,W,000002.00,A*12

04/15/2007,00:00:05.099,$GPGLL,5830.476,N,17012.648,W,000004.00,A*16

04/15/2007,00:00:07.099,$GPGLL,5830.482,N,17012.651,W,000006.00,A*17

FIELD	DATA	Example	UNITS
1	SCS logged Date	04/15/2007	mm/dd/year
2	SCS logged Time GMT	00:00:07.099	hh:mm:ss.sss
3	NMEA header	$GPGLL	
4	Latitude	5830.482	ddmm.mmm
5	North or South	N	
6	Longitude	17012.651	dddmm.mmm
7	East or West	W	
8	GMT of Position	000006.00	hhmmss.ss
9	Status of data (A=valid)	A	
10	Checksum	*17	

PCode Bridge VTG

Course and speed over ground data in NMEA VTG format from the Trimble GPS receiver located on the bridge.

./pcode_bridge_vtg

Pcode-Bridge-VTG_20070415-000000.Raw

04/15/2007,00:00:03.162,$GPVTG,343.9,T,333.8,M,12.46,N,23.08,K*40

04/15/2007,00:00:05.162,$GPVTG,343.8,T,333.8,M,12.49,N,23.12,K*45

04/15/2007,00:00:07.146,$GPVTG,343.9,T,333.8,M,12.48,N,23.11,K*46

FIELD	DATA	Example	UNITS
1	SCS logged Date	04/15/2007	mm/dd/year
2	SCS logged Time GMT	00:00:07.146	hh:mm:ss.sss
2	NMEA header	$GPVTG	
3	Heading	343.9	Degrees
4	Degrees true (T)	T	
5	Heading	333.8	Degrees
6	Degrees magnetic	M	
7	Ship Speed	12.48	knots
8	N=Knots	N	
9	Ship Speed	23.11	km/hr
10	K=KM per hour	K	
11	Check sum	*46	

Glonass

Glonass GGA

Position data in NMEA GGA format from the GLONASS GPS receiver.

./glonass_gga

Glonass-GGA_20070415-000000.Raw

04/15/2007,00:00:02.412,$GPGGA,000002.00,5830.472078,N,17012.636881,W,1,09,0.9,22.999,M,9.46,M,,*49

04/15/2007,00:00:03.396,$GPGGA,000003.00,5830.475412,N,17012.638716,W,1,09,0.9,23.000,M,9.46,M,,*40

04/15/2007,00:00:04.412,$GPGGA,000004.00,5830.478732,N,17012.640527,W,1,09,0.9,22.932,M,9.46,M,,*4D

FIELD	DATA	Example	UNITS
1	SCS logged Date	04/15/2007	mm/dd/year
2	SCS logged Time GMT	00:00:04.412	hh:mm:ss.sss
3	NMEA header	$GPGGA	
4	GPS time at position GMT	000004.00	hhmmss.ss
5	Latitude	5830.478732	ddmm.mmmmmm
6	North (N) or South(S)	N	
7	Longitude	17012.640527	dddmm.mmmmmm
8	East (E) or West (W)	W	
9	GPS Quality: 1 = GPS2=DGPS	1	
10	Number of GPS Satellites Used	09	
11	HDOP (horizontal dilution of precision)	0.9	
12	Antenna height	22.932	meters
13	M for Meters	M	
14	Geoidal Height	9.46	meters
15	M for Meters	M	
16	Differential reference station ID (no data in sample string)		
17	Checksum	*4D	

Glassnos GLL

Position data in NMEA GLL format from the GLONASS GPS receiver.

./glassnos_gll

Glonass-GLL_20070415-000000.Raw

04/15/2007,00:00:03.240,$GPGLL,5830.475412,N,17012.638716,W,000003.00,A*12

04/15/2007,00:00:04.255,$GPGLL,5830.478732,N,17012.640527,W,000004.00,A*16

04/15/2007,00:00:05.255,$GPGLL,5830.482216,N,17012.642424,W,000005.00,A*11

FIELD	DATA	Example	UNITS
1	SCS logged Date	04/15/2007	mm/dd/year
2	SCS logged Time GMT	00:00:05.255	hh:mm:ss.sss
3	NMEA header	$GPGLL	
4	Latitude	5830.482216	ddmm.mmmmmm
5	North or South	N	
6	Longitude	17012.642424	dddmm.mmmmmm
7	East or West	W	
8	GMT of Position	000005.00	hhmmss.ss
9	Status of data (A=valid)	A	
10	Checksum	*74	

Gyro

Gyro Heading

Heading data in NMEA HDT format from the Sperry gyrocompass.

./gyro

Gyro_20070415-000000.Raw

04/15/2007,00:00:01.912,$HEHDT,346.647,T*2B

04/15/2007,00:00:03.912,$HEHDT,346.713,T*2B

04/15/2007,00:00:05.927,$HEHDT,346.735,T*2F

FIELD	DATA	Example	UNITS
1	SCS logged Date	04/15/2007	mm/dd/year
2	SCS logged Time GMT	00:00:05.927	hh:mm:ss.sss
3	NMEA header	$HEHDT	
4	Heading	346.735	degrees
5	True (T) or Magnetic (M)	T	
6	Check sum	*2F	

Waypoints

IBS Waypoints

Waypoints from the Healy's Integrated Bridge System (IBS).

./ibs_waypoints

IBS-WayPoints_20070415-000000.Raw

04/15/2007,00:00:03.193,$NVWPL,6152.68,N,17402.58,W,62*51

04/15/2007,00:00:04.193,$NVWPL,6156.58,N,17422.68,W,63*56

04/15/2007,00:00:05.193,$NVWPL,6202.16,N,17439.96,W,64*52

FIELD	DATA	Example	UNITS
1	SCS logged Date	04/15/2007	mm/dd/year
2	SCS logged Time GMT	00:00:05.193	hh:mm:ss.sss
3	NMEA header	$NVWPL	
4	Latitude	6202.16	ddmm.mm
5	North or South	N	
6	Longitude	17439.96	dddmm.mm
7	East or West	W	
8	Waypoint number	64	
9	Checksum	*52	

Speed Log

Sperry Sped Log

Ground/water speed data from the Sperry Speed Log.

./sperry_speedlog

Sperry-Speedlog_20070415-000000.Raw

04/15/2007,00:00:02.755,$VDVBW,12.32,0.85,A,12.43,0.66,A*5A

04/15/2007,00:00:03.271,$VDVBW,12.33,0.80,A,12.44,0.66,A*59

04/15/2007,00:00:03.771,$VDVBW,12.34,0.78,A,12.45,0.68,A*56

FIELD	DATA	Example	UNITS
1	SCS logged Date	04/15/2007	mm/dd/year
2	SCS logged Time GMT	00:00:03.771	hh:mm:ss.sss
2	NMEA header	$VDVBW	
3	Fore-aft Water Speed - = astern	12.34	knots
4	Port-Stbd Water Speed - = port	0.78	knots
5	A= Data Valid V=Invalid	A	
6	Fore-aft Bottom Speed - = astern	12.45	knots
7	Port-Stbd Bottom Speed - = port	0.68	knots
8	A= Data Valid V=Invalid	A	
9	Checksum	*56	

Sound Velocimeter

SV2000

Sound Velocity data from the SV2000 sound velocimeter.

./sv2000

Sound-Velocimeter_20070415-000000.Raw

NO DATA

./Raw

The following sections are in the Raw data directory.

75 KHz ADCP data

./adcp75

The shipboard ADCP system measures currents in the depth range from about 30 to 300 m -- in good weather. In bad weather or in ice, the range is less, and sometimes no valid measurements are made. ADCP data collection occurs on the Healy for the benefit of the scientists on individual cruises and for the long-term goal of building a climatology of current structure in the Ocean.

The ADCP data set collected during this cruise are placed in the directory ./Raw/adcp75. The archive consists of a single file for each day of data collection. The files are named by the cruise HLY0702, a three place number of the sequence in the files, then an extra □_000000□, and then an extent for the kind of data in the file. An example of the files for one set is:

FILE NAME	FILE EXTENSION	DEFINITION
HLY0702022_000000	*.ENR*	Raw Binary ADCP Data
HLY0702022_000000	*.ENS*	Binary Adcp Data
HLY0702022_000000	*.ENX*	Binary Ensemble Data
HLY0702022_000000	*.STA*	short term average
HLY0702022_000000	*.LTA*	long term average
HLY0702022_000000	*.N1R*	Raw NMEA ASCII
HLY0702022_000000	*.N2R*	Raw NMEA ASCII
HLY0702022_000000	*.NMS*	Averaged Nav Data
Cruise Name_000008	Copy of .ini	

150 Khz ADCP data

./adcp150

The shipboard ADCP system measures currents in the depth range from about 30 to 300 m -- in good weather. In bad weather or in ice, the range is less, and sometimes no valid measurements are made. ADCP data collection occurs on the Healy for the benefit of the scientists on individual cruises and for the long-term goal of building a climatology of current structure in the Ocean.

The ADCP data set collected during this cruise are placed in the directory ./Raw/adcp150. The archive consists of a single file for each day of data collection. The files are named by the cruise HLY0702, a three place number of the sequence in the files, then an extra □_000000□, and then an extent for the kind of data in the file. An example of the files for one set is:

FILE NAME	FILE EXTENSION	DEFINITION
HLY0702022_000000	*.ENR*	Raw Binary ADCP Data
HLY0702022_000000	*.ENS*	Binary Adcp Data
HLY0702022_000000	*.ENX*	Binary Ensemble Data
HLY0702022_000000	*.STA*	short term average
HLY0702022_000000	*.LTA*	long term average
HLY0702022_000000	*.N1R*	Raw NMEA ASCII
HLY0702022_000000	*.N2R*	Raw NMEA ASCII
HLY0702022_000000	*.NMS*	Averaged Nav Data

KNUDSEN 320B/R

The Knudsen 320B/R depth sounder can record depth in both 3.5 and 12 kHz mode. The Healy records the 3.5 kHz data (Sub Bottom Profile) underweigh. This data is saved in all of the formats that the Knudsen can record data in. These files are in both ASCII and BINARY format (see the table below). This data is also saved as depth in Datalog/Knudsen.

./knudsenraw

FILENAME	FORMAT	DEFINITION
2007_102_0005_004.keb	Binary	Knudsen Playback File
2007_102_0005_008.kea	Ascii	Log of depth, settings and environmental data
2007_102_0005_HF_001.sgy	Binary	SEG-Y extended Seismic format

POSMV

The files saved in the directory pos_mv are all ones that the posmvnav computer logged from various navigation devices and devices related to the Seabeam system. The files use the naming convention of the name of the cruise, the device and an extent that has the year and julian day. An example for the ADU5 GPS receiver on day 105 in 2007 would be: HLY0702-adu5.y2007d105. The files are ASCII

./pos_mv

HLY0702-adu5.y2007d105 □ Ashtech GPS

HLY0702-aggps.y2007d105 □ Differential GPS

HLY0702-tsgauss.y2007d105 □ TSG ASCII data

HLY0702-tsgaussraw.y2007d105 □ Raw TSG in HEX with a time stamp

HLY0702-par.y2007d105 □ Raw PAR sensor data

HLY0702-posatt.y2007d105 □ POSNV Attitude data

HLY0702-posnav.y2007d105 □ POSMV Nav data

HLY0702-posreform2sb.y2007d105 □ Reformatted POSMV for Seabeam

HLY0702-sbsv.y2007d105 □ Surface Sound Velocity

POSMV Events

The events directory in the pos_mv directory has event files from various system showing start and stop times and various events in the recording and setup history of the device.

/pos_mv/events

Seabeam

The raw Seabeam 2112 binary files are in this directory. The naming convention uses the year, month, Julian day, and the start hour and minute in it. For year 2007 on day 110 starting at 11:12 the name would be sb20071101112.mb41. mb41 is the multibeam format number for the Seabeam 2112 that the Healy uses. This can best be accessed and used by using the MB-System software.

./Seabeam

sb20071091600.mb41

Thermosalinograph

Thermosalinograph AFT

Not used for HLY0702

./tsg_aft

Thermosalinograph Forward

The Forward Thermosalinograph data is written here in the binary format that SeaBird puts out. There are 2 files for each time period. The files use the name of the cruise and a sequence number in the recording for the cruise. See the SeaBird software Seacat for further processing.

./tsg_fwd

HLY07TSGFwd0701-2.CON

HLY07TSGFwd0701-2.hex

CTD

Data for the each CTD cast are contained here. These files are in SeaBird software□s format. Each cast is in a separately numbered subdirectory.

./ctd

FILENAME	FORMAT	DEFINITION
021.BL	ASCII	Bottle firing information
021.CON	ASCII	The configuration file for the cast
021.HDR	ASCII	Header information for the cast
021.btl	ASCII	Averaged Bottle firing information
021.cnv	ASCII	The data
021.dat	Binary	The data
021.jpg	Binary	Plotted JPEG image of the cast
021.ros	ASCII	Data from when bottles fire
021avg.cnv	ASCII	Meaned 1 meter down cast of the data

Expandable Bathythermograph (XBT)

No XBTs were taken on HLY0702. The file names use the probe type and the sequence number of the XBT in the series used for the cruise.

./xbt

FILENAME	EXTENSION	DEFINITION	PROGRAM REQUIRED to read the file
T5_00014.rdf	.RDF	Raw Data Format	Sippican Software
T5_00014.edf	.EDF	Exportable Data Format	Any text/spreadsheet

Oxygen Concentration Sensor

On HLY0702 an Oxygen Concentration Sensor was run underway in the Bio/Chem Lab. The data are in Excel files. These data are preliminary, the data are not yet quality controlled. There is also a directory (Opto_Raw) of the raw data in files for each day.

./Optode

Optode_corrected.xls

11-Apr-07 1:27:18 343.64
11-Apr-07 1:27:48 347.23
11-Apr-07 1:28:18 348.23

FIELD	DATA	Example	UNITS
1	Date	11-Apr-07	mm/dd/year
2	Time	1:27:18	
3	O2 Concentration	343.64	O2 conc (□mol/L)

APPENDIX:

Calculations

Some of the data values were calculated. The description of these data are below.

TSG

Raw TSG data is stored as a 20 byte (character) long hex string

Before 04/13/07

ftsgauss 2007:103:04:30:08.3076 111665C80AE8E00621 1443.37 0.07 -0.36 2.67 31.82

Bytes	*Data*	*Hex Data Example*
1-4	Intake Temperature	1116
5-8	Conductivity	65C8
9-14	Remote Temperature	0AE8E0
15-18	Fluorometer voltage	0621

After 04/13/07

ftsgauss 2007:103:04:33:33.8985 110E65C10AEE1D61F000 1443.76 0.06 -0.27 2.67 31.82

Bytes	*Data*	*Hex Data Example*
1-4	Intake Temperature	110E
5-8	Conductivity	65C1
9-14	Remote Temperature	0AEE1D
15-17	Fluorometer voltage	61F
18-20	Turbidity voltage	000

The coefficients for temperature, conductivity, fluorometer and turbidity sensors can be found in the calibrations sheets below in the Appendix.

Calculating Temperature – ITS-90

T = decimal equivalent of bytes 1-4

Temperature Frequency: f = T/19 +2100

$$\text{Temperature} = 1/\{g + h[ln(f_0/f)] + i[ln^2(f_0/f)] + j[ln^3(f_0/f)]\} - 273.15\ (\square C)$$

Calculating Conductivity – ITS-90

C = decimal equivalent of bytes 5-8

Conductivity Frequency f = sqrt(C*2100+6250000)

$$\text{Conductivity} = (g + hf^2 + if^3 + jf^4)/[10(1 + dt + ep)]\ \text{(siemens/meter)}$$

t = temperature (□C); p = pressure (decibars); d = Ctcor; e = CPcor

Calculating Fluorometry Voltage

f = decimal equivalent of bytes 15-17

Fluorometry Voltage = f/819

Calculating Transmittance

$V_{dark} = 0.058$ V

$V_{ref} = 4.765$ V

t = decimal equivalent of bytes 18 - 20

Transmissometer Voltage (V_{signal}) = t/819

$$\%\ \text{Transmittance} = (V_{signal} - V_{dark}) / (V_{ref} - V_{dark})$$

PAR

raw data = mV

calibration scale = 6.08 V/(mEinstiens/cm ^{2}sec)

offset (V_{dark}) = 0.3 mV

(***raw*** mV - V_{dark})/scale x 10^4 cm^2/m^2 x 10^{-3} V/mV= mEinstiens/m^2sec

or

(***data*** mV - 0.3 mV) x 1.65 (mEinstiens/m^2sec)/mV = mEinstiens/m^2sec

Sensors

HLY0702 Shipboard Sensors

Sensor	Description	Serial #	Last Calibration Date	Status
Meteorology & Radiometers				
Port Anemometer	RM Young 09101	L001	02/06/07	Collected
Stbd Anemometer	RM Young 09101	L003	03/07/07	Collected
Barometer	RM Young 61201	BP01643	03/07	Collected
Air Temp/Rel. Hum.	RM Young 41382VC	109652	03/07	Collected
Helo shack PAR	BSI QSR-2200	20270	01/09/07	Collected
Underway Ocean				
TSG	SeaBird SBE21	1864	01/23/07	Collected
Remote Sea Temp	SeaBird SBE3S	4063	01/24/07	Collected
Fluorometer	Turner SCUFA	0584	01/22/07	Collected
Sonars				
Knudsen-subbottom	320 B/R	K2K-00-0013	N/A	Collected
ADCP 150 kHz	Broad Band (BB150)	80	N/A	Collected
ADCP 75 kHz	Ocean Surveyor	172	N/A	Collected
Multibeam	Seabeam 2112	?	N/A	Collected
Speed log	Sperry	?	N/A	Collected
Navigation				
P-Code GPS (aft)	Trimble Centurion	0220035469	N/A	Collected
Attitude GPS	Ashtech ADU5	AD520033513	N/A	Collected
DGPS	Trimble AGGPS-AG132	0224016199	N/A	Collected
POSMV	Model- MV V4	2306	N/A	Collected
P-Code GPS (fwd)	?	?	N/A	Collected
Glonass	?	?	N/A	Collected
GYRO 1	Sperry MK25	?	N/A	Collected
GYRO 2	Sperry MK25	?	N/A	Collected

Instrument Locations on the Healy

Layout plot of instrument locations

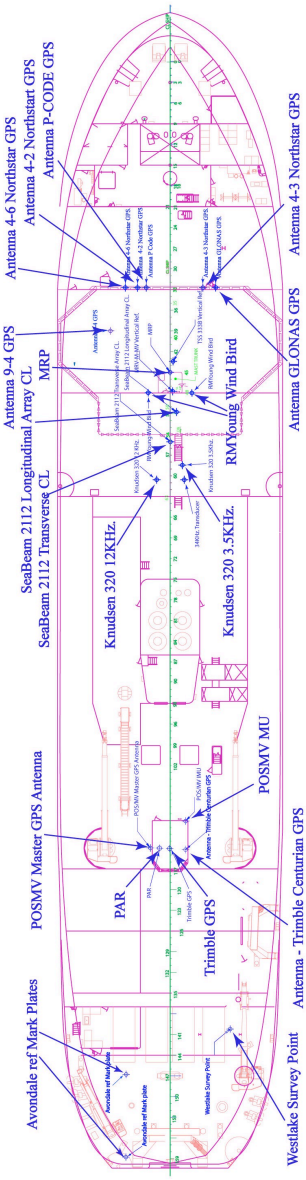

Table of Survey measurements

Consolidated Survey Data						
	Elements of:					
		Avondale Survey				
		Westlake Survey				
		Lamont Survey				
	All Measurements in *Meters* relative to MRP unless otherwise stated					
	X = fore & aft with + foreward					
	Y = port & starboard with + to starboard					
	Z= vertical with + upwards					
				X	Y	Z
Item	***Survey***	***Description***		***North***	***East***	***Elevation***
1	Avondale	**MRP**	See discussion Westlake Final Report	34.30	0.00	9.15
2	Westlake	**MRP**	by Definition	0.00	0.00	0.00
3	Westlake	**Seabeam 2112**				
		Transverse Array	Centerline	-7.679	0.030	9.242
		Longitudinal Array	Centerline	-4.386	0.711	9.238
4	Westlake	**Transducers**				
		Starboard - Forward to Aft				
		Transducer -	Bathy 2000 3.5 kHz	-10.252	1.362	9.243
		Transducer -	Bathy 1500 34 kHz *	-11.866	1.559	9.245
		Transducer -	Doppler Speed Log	-12.168	0.414	9.245
		Transducer -	Spare Transducer Well	-13.081	1.449	9.237
5	Westlake	**Port - Forward to Aft**				
		Transducer -	VM 150	-9.726	-1.395	9.230
		Transducer -	Ocean Surveyor 75 kHz	-10.819	-1.290	9.230
		Transducer -	Bathy 2000 12 kHz	-11.859	-1.492	9.234
		Transducer -	Spare Transducer Well	-13.078	-1.394	9.235
6	Westlake	Gyros				
		Starboard Gyro	Centerline	4.741	0.207	-19.604
		Port Gyro	Centerline	4.746	-0.207	-19.609
7	Westlake	**Antennas**				
		REF DWG TBD	Antenna 9-4 * - GPS Antenna (4.1.5)	4.587	-6.622	-24.000
			Antenna 4-6 * - Northstar GPS (4.1.1)	9.374	-4.970	-23.406
			Antenna 4-2 * - Northstar (4.1.2)	9.362	-3.617	-23.451
			P CODE GPS Antenna *	9.368	-2.645	-23.609
			Antenna 4-3 * - Northstar (4.1.4)	9.355	3.638	-23.363
			GLONAS GPS Antenna *	9.379	5.066	-23.515
			Antenna base (4A)	-53.872	-0.011	-22.025
			Antenna base (4B)	-49.758	0.038	-22.010
			Antenna base (4C)	-49.785	1.629	-22.020

			Antenna base (4D)	-49.771	-1.546	-22.008
			Trimble Centurion**	-52.726	-1.717	-21.113
			Time Server **	-52.671	1.838	-21.115
8	Westlake	**Vertical Ref**				
			MRV-M-MV -			
			Measured at Top of mounting bracket			
			Center (mid-point) - calculated	-2.100	0.291	-0.775
			TSS 333B - Marine Motion Sensor -			
			scribe atop mounting plate			
			Center of TSS 333B	1.210	0.329	-0.013
9	LDEO	**POS/MV**				
		From	**TO**	**X**	**Y**	**Z**
		IMU	Port Antenna (Master)	-2.9719	-3.9140	-5.5310
		MRP	IMU	-49.5710	1.7110	-16.7990
		MRP	Transmit array	-4.3860	0.7110	9.2380
		MRP	Port Antenna (Master)	-52.5429	-2.2030	-22.3300
10	Westlake Raw	**Fan Tail**				
			Aft/Port	-86.737	-4.906	-3.617
			Forward/Port	-77.600	-4.881	-3.589
			Forward/Starboard	-72.590	6.676	-3.653

This table was Proofed by Dave Forcucci David.Forcucci@uscg.mil on the first half of HLY0702
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