1301SH Underway Data Notes

Data transmitted on DVDs:

1. **SCS Data**: All SCS data from this cruise, including event data and all sensor messages
2. **Instrument Calibrations**– Current calibration forms for our instruments
3. **Shimada Instrument Locations**– A CAD image of the port side of the ship sighting sensor locations as well as different intakes, outputs, and other things on the hull that might be of interest.
4. **Letter Transmitting Data** – this document is signed by the Chief Scientist confirming that they have received the disc and are responsible for distribution of data (blank copy).
5. **TSG Pump Turnoff Record-** log of when the TSG pump was turned off and on.
6. **Data directions for Kat, Lauren, Marg-** specifics on where their data of interest is found within SCS

CalCOFI Specifics:

The SCS events that were running are filed under SCS/Event data. The event log for all side operations is called **CalCOFI 2013 Side Station,** which logged snapshot data associated with the CTD, secchi and net casts. The continuous data log for the whole cruise is called the **CalCOFI 2013 Continuous** event. This event also created snapshots of the hydrophone and sonobuoy activity.

SCS Events in General:

The SCS data is in NMEA comma delimited format. NMEA definitions can be found by Google-ing the NMEA code ($MXGLL).

Occasionally you will see $DERIV. These are SCS derived sensors, calculations made from other sensors. For example, true wind is calculated in SCS using relative wind and ship position. This data string starts with a $DERIV code. The first value in this code is the output and the values after that are the factors used in the calculation. You may see sensors with the title Base Derivative. Sensors with this title are used to calculate another useable value. Look for the derived sensor and use that value instead of the base derivative. For example, the Shaft outputs data in a Milliamps code. SCS then calculates actual Shaft RPM from this value. The Milliamps code is the base derivative, and actual Shaft RPM is the derived sensor. The base derivatives and their derived sensors are generally in the same folder within SCS.

If a sensor stops logging for any reason, you may see that SCS records the last known value over and over, or at least the next 30 seconds. Please be cautious of this when processing data.

SCS organizes the raw data in folders. More than one sensor can be logged to a folder. Some definitions/acronyms worth knowing when looking at the SCS raw data folders that pertain to this cruise:

Centerboard Position and Draft– this file contains raw data regarding the position of the centerboard. 12.60 means the centerboard is Retracted. 18.20 means the centerboard is

Lowered. 15.68 means the centerboard is in Intermediate position. The centerboard was in the Intermediate position for the majority of the cruise.

EK60 – Correct depth readings were sent to SCS from the 5 transducers only if we were in waters shallower than 750m. Otherwise, the data reads zeros or incorrect values. The raw and processed EK60 data are held in separate files, maintained by the acoustician for this cruise (Jeremiah Renfree).

ES60-Bridge Single Beam Sonar – Controlled by the bridge officers, the ES60 is set up not to interfere with the EK60 and was set to passive mode for the majority of the cruise. When we were in shallow waters, the bridge would occasionally turn on this sonar for accurate depths. Only the 50 kHz transducer was outputting data to SCS. When the sonar can't find the bottom, it commonly outputs 0.00, so you may see this value frequently.

Event Data – contains any event data (the button pushes and continuously recorded files) run during the cruise. These events (described above) included **CalCOFI 2013 Side Station, CalCOFI 2013 Continuous, SAMOS, and TSG Transmitter.** The latter 2 events are for land-based projects and provide various averages of data collected throughout the cruise. Feel free to ignore the data if desired.

Gyro – There are two gyros, each recording to its own file, Gyro 1, and Gyro 2. The file titled Gyro-HEHDT-MainFeed contains the value from whichever gyro is in use at the time, so these values may be from either Gyro 1, or Gyro 2, depending on what the bridge officers used at the time to navigate. Gyro 2 was the principle gyro used on this cruise. Gyro 3 does not exist.

ME70 – Multibeam Sonar – SCS records a single Depth Below Transducer output from the ME70, however the bottom tracking was not usually on. The raw data was given directly to the scientists, and the data was not sent to SCS during this leg.

Nav Doppler Speed Log– This is the Navigational Doppler, also referred to as the speed log, controlled from the bridge. It is turned on during our CTD and net stations, and off during the transits between stations, as it interferes with the EK60. The file contains depth and keel offset of the hull mounted sensor, water temperature, and water/bottom speed data. The Water&BottomSpeed-Message has the most useful data, containing the speed through the water in the first data position after the header.

POSMV – Heave pitch and roll data. The attitude data is formatted $PASHR, hhmmss.ss, xxx.xx, T, RRR.RR, PPP.PP, HHH.HH, a.aaa, b.bbb, c.ccc,d,e*hh <CRLF> where hhmmss.sss is UTC time of data string, xxx.xx is True vessel heading fom 0 to 359.99 degrees, T is True, RRR.RR is Roll -90.00 to 90.00 degrees, PPP.PP is pitch from -90.00 to 90.00 degrees, HHH.HH is Heave from -99.00 to 99.00 meters, a.aaa is Accuracy roll 0 to 9.999 degrees, b.bbb is Accuracy pitch from 0 to 9.999 degrees, c.cc is Accuracy heading 0 to 9.999 degrees, d is Flag-accuracy heading with 0= no aiding, 1= GNSS aiding, and 2=GNSS and GAMS aiding, e is Flag-IMU where 0=IMU out and 1=satisfactory, and *hh is checksum.

Radiometer – Data from the radiometer mounted on top of the port side trawl tower. (See Shimada Blackline drawing for reference.)

SAMOS – data recorded in 1 minute averages and sent to Florida State University as part of nation-wide QA data program. Feel free to ignore this data.

SavedGISTracklines – Default folder created by SCS.

Sci-GPS – The GPS used for all SCS and scientific data collection.

Sea Temp – reference only – the ship has three Furuno temperature sensors mounted on the starboard side of the hull, high, mid, and low. (See Shimada Blackline drawing for reference.) The middle sea temperature data feed was turned off for this cruise due to error messages. These thermometers are not scientific grade, and should be used only as a reference. For accurate Sea Surface Temperature, use the SBE 38 hull mounted temperature probe located in the folder Seawater System – TSG and SeaTemp True, file TSG21-SeaSurfTempSalinitySountVelocMessage. This file is tab delimited, and sea temp is the last value.

Seawater System – Flowmeter – this is the flowmeter for the entire seawater system (TSG, Fluorometer.) It is mounted in the bow thruster room, just after the seawater intake, and just before the SBE 38 temperature sensor. The derived output value is measured in gallons per minute. When the seawater pumps are secured during times of heavy seas, the value will read 0. **Seawater System – Turner 10-AU Fluorometer** – is the raw value output from the continuously sampling Turner 10-AU Fluorometer as part of the seawater system.

Seawater System – TSG & SeaTemp True – This folder contains data from both the TSG SBE 21, which includes the SBE 38 sea surface temperature sensor, and the Micro TSG SBE 45. The file TSG21-SBE38_SeaSurface Temp-F-Message is a derived sensor that converts sea surface temp data from C to F. The first value in the data string is F, the second value is C. Please note that the pump for the sea water system was turned on and off depending on the sea state but the TSGs continued to record data.

Shaft RPM – just that, Shaft Revolutions per minute. Shaft output is a milliamps code. Actual Shaft RPM is in the file Shaft-RPM-Message.

Wind & Weather Suite – This folder contains data for Air Temp, Wet Bulb Temp, Barometric Pressure, Relative Humidity, Calculated True Wind, and Relative Wind from three different wind birds. The main wind bird used for scientific data is the FWD Jack Staff. Other wind birds 9our ultrasonics) are mounted on the flying mast, and labeled PortMast and StbdMast. This folder also contains a derived sensor that averages the true wind speed and direction from the FWD Jack Staff over a 2 minute time period.

The ship data was collected on three disks.

Disk #1

Read Me

CenterBoard Position & Draft

Compress

Crane Loads

CTD

EK60 - Scientific Single Beam Sonar

EventData

FS70 Trawl Net Sounder

Gyro 1 Average Test

Gyro Average Test

ITI Trawl System

ME70 - MultiBeam Sonar

Nav Doppler Speed Log

Disk #2

POSMV

Radiometer

Sea Temp - Reference Only

Seawater System – Flowmeter

Seawater System - TSG & SeaTemp True

Seawater System-Fluorometer

Winch - Side Sampling Station

Wind & Weather Suite

Disk #3

2013 Calibrations

ADCP

Ship and sensor information