Guidance for Shipboard Data Management Coordinator

Data Format and Transmission Specifications

Subsurface Monitoring Unit

MC252 Deepwater Horizon Oil Spill

Prepared by:

EPA Emergency Response DATA Team

NOAA NOS Center for Coastal Monitoring and Assessment (CCMA)

NOAA NOS Integrated Ocean Observing System (IOOS)

Natural Resource Damage Assessment (NRDA)

NOAA National Oceanographic Data Center (NODC)

BP

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Version 3.0

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Contact List for Shore Based Data Managers

Affiliation	Name	Phone	Email
SMU	Ben Shorr Lauren Decker Tharyan George		Benjamin.Shorr@noaa.gov ldecker@asascience.com tharyan.george@siriuscom.com
BP	Tim Morgan	713-408-7120	tim.morgan@bp.com
EPA			epadwh@gmail.com
NRDA			dwhnrda@gmail.com
NODC	Russ Beard Rost Parsons Hernan Garcia		Russ.Beard@noaa.gov Rost.Parsons@noaa.gov Hernan.Garcia@noaa.gov
IOOS			
CCMA			
OR&R			

Change Log

New Version	Author	Update Made
1.1	Tim Morgan	Changed document name and title
		Updated first section to reflect addition of the LISST data format to the specification
		Binning interval changed from 0.5 meters to 1 meters.
		CTD Detail Record – Field Name "X" changed to "Long", and "Y" changed to "Lat". Modified date format to be consistent with other formats in file.
		Added LISST section
1.2	Tim Morgan	Added diagram to illustrate purpose of the standard and mapping
1.3	Tim Morgan	Following discussions with Fugro (Rosemary Smith), added section on CTD scan 'source' standard. This is the expected, standardized output from the Seabird software to from which BP can map to its target specification.
		Added source to target mapping assignment.
1.4	Tim Morgan	In mapping from source to target, NULL values are to be replaced with -99999
2.0	Lauren Decker	Incorporating with "Sample Guidance for Data Managers" document
2.01	Lauren Decker	Changed the Annotated CTD plots x-axies scale for Fluorescence from 100 to 50 and Temperature from 24 to 26.
2.02	Lauren Decker	Added description of *data manager* roll, changed doc name/title
2.03	Tharyan George	Modified "Who you are (The Data Manager)" section
2.1	Lauren Decker	Added a CTD .btl file to the daily deliverables
2.2	Tharyan George	Changes Sample ID to state ID is 2 digits long
2.3	Tharyan George	Added Sample Matrix to Sample ID format
2.31	Lauren Decker	Updated the data flow image & folder structure image
3.0	Lauren Decker	Updated IDs system, add sample/location xls explanation, Acronym list, added NRDA specific guidance, more background and images to several sections.

Useful Acronyms

CoCM Chain of Custody Manager (Sampling Representative)- A qualified person concerned with the appropriate delivery of samples

CTD Conductivity, Temperature, Depth- A useful monitoring instrument
www.pmel.noaa.gov/vents/PlumeStudies/WhatIsACTD/CTDMethods.html

ERMA Environment Response Management Application-
www.response.restoration.noaa.gov/erma

IH Industrial Hygienist- A qualified person concerned with the health and safety of the environment, here there is a focus on air quality

IP Incident command Post- The location from which operations are orchestrated

LISST A useful monitoring instrument that determines particle size via laser diffraction

NOAA National Oceanic and Atmospheric Administration- www.noaa.gov

NRDA Natural Resource Damage Assessment- A branch of NOAA interested in long-term assessment of damages

OR&R Office of Response and Restoration

RP Responsible Party

OMAO Office of Marine and Aviation Operations www.nmao.noaa.gov

PAH Polyaromatic Hydrocarbons- Any of a collection of organic molecules with more than one connected aromatic ring (a cyclic hydrocarbon with specific characteristics)

SimOPs Simutaneous Operations- A center in Houston, TX with operational command of all vessels around the well-head

SMART Specific Monitor Applied Response Technology- A Coast Guard Team monitoring the effects of dispersion.

UC Unified Command- Includes BP, state and Coast Guard representatives.

VOC Volatile Organic Chemical- Hydrocarbons of low molecular weight prone to rapid evaporation

VOO Vessel of Opportunity - BP chartered vessels that have assets available upon request

Overview

Purpose

We are providing shipboard guidance to research vessel data managers to expedite onboarding of new personnel and equipment/data setup. By ensuring consistency between vessels, cruises and samples of recorded datasets, post sampling processes and analysis can be accelerated. In this document we discuss the data flow, organization, and processing of shipboard digital data.

Who we are

The Subsurface Monitoring Unit (SMU) is an umbrella group built to coordinate research vessel activity in the Gulf of Mexico relating to the MC252 incident. Our goal is to provide ship coordination and data management between the research fleet and Incident Command (plus all other interested parties.)

Who YOU are (the Data Manager)

The data manager on the ship has several very important roles that differentiate them from the sample manager (who physically takes water samples.) Your role includes:

- Generation and delivery of the "Daily Deliverables"

- Data uploads to ftp (including raw data) for archiving

- Recording information in the sample log sheets

- Sample ID generation (labels for bottles and COC forms)

- General assistant to water sampling team

- Coordination with Chief Scientist for prioritization of water sample testing

Your Team Members

In an effort to maintain a dynamic and functioning work environment the scope stated here is merely to define general aspects and does not represent definitive scope.

Land-Based Data Manager – Your land based contacts

Chief Scientist – Oversees and implements the monitoring practices

Data Manager- (You) The information go-to person

Sampling Manager – Facilitates the actual acquisition of the samples (there will usually be both a NRDA representative, and an Entrix (RP) representative.)

Operating Technician – Operates the sampling equipment

Policy

All observational data will be routed through the Data Processing Workflow, to include (at a minimum) quality assurance and quality control (QA/QC) steps, model ingestion (where relevant), and analysis by the Joint Analysis Group (JAG).

Approach

Data management is a critical part of the overall sampling strategy. The basic approach is to aggregate validated sampling data via direction from the Unified Area Command. This effort will be directed by the NOAA scientific support command (SSC) at the area command. All observations that are developed under this overall plan will be transmitted to a NOAA-managed SFTP server at the area command and then transmitted to the assigned modeling groups. This will establish an "authoritative source" and chain of custody for data, so that modeling efforts will maintain consistency and reliability. Sub-surface data will be integrated with surface observations, shoreline data, and atmospheric conditions in these models requiring consisting formatting.

Modeling output can also be transferred via this SFTP service, but will most effectively be managed by the modeling groups directly due to file size and format specifications. Alignment with the unified command priorities and incident command needs is critical. With numerous vessels, platforms, and activities in the region the operational unit leaders need to be made aware of any new sampling efforts or equipment being deployed. Informational updates will be provided on a daily basis to ensure the security and integrity of the sub-surface cruises.

Numerous organizations are keenly interested in receiving timely shipboard data (CTD and LISST) for analysis. Currently, this data is being delivered in numerous formats using a number of delivery channels which is complicating the preparation of the data for analysis.

In order to accelerate the analysis and the decision making process related to the CTD and LISST data, a consistent data file format is required for both sets of data. This document lays out a data specification for the consistent creation of the CTD and LISST data in Appendix 3.

Standard Operating Procedures (SOPs) are available, such as clean sampling techniques and decontamination procedures, as part of the cruise plan.
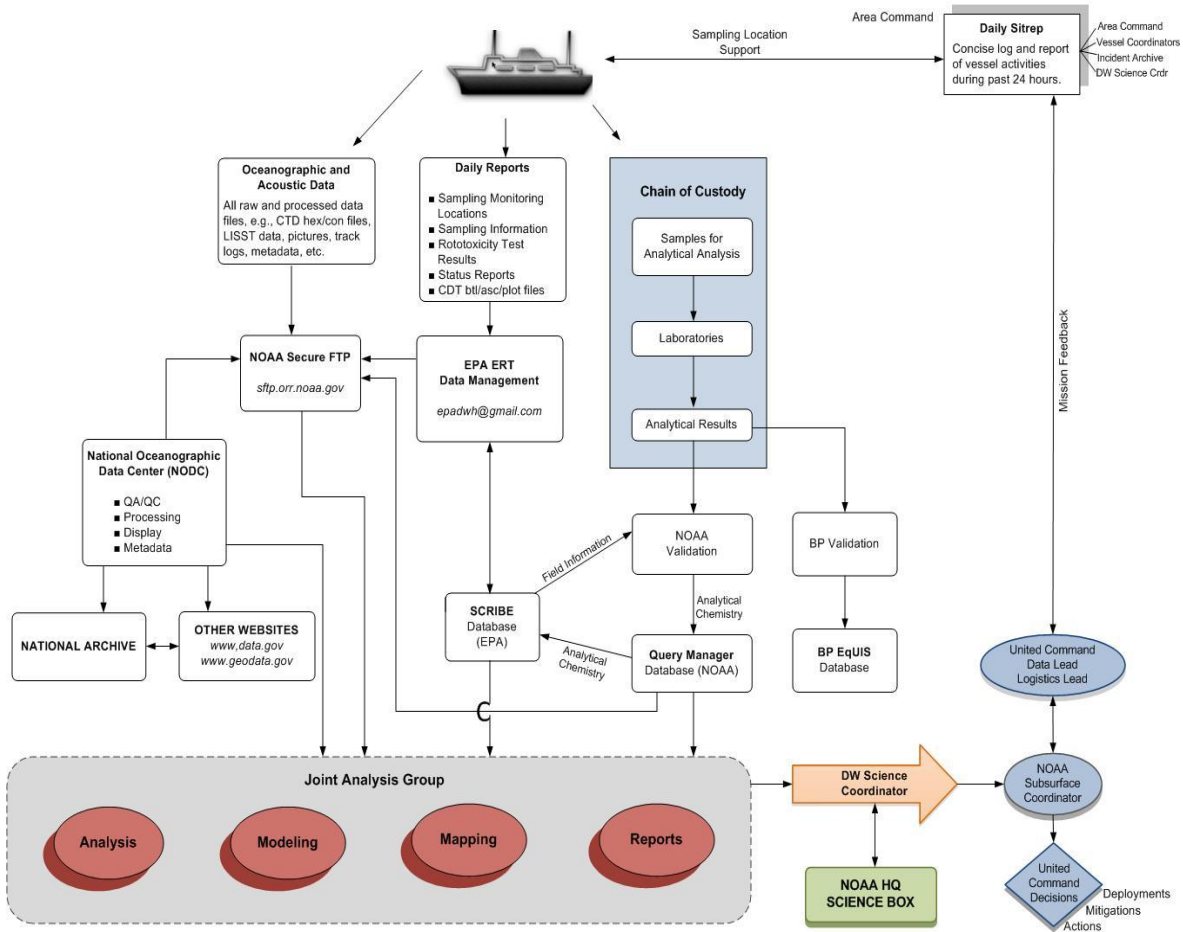
Figure 1. Flow chart depicting the dissemination of information.

It is the responsibility of the Data Manager to ensure that the appropriate data follows the correct path, see Figure 1. The *Oceanographic and Acoustic Data* and the *Daily Reports* are the responsibility of the Data Manager. The physical sample bottles follow the chain of custody (CoC) path for laboratory analysis, and are the responsibility of the sample manager.

STEP 1: Before the Cruise

Let us know you are heading out!

Before the cruise begins, the Data Management Coordinator must email the following information about themselves to epadwh@gmail.com:

- Name
- Name of Vessel
- Email Address
- Satellite Phone Number on Board the Vessel (can be delivered upon arrival to vessel)
- Cell Phone Number
- Start Date of Cruise
- Projected End Date of Cruise

Gathering forms

When we are able to contact you, we can build a log book with you, and give you a 1TB hard drive with a pre-made file structure to organize your data (explained more in Appendix 1: Organization of Data During the Cruise.) This will be important to receive the correct sampling sheets, COCs, paperwork and contacts that will help facilitate the processing, integration, and analysis of the cruise data. The set of forms you will need in your log book are:

- This document (Guidance for Shipboard Data Management Coordinator)
- Vessel monitoring log + example
- Sample/locations template + example
- Rototox template + example
- labels for sample bottles

Submit Test Deliverables

In an effort to ensure uniform data transfer during the cruise it is important to submit a sample deliverable for approval prior to your departure. The test deliverable will be emailed to the same location as the actual deliverables, email epadwh@gmail.com. You only need to do this once as a new data manager, it is easier to resolve questions on land rather than while cruise activities are in progress. The raw data is limited to a very small sampling size for manageability.

● All test material can be found in the sftp server at: Deepwater_Horizon_Ext/Subsurface_Monitoring/Vessel_Name/Cruise_##/Documents/Data_Management_Guidance

● All deliverables must contain the word "test" in the file name

STEP 2: During the Cruise

Ship to Shore Data Management Links

Daily Deliverables
Email epadwh@gmail.com your daily updates (more in the next section)

Daily Ship Calls
SMU calls each ship in the mornings (between 0830 and 1000)

Evening Chief Scientist Conference Call
A conference call to help coordinate sampling and observations - starts at 1900. Email chief.smu@noaa.gov for more information.

SMU Wiki
Information on daily reporting requests, sampling tracking sheet formats, cruise logistics, contacts, products and reports. (Email the SMU for log in credentials.)
https://www.st.nmfs.noaa.gov/confluence/display/OOP/Home

OR&R SFTP
The response data archive for all research ships. If you have connectivity, you can find all other ships data here & upload your data in near real time. See Appendix 1 for more login help, and email the SMU for login information.
https://www.st.nmfs.noaa.gov/confluence/display/OOP

NRDA FTP
The NRDA data archive for all research ships, as well as NRDA protocols and background.
www.researchplanning.com/downloads.com

Other information:
NOAA: www.noaa.gov
BP: www.bp.com
Environment Response Management Application: www.gomex.erma.gov

FOR RESPONSE: Daily Deliverables

Daily data packages should be submitted to epadwh@gmail.com by **midnight central time**. These data packages must include the following deliverables, see Appendix 2 for descriptions and examples:

1. Detailed status report (Required)
2. Vessel monitoring log (Required)
3. Data table of sampling information and monitoring locations (Required)
4. Annotated CTD Plots (Required)
5. Data Table of Rototoxicity Test Results (Optional)

6. LISST Particle Analysis Report (Optional – acquire from the LISST techs if available)
7. Map (Optional, Arc, Google Earth, etc.)

Data packages will be compared against the requirements described in this document as well as the field description tab of each data entry template. If deliverables within a given data package do not meet these requirements, an email will be sent to the offending Data Management Coordinator. Such emails will provide some indication of the reason why the deliverable is being rejected. Emails will also be sent to relevant Data Management Coordinators who miss a deadline and/or fail to provide complete data packages.

The SMART team will upload the daily deliverables to the folder "EPADWH_Daily_Deliverables" under a date folder (YYYY_MMDD) for the deliverables on a daily bases - this is at the root of the ship folder.

CTD Sampling

For timely analysis during the cruise (if you have internet connectivity) please process the CTD data in the specified format and upload to the OR&R sftp site (See Appendices). The CTD files are not part of the daily deliverables, as internet connectivity can be very poor. Please upload all CTD files to the sftp as soon as possible.

FOR NRDA: Deliverables and Required Documentation

A Field Sample Form, Chain of Custody (COC), pictures, GPS information, and Photologger form are required documentation for cruise data. All information should be posted to the researchplanning.com/downloads FTP site (RPI FTP site) in a zipped file after each cruise. For Trustee access to the FTP site, please e-mail DWHNRDA@gmail.com.

- **Field Sampling Form (required – filled out by the sample manager):** The NOAA NRDA field sampling form is the highly preferred form for NRDA water column vessel information, but is not required. If possible, please fill out the NOAA NRDA field sample form electronically on the boat. Information may be recorded on another form, but it is **imperative that all required fields** from the NRDA Sample Collection Form be recorded. The NOAA NRDA Field sample form and protocols can be found on the ResearchPlanning FTP site (Navigate to >Home/Trustee Private Communications/Sample_Data/0_Instructions_and_Forms)

  - Please fill out one field sample form (electronic) per day.

  - If using the NOAA NRDA Field Sampling Form to record field sample data, please use the Sample Notes area to note the station number and depth.

- **Chain of Custody (required – filled out by the sample manager):** The NOAA NRDA COC is **required** for all NOAA NRDA samples. The form can be automatically generated using the NOAA NRDA electronic field form.

  - NOAA NRDA water column cruise samples may use the SMU Sample ID naming convention (described in the SMU data management responsibilities).

  - Ensure the Sample ID on the bottle is the same as the one on the NOAA NRDA field sample form and COC (NOTE: if using NOAA NRDA electronic form do **NOT** allow the form to automatically generate NRDA sample IDs if you are using the response Sample ID naming convention)

- **Photos:** Digital photos should be taken at each sampling station. The first photo of the day should be of the GPS unit (either handheld or the boat's). Date and time on the camera should be set correctly to local time. Time on the Camera should be 24-hour military time.

- **Photologger Form:** Photologger form is required, if photos are taken. The form can be found on the RPI FTP site (navigate to Home/Trustee Private Communications/Sample_Data/0_Instructions_and_Forms)

- **GPS:** GPS waypoints should be taken at every sampling station. Ideally the tracklog and the waypoints will be downloaded and provided to NOAA NRDA. GPS should be set to: WGS 1984, decimal degrees, military time, and tracklog set to "wrap when full."

Information shall be uploaded to the RPI FTP site or provided to sample in-take team meeting the cruise in port.

More Detailed Guidance

Complete NOAA NRDA protocols and sample intake or shipping guidance are available on the

RPI FTP site (navigate to Home/Trustee Private Communications/Sample_Data/0_Instructions_and_Forms/).

The sample manager should attend a field sample form webinar Monday through Friday at 4pm CT. E-mail dwhnrda@gmail.com for webinar details.

STEP 3: After your cruise

Uploading Complete Data Set (must include raw data)

After each cruise, load the entire "Cruise_## " folder on to the response ftp site: **sftp.orr.noaa.gov/Deepwater_Horizon_Int/Subsurface_Monitoring/Your_Ships_Name**

THEN, zip your entire folder structure for the cruise, and upload to the NRDA ftp site: **www.researchplanning.com/downloads.com**

This folder structure and a single hard drive can be used during the cruise so that data distribution between all parties can receive copies easily after the cruise. You can release your log book to the Subsurface Monitoring Unit – trailer 501, first table (remember that any physical log books/hard drives will have a Chain of Custody!)

If you have a good internet connection on your ship you can upload data directly to the sftp OR&R site in the folder structure as you receive it. This is the preferred method, since we will be able to see more data closer to real time. (See Appendix 3 on FTP instructions, and email the SMU for login information.)

Pass the Baton

Find out who is the next data manager for your ship, and get in contact with them! Give them this packet, and any information that you found important during your cruise.

…And from the Subsurface Monitoring Unit (down in Houma Louisiana), to all the data managers, scientific crew, ships crews, and everyone helping with this effort:

Thank you!

Appendix 1 – Organization of Data During the Cruise
FTP Instructions

1. Download an FTP program (like firezilla: http://filezilla-project.org/download.php)
2. Email the SMU to get login credentials for sftp.orr.noaa.gov.

Below is a screen shot after opening the filezilla application. The red box highlights where to enter the host (sftp.orr.noaa.gov), username, password and port number. Each of these elements is important to open the correct server.
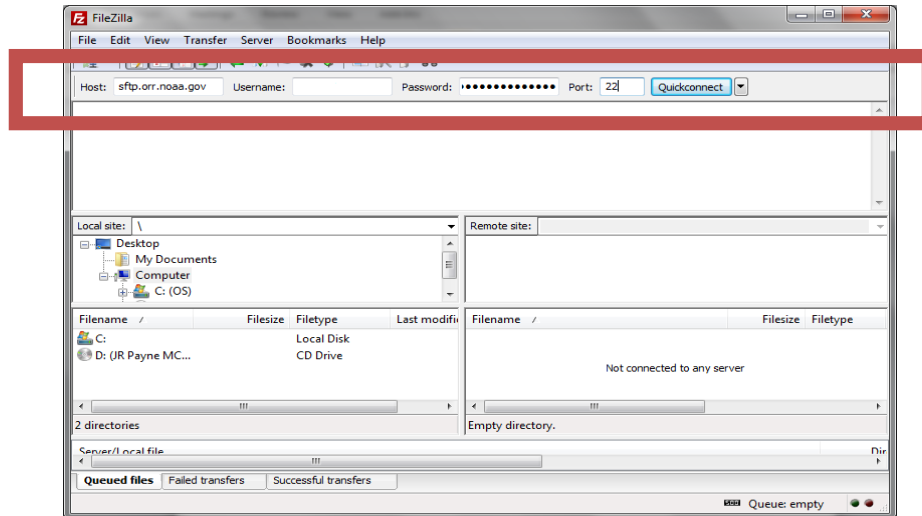
3. Once connected you can navigate to the /Deepwater_Horizon_Ext/Subsurface_Monitoring/*Your_Ship_Name*
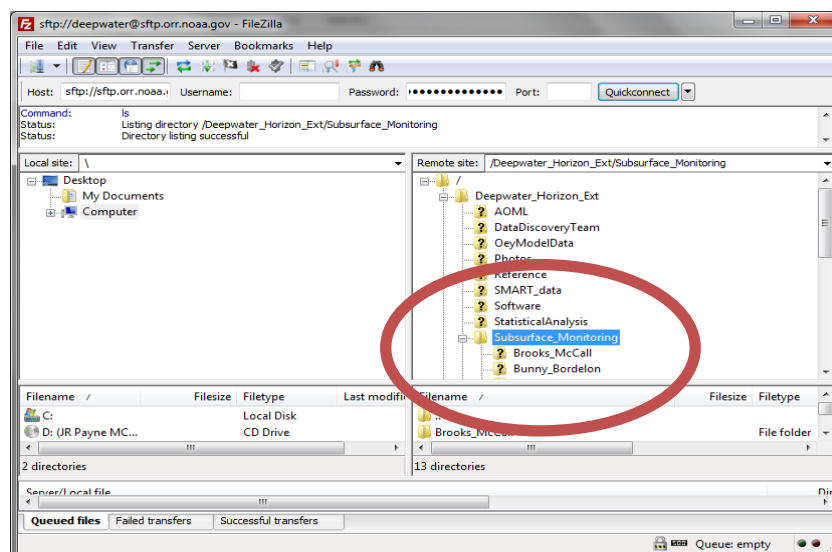
4. To upload the correct files (i.e. excel data templates) you must drag the file over to the correct place on your computer in the left half of the split screen.

File naming convention

Within the FTP folder, each vessel has its own folder under which individual folders for the CTD, LISST and Location data has been created from the templates provided.

Data created in each folder must have the following format:

<DATA_TYPE>_<VESSEL_CODE>_<DATE>_<CRUISE_NUMBER>_<Station_ID>

<DATA_TYPE> = "CTD", "LISST", "LOC"

<VESSEL_CODE> = examples include: "BM", "OV", "RC"

<DATE> = MMDDYYYY

Note: that if a sample is repeated at a given location then this sample should be uniquely identified from the original sample by the date and time assigned to each.

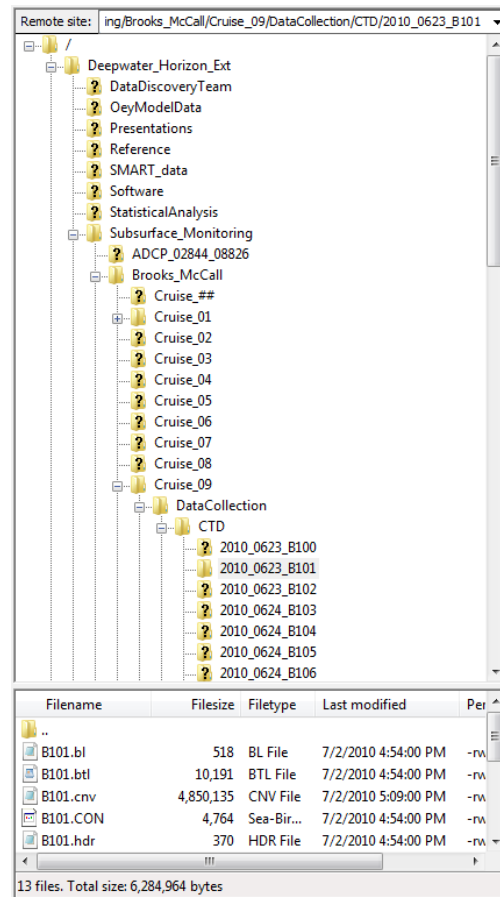## Folder Structure for CTD / LISST / Pictures / etc.

Basic folder structure for each cruise is shown below.

The email sent to epadwh@gmail.com will be uploaded shoreside to the daily deliverables folder "EPADWH_Daily_Deliverables" under a date folder (YYYY_MMDD) for the deliverables on a daily bases - this is at the root of the ship folder.

The cruise data manager will save the daily deliverables sent under Documents > Daily_Deliverables > YYYY_MMDD > *the documents*. (These will be near duplicates, but the SMART team usually has to tweak small changes sent to them before uploading into the SCRIBE database, so it is important to keep all versions of the data.)

Sample_Logs (under Data_Collection) will be the location for storing the xls files of samples collected/stations/etc – your log books.
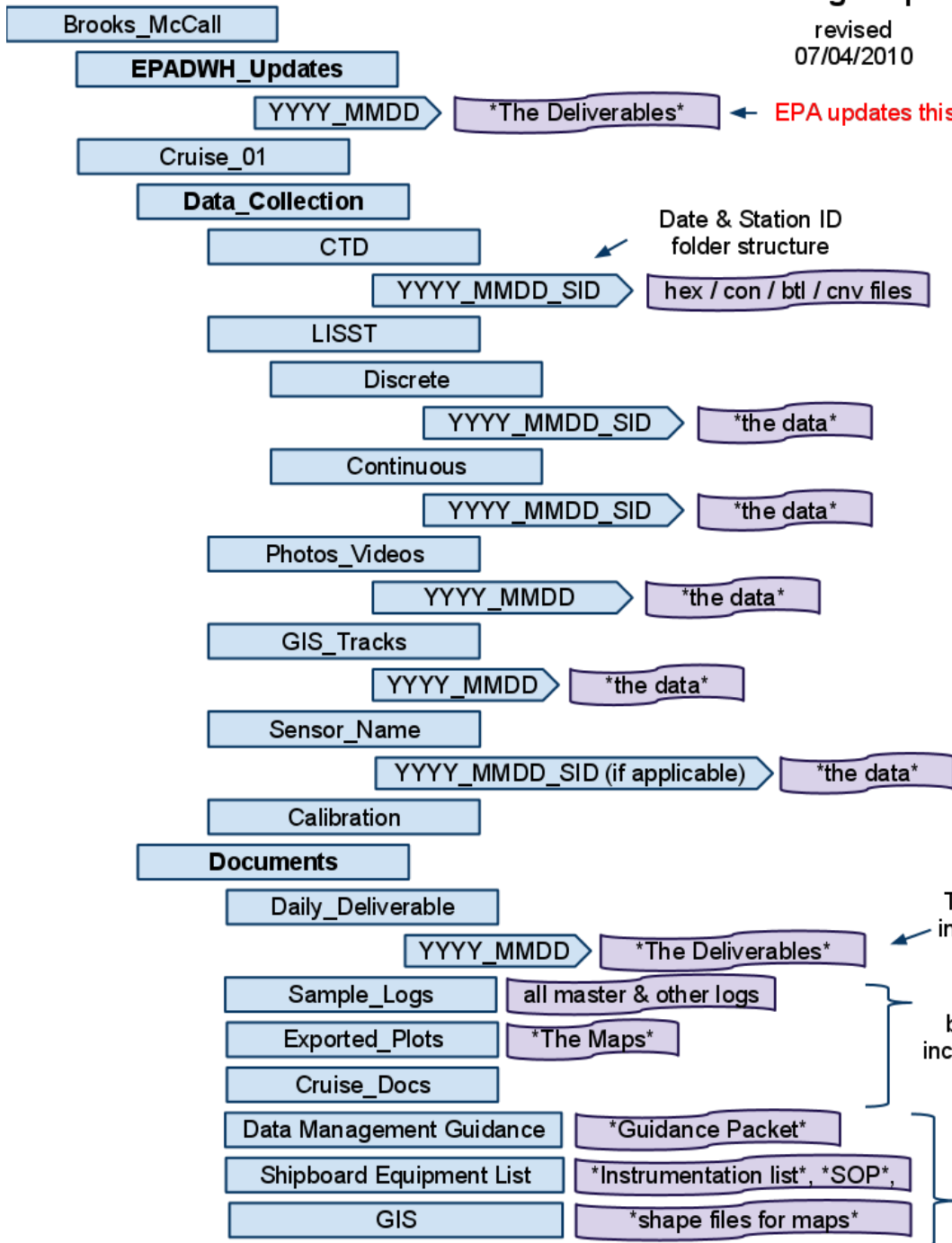
Each ship will have a folder, containing each cruise. The cruise data will be divided up by the *Data_Collection* and *Documentation*. Most of the data will be sorted in the *Data_Collection* folder by **instrument** > **date-station ID** > **data file** (Except for continuous data/transects, which should be under a just-date folder.)   Each Instrument should have its own sensor folder!

Subsurface Monitoring: sftp Data Organization

revised
07/04/2010

Brooks_McCall

EPADWH_Updates

YYYY_MMDD > *The Deliverables* ← EPA updates this folder.

Cruise_01

Data_Collection

CTD

Date & Station ID
folder structure

YYYY_MMDD_SID > hex / con / btl / cnv files

LISST

Discrete

YYYY_MMDD_SID > *the data*

Continuous

YYYY_MMDD_SID > *the data*

All your sensors should have their own folder under data collection, and should be organized by either date and station (or just date if you are underway during the data collection.)

Photos_Videos

YYYY_MMDD > *the data*

GIS_Tracks

YYYY_MMDD > *the data*

Sensor_Name

YYYY_MMDD_SID (if applicable) > *the data*

Calibration

Documents

Daily_Deliverable

YYYY_MMDD > *The Deliverables*

The products you produce and send in the epadwh email should be saved in daily deliverables.

Sample_Logs   all master & other logs

Exported_Plots   *The Maps*

Cruise_Docs

There will frequently be more log books/plots and images that are not included in the daily deliverables or data collection that can go under their respective folders here.

Data Management Guidance   *Guidance Packet*

Shipboard Equipment List   *Instrumentation list*, *SOP*,

GIS   *shape files for maps*

Templates / background / and guidance should be in these folders

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Explanation of Sampling Scheme

Example for Brooks McCall (BM): *SW-20100608-BM08-01*

(**Matrix Code**)-(**Date**)-(**Vessel Code**)-(**Sequential#**)

- SW: (**Matrix Code**) SW for water samples, or an oil matrix code.
- 20100608: (**Date**) The date the sample was collected in YYYYMMDD format.
- BM08: (**Vessel Code**) – An alphanumeric string describing the vessels and cruise number.
- 01: (**Sequential#**) – A number that is advanced for each sample collected on the same day, of the sample matrix type, and governed by the same Sample Program (or by the same Sampling Team).

Appendix 2 – Descriptions of Required Daily Deliverables

Example files and templates should be included on your hard drive, and are also located on the OR&R SFTP site.

Deliverable: Detailed Status Report
Description: A concise log and report of the vessels activities during a 24-hour operating period. Include a summary of ongoing Rototoxicity tests (what test are ongoing, what is the progress, etc).
Format: Microsoft Word (.doc) Document
*File Naming Convention: <*Date (in the format MM-DD-YYYY)>_<Vessel Name>_Status Report
Name of Example File: 05-23-10_Brooks McCall_Status Report

Deliverable: Vessel Monitoring Form
Description: A simple xls sheet with a check list of types of data collected, and a quick report for that day's activities and tomorrows plans.
Format: Microsoft Excel (.xls) Spreadsheet
*File Naming Convention: <*Date (in the format MM-DD-YYYY)>_<Vessel Name>_ Monitoring_Log
Name of Example File: 05-23-2010_Brooks McCall_Monitoring_Log

Deliverable: Data Table of Sampling Information and Monitoring Locations
Description: A spreadsheet that documents the samples and locations that were collected at specific locations and depths.
Format: Microsoft Excel (.xls) Spreadsheet
*File Naming Convention: <*Date (in the format MM-DD-YYYY)>_<Vessel Name>_Samples
Name of Example File: 05-23-2010_Brooks McCall_Samples

Deliverable: Annotated CTD Plots
Description: An image (.jpg) file of the plot as produced by the Seabird software with the following annotations: StationID, Date, Latitude (in decimal degrees) and Longitude (in decimal degrees). Recommended method: 1) Import the .jpg generated by the Seabird software into Microsoft PowerPoint. 2) Add the annotations. 3) Save the file as a JPEG File Interchange Format.
Format: .jpg
*File Naming Convention: <*Date (in the format MM-DD-YYYY)><*Vessel Name>_CDT<StationID>
Name of Example File: 05-23-10_Brooks McCall_CTD_<StationID>

Deliverable: Data Table of Rototoxicity Test Results
Description: Results of the Rototoxicity assessment.
Format: Microsoft Excel (.xls) Spreadsheet
*File Naming Convention: <*Date (in the format MM-DD-YYYY)><*Vessel Name>_Rototox<StationID>
Name of Example File: 05-23-10_Brooks McCall_RotoTox_<StationID>

Deliverable: LISST Particle Analysis Report
**Description:** A report of LISST analysis activities.
Format: Microsoft Word (.doc) Document
*File Naming Convention: <*Date (in the format MM-DD-YYYY)>_<Vessel Name>_LISST
Name of Example File: 05-23-2010_Brooks McCall_LISST

Table of Sampling Information and Monitoring Locations

1) Open "SampleDataTemplate.xls" and fill out the "Setup" tab.
2) Enter your location information (cruise, station ID, date & depth) in the "Locations" tab.
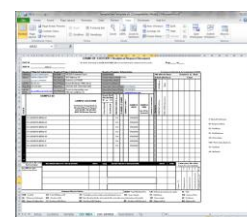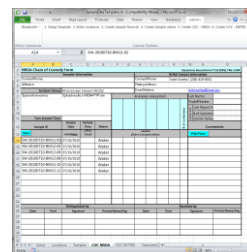3) Highlight the stations you want to create entries for, and click "3. Create Sample Records" in the Add-Ins tab.
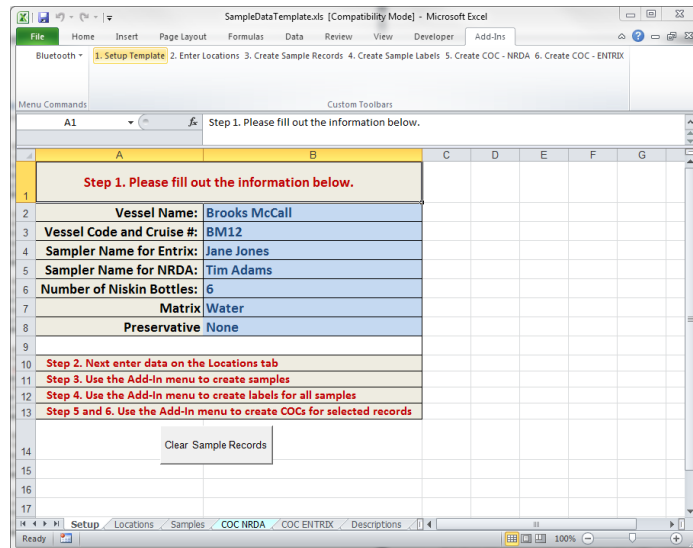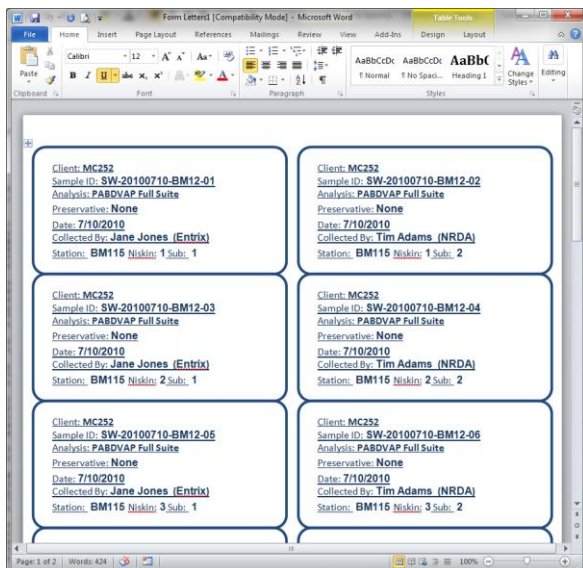
4) The Samples tab will be populated with the most common sample IDs used during the cruise, add more as required. When you have all the samples you will need, click "4. Create Sample Labels" This will open a word document with all the sample label information necessary to print labels for the sample managers. SAVE THIS SHEET under "Cruise_Docs".

5) Sample managers will use your labels on the sample bottles, and collect water/oil samples. You then need to fill out the rest of the blank fields under the "Samples" tab. See the "Descriptions" tab for help on how to fill out each column (lots of information, like Lat/Lon, should be pulled from the CTD file that is created by the technician operating the CTD.)

6) At the end of each day, create Chain Of Custody forms for both NRDA samples and Entrix samples by highlighting up to ten IDs for NRDA/Entrix at a time and clicking "5. Create COC- NRDA" OR "6. Create COC – ENTRIX" Enter any other information the COCs that is needed, save the sheet and print for the Sample Managers.

Image Formatting

In order to analyze and process the CTD data from different vessels and different CTD setups, this framework aims to provide consistent parameters for generation of the plot and its annotation for the data manager to deliver back to shore.

Check in with the CTD operator/engineering technician aboard the vessel concerning…

X-Axis Variables and Parameters

These variables and their ranges shown in the plot need to be consistent. This information can be programmed into the SeaBird processing software.

Variable	Units	Axis minimum	Axis maximum
Fluorescence	mg/m³	0	50
Dissolved Oxygen	mg/L	0	20
Temperature	deg C	0	26
Salinity	PSU	32	37

Downscan

For ease of viewing and the smoothest data scan, only the downscan of each of the above variables should be included in the plot. This can be accomplished by splitting the data and generating the plot or stopping the plot generation at the maximum depth. Note: this is only for the purpose of generating a clean deliverable; the sensor data should be recorded for the CTD's trip through the water column as decided by the Chief Scientist and those in charge of mission planning.

Once the plot is exported as an image from the SeaBird software…

Annotation Requirements

Please add an annotation tag to each plot in Microsoft Powerpoint (or other suitable software), and save the plot tied to the annotation as a JPEG image. This tag should include only the following information:

- "CTD Raw Data"
- StationID
- Date
- Latitude
- Longitude

Save this powerpoint slide as a JPEG image and include one for each station in the daily deliverable package.

See following page for an example plot with related annotation.

Example CTD Plot
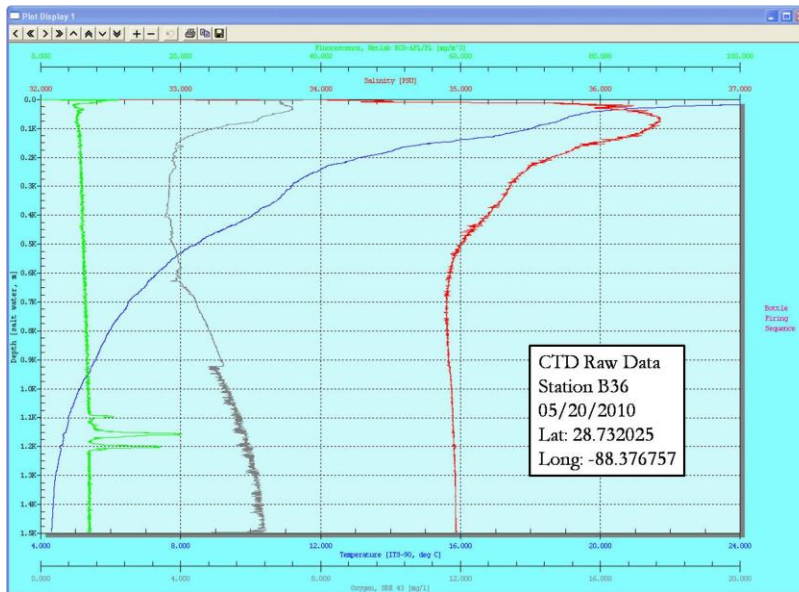
Metadata

To provide adequate background information on data collected during your cruise, we need "data about data". This includes basic information for a minimal metadata record.

Most of this information is can be produced by the technician of the instrument. (For example, the CTD header file is updated before every cast with some basic metadata – see the shipboard data processing section for those requirements.)

Please make sure you have this set of information for each instrument, for each raw data file produced:

- Person to contact about the data, and their contact information (most likely the data manager, maybe the tech)
- Instrument used
- Time/Location of data collection
- Processing steps

Appendix 3 – Shipboard Data Processing

Vessel "Source" Format

The table below details CTD instrumentation setup and detail data specification for the Sea-Bird software. Configuring the CTD scan using these parameters will ensure consistency in data analysis between cruises and between vessels.

It is important to ensure that the parameters specified here are configured exactly as detailed e.g. the order of the "name" fields is important so that this data can be mapped to the target specification.

An example header of the original hex file header (needed for metadata – so make sure the tech updates the file!):

Source File Data	Comment
* Sea-Bird SBE 9 Data File:	
* FileName = D:\03 June _SBE 9 data\SBE 9 Data\OV02101.hex	
* Software Version Seasave V 7.20d	
* Temperature SN = 2234	
* Conductivity SN = 1815	
* Number of Bytes Per Scan = 30	
* Number of Voltage Words = 4	
* Number of Scans Averaged by the Deck Unit = 1	
* System UpLoad Time = Jun 04 2010 12:12:29	
** Vessel: Ocean Veritas	
** Station ID: OV02101	Use agreed format of <VESSEL_ID><STATION_ID>
** Date / Time: 4 Jun 2010 / 12:12	
** Nav. Datum-NAD-27	
** Lat: 28.706530	Latitude in decimal degrees
** Lon: -88.348059	Longitude in decimal degrees
** Operator: WJ Bekins	

Order of variables in the file (#name 0 is the first column of data) built after the "datacvn" processing:

# name 0 = t090C: Temperature [ITS-90, deg C]	Ensures that temperature will be presented in column 1 of the detail output
# name 1 = prDM: Pressure, Digiquartz [db]	Ensures that pressure will be presented in column 2 of the detail output
# name 2 = sbeox0V: Oxygen Voltage, SBE 43	Ensures that oxygen voltage will be presented in column 3 of the detail output

# name 3 = flECO-AFL: Fluorescence, Wetlab ECO-AFL/FL [mg/m^3]	Ensures that flurorescence will be presented in column 4 of the detail output
# name 4 = v1: Voltage 1	Ensures that voltage 1 will be presented in column 5 of the detail output
# name 5 = v2: Voltage 2	Ensures that voltage 2 will be presented in column 6 of the detail output
# name 6 = v3: Voltage 3	Ensures that voltage 3 will be presented in column 7 of the detail output
# name 7 = c0S/m: Conductivity [S/m]	Ensures that conductivity will be presented in column 8 of the detail output
# name 8 = depSM: Depth [salt water, m], lat = 29	Ensures that depth will be presented in column 9 of the detail output
# name 9 = sal00: Salinity, Practical [PSU]	Ensures that salinity will be presented in column 10 of the detail output
# name 10 = density00: Density [density, Kg/m^3]	Ensures that density will be presented in column 11 of the detail output
# name 11 = svCM: Sound Velocity [Chen-Millero, m/s]	Ensures that sound velocity will be presented in column 12 of the detail output
# name 12 = sbeox0Mg/L: Oxygen, SBE 43 [mg/l], WS = 2	Ensures that oxygen will be presented in column 13 of the detail output
# name 13 = sbeox0ML/L: Oxygen, SBE 43 [ml/l], WS = 2	Ensures that oxygen will be presented in column 14 of the detail output

Appendix 4- Accessing Analytical Data - The SCRIBE Database

EPA uses the daily deliverables to update a database of the samples taken for research ship analytical data (physical water/oil samples that go to a lab.) If you would like to access the SCRIBE data base, download the latest version of SCRIBE off of the website: epaosc.net/scribe

Then email the EPA Deep Water Horizon team at: *epadwh@gmail.com* for subscription information.