



Project Instructions

Date Submitted: October 11, 2017

Platform: NOAA Ship *Bell M. Shimada*

Project Number: SH-17-10 California Current Ecosystem Moorings (OMAO)

Project Title: CCE1, CORC and 43 Fathom Bank Moorings

Project Dates: November 01 to November 08, 2017

Prepared by: U. Send Dated: October 11, 2017
Dr. Uwe Send
Chief Scientist
Scripps Institution of Oceanography

Approved by: _____ Dated: 10/19/2017
Dwight Gledhill
Deputy Director
NOAA Ocean Acidification Program

Approved by: _____ Dated: _____
CAPT Keith W. Roberts, NOAA
Commanding Officer
Marine Operations Center - Pacific

I. Overview

A. Brief Summary and Project Period

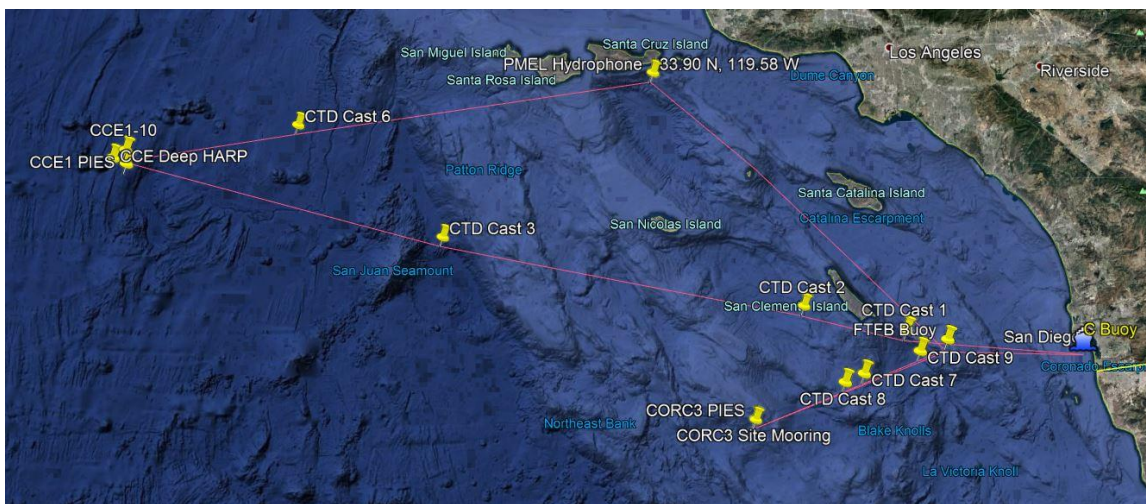
Mooring replacement cruise for the CCE1 Surface Mooring, CCE1 Deep HARP mooring, CORC3 subsurface mooring, CORC3 Mooring Recovery-dragging, 43 Fathom Bank Surface Mooring, 43 Fathom Bank WBAT Bottom landers, NOAA PMEL Hydrophone Mooring, with CTD casts for validation and calibration of mooring instrumentation. Departure November 01 and return to port November 08, 2017.

B. Days at Sea (DAS)

Of the 8 DAS scheduled for this project, 0 DAS are funded by an OMAO allocation, 8 DAS are funded by a Line Office Allocation, 0 DAS are Program Funded, and 0 DAS are Other Agency funded. This project is estimated to exhibit a medium Operational Tempo.

C. Operating Area (include optional map/figure showing op area)

Offshore Southern California. See Appendix #1



Project Site	Waypoint
CORC3-01	32N 18.09', 119W 01.83'
CORC3-02	32N 18.5', 119W 01.77'
CORC3-03	32N 18.50', 119W 1.77'
CORC3 PIES	32N 18.30', 119W 2.04'
CCE1-10	33N 28.81', 122W 32.01'
CCE1-11	33N 31.21', 122W 30.26'
CCE DEEP HARP	33N 28.97', 122W 34.56'
CCE1 PIES	33N 27.3995', 122W 29.9345'
FTFB Mooring	32N 39.01', 117W 58.32'

PMEL Hydrophone NRS05	33N 54', 119W 34.80'
CTD site 1	32N 41.894', 118W 11.875'W
CTD site 2	32° 49.329'N, 118° 45.598'W
CTD site 3	33N 8.671'N, 120W 44.322'
CTD site 4	33N 30.00', 122W
CTD site 5	33N 12.829', 121W 46.765'
CTD site 6	32N 37.829', 120W 15.102'
CTD site 7	32N 30.06', 118W 26.13'
CTD site 8	32N 27.77', 118W 32.46'
CTD site 9	32N 35.95', 118° 7.51'

D. Summary of Objectives

- Deployment of the CCE1-11 Surface Mooring
 - Pre-deployment CTD cast calibration/validation of mooring instrumentation
 - 50m Load Cage Instrumentation CTD Cast
 - 500m Microcats CTD Cast
 - 2000m Microcats CTD Cast
 - Pre-deployment checks of acoustic releases at depth
 - Drift test to determine mooring deployment track
- Recovery of the CCE1-10 Surface Mooring
 - Post-deployment CTD cast calibration/validation of mooring instrumentation
 - 50m Load Cage Instrumentation CTD Cast
 - 500m Microcats CTD Cast
 - 2000m Microcats CTD Cast
- Recovery of CCE1 Deep HARP mooring
- Deployment of SOLO Float
- Recovery of the CORC3-02 subsurface mooring
 - Post-deployment CTD cast calibration/validation of mooring instrumentation
 - 1000m Microcats CTD Cast
 - 2000m Microcats CTD Cast
 - Pre-deployment checks of acoustic releases at depth
- Deployment of the CORC3-03 subsurface mooring
 - Pre-deployment CTD cast calibration/validation of mooring instrumentation
 - 1000m Microcat CTD Cast
 - Post-deployment acoustic communication with mooring modem for functionality
 - Post-deployment triangulation of acoustic releases for mooring position
- CORC3-01 recovery dragging operation
 - Post-deployment CTD cast calibration/validation of mooring instrumentation
 - 1000m Microcat CTD Cast
- CORC3-01 recovery dragging operation
 - Post-deployment CTD cast calibration/validation of mooring instrumentation

- 1000m Microcat CTD Cast
- Recovery of the 43 Fathom Bank WBAT bottom lander
- Recovery of the 43 Fathom Bank Surface Mooring
 - Post-deployment CTD cast calibration/validation of mooring instrumentation
 - 800m Microcats CTD Cast
- Deployment of the 43 Fathom Bank Surface Mooring
 - Drift test to determine mooring deployment track
 - Post-deployment CTD cast calibration/validation of mooring instrumentation
- Recovery of the 43 Fathom Bank WBAT bottom lander
- Deployment of the 43 Fathom Bank WBAT bottom lander
 - Post-deployment triangulation of acoustic releases for mooring position

E. Participating Institutions

Scripps Institution of Oceanography, UC San Diego

NMFS Southwest Fisheries Science Center

F. Personnel/Science Party: name, title, gender, affiliation, and nationality

Name (Last, First)	Title	Date Aboard	Date Disembark	Gender	Affiliation	Nationality
Send, Uwe	Chief Scientist	11/01	11/08	M	SIO/UCSD	USA
Borsack, Eden	Volunteer	11/01	11/08	F	Volunteer	USA
Chua, Paul	Engineer	11/01	11/08	M	SIO/UCSD	CANADA (Green Card)
Durette, Jessica	Technician	11/01	11/08	F	SIO/UCSD	USA
Fuentes, Michael	Volunteer	11/01	11/08	M	Volunteer	USA
Heux, Romain	Engineer	11/01	11/08	M	SIO/UCSD	France
Lankhorst, Matthias	Scientist	11/01	11/08	M	SIO/UCSD	GERMANY
Lowcher, Caroline	Grad Student	11/01	11/08	F	SIO/UCSD	USA
Morris, Ethan	Technician	11/01	11/08	M	SIO/UCSD	USA
Palance, Danial	NOAA Corp	11/01	11/08	M	NMFS/NOAA	USA
Reshef, Eadoh	Grad Student	11/01	11/08	M	SIO/UCSD	USA
Roche, Lauren	Marine Technician	11/01	11/08	F	NOAA/PMEL	USA
Sevadjan, Jeff	Engineer	11/01	11/08	M	SIO/UCSD	USA

G. Administrative

1. Points of Contacts:

Chief Scientist: Uwe Send, usend@ucsd.edu , (858) 822-6710

Chief Scientist/alternate: Matthias Lankhorst, mlankhorst@ucsd.edu, (858) 822-5013

Project Operation Leads: Paul Chua, pchua@ucsd.edu, (858) 534-4607

Project Operation alternate: Matthias Lankhorst, mlankhorst@ucsd.edu, (858) 822-5013

HAZMAT contact: Jessica Durette, jdurette@ucsd.edu, (858) 822-3583

Address for all:

8810 Shellback Way

Nierenberg Hall Room 116

La Jolla, CA 92037

2. Diplomatic Clearances: None Required.

3. Licenses and Permits: Coast Guard PATON for CCE1 & 43 Fathom Bank surface mooring, see appendix #5 & #12.

II. Operations

The Chief Scientist is responsible for ensuring the scientific staff are trained in planned operations and are knowledgeable of project objectives and priorities. The Commanding Officer is responsible for ensuring all operations conform to the ship's accepted practices and procedures.

A. Project Itinerary: See Appendix #1

B. Staging and Destaging:

Tenth Avenue Marine Terminal, San Diego, Ca. Staging October 30-31. Destaging November 09-10.

C. Operations to be Conducted:

Operation Name	Task	Overboard Equipment Depth (m)	Est. Operations Area (nm)
CTD Cast #1	pre-deployment calibration cast to 1000m for instrument calibration with water samples (S). Attach 4x MCP-1000 & 4 acoustic release to CTD rosette.	1000	1

CTD Cast #2	pre-deployment calibration cast to 50m for instrument calibration with water samples (O, S, chl, nuts, C). Attach Biopackage Cage, 1 Seacat w/ 2 FLNTUS, & 1 Seaphox to CTD rosette.	50	0.5
CTD Cast #3	pre-deployment calibration casts to 2000m for instrument calibration water samples (salinity, O). Attach 20 MC to CTD Rosette.	2000	2
Deployment of CCE1-11	Deployment of CCE1-11 surface mooring	Full	10
Recovery of Deep HARP	Recover of CCE1 Deep HARP Mooring	Full	3
CTD Cast #4	calibration cast to 1000m between CCE buoys with water samples (O, S, Chl, nuts, C)	1000	2
CCE1-10 Recovery	Recovery of CCE1-10 surface mooring.	Full	10
CTD Cast #5	post-deployment calibration casts to 500m for instrument calibration near CCE1-11 Buoy; water samples (S, chl). Attach 1 seacat w/ FLNTUS to CTD Rosette.	500	2
Deploy SOLO Float	Deploy SOLO-2 Float.	0	0
CTD Cast #6	post-deployment calibration cast to 50m with water samples (O, S, chl, nuts, C). Attach Biopackage Cage, 1 Seacat w/ 1 FLNTUS, & 1 Seaphox to CTD rosette.	50	0.5
PMEL Hydrophone Mooring	Recovery & Redeployment of the NOAA PMEL Hydrophone Mooring NRS05 CINMS	Full	1
Recover 43FB-1 Mooring	Recovery of the 43FB-1 surface mooring.	Full	0.5
CTD Cast #7	pre & post-deployment calibration casts to 180m for instrument calibration; water samples (S). Attach 2 old seacats to CTD rosette.	180	1
CTD Cast #8	post-deployment calibration casts to 50m for instrument calibration; water samples (S, O, C). Attach Seaphox to CTD rosette.	50	1
CORC3-01 PIES Communication	Acoustic data communication	15	0.5
Recover CORC3-02	Recovery of CORC3-02 subsurface mooring.	Full	10
Deployment of CORC3-03	deploy new CORC3-03 mooring, triangulation of mooring post deployment.	Full	7
CORC3-01 dragging operations	Dragging operations for recovery of broken CORC3-01 mooring.	Full	3
CTD Cast #9	post-deployment calibration casts to 2000m; water samples (S); Attach 16 MC	2000	0.5
Recover 43FB WBAT	Recovery of the 43 Fathom Bank (43FB) WBAT	Full	0.5
Deployment of 43FB -2	Deploy of the 43FB-2 surface mooring	Full	2
Deployment of 43FB WBAT	Deploy of the 43FB-2 WBAT Bottom Lander	Full	0.5

D. Dive Plan

Dives are not planned for this project.

E. Applicable Restrictions

Conditions which preclude normal operations: Poor weather events will limit the overboard deployment and recovery of the large surface buoy. Failure of the mooring winch will have significant impacts on operations. Mooring deployment and recovery operations may be possible using the ship's capstans. CTD issues will delay calibration/validation of data from mooring instruments.

III. Equipment

Equipment and Capabilities provided by the ship (itemized)

- a. Mooring Winch
- b. Deck Cleats
- c. Overboard Crane
- d. A-Frame
- e. 12 bottle CTD Rosette
- f. 12khz bathymetric echosounder
- g. Multibeam bathymetric echosounder (ME70 for seabed mapping)
- h. 75khz ADCP

B. Equipment and Capabilities provided by the scientists (itemized)

- a. Mooring recovery and deployment equipment
 - i. H-bit (a large cleat for deploying mooring rope)
 - ii. 10k lb Skookum block
 - iii. 5500lb Side opening block
 - iv. Various McKissick snatch blocks
 - v. Stopper lines with 10k lb snap hooks
 - vi. Stopper lines
 - vii. Tag lines
 - viii. Slip lines
 - ix. 5000k snap hooks
 - x. Hook up poles
 - xi. Happy hooker pole
 - xii. Lifting slings
 - xiii. Yale grip
 - xiv. Various chain hooks
 - xv. Klein grips
 - xvi. Chafing gear
 - xvii. Tension cart to spool line onto winch for deployment (compressed air powered), 6' x 6' hand moveable cart, 532lbs
 - xviii. Spooling cart to spool line off winch after recovery (110v power), 6' x 6' hand moveable cart, 860lbs
 - xix. Hand tools

- b. Teledyne Benthos Universal Deckbox
- c. Teledyne Benthos Portable modem
- d. Lithium Fire Extinguisher (30 lb Class D Fire Extinguisher)
- e. Small laboratory Spill kit
- f. Personal Floatation Equipment
- g. Personal Protective Equipment
- h. SOLO Float, quantity 1, 1.5'x1.5'x5.5', 70 lbs
- i. CCE1 Buoy and equipment, see appendix #2, 3, & 15
- j. CCE1 DEEP HARP Mooring and equipment, see appendix #6
- k. PMEL Hydrophone mooring and equipment, see appendix # & 15
- l. CORC-3 Mooring and equipment, see appendix #7, 8 & 15
- m. 43 Fth Bank Mooring and equipment, see appendix #10, 11 & 15

IV. Hazardous Materials

A. Policy and Compliance

The Chief Scientist is responsible for complying with FEC 07 Hazardous Materials and Hazardous Waste Management Requirements for Visiting Scientific Parties (or the OMAO procedure that supersedes it). By Federal regulations and NOAA Marine and Aviation Operations policy, the ship may not sail without a complete inventory of all hazardous materials by name and quantity, MSDS, appropriate spill cleanup materials (neutralizing agents, buffers, or absorbents) in amounts adequate to address spills of a size equal to the amount of chemical brought aboard, and chemical safety and spill response procedures. . Documentation regarding those requirements will be provided by the Chief of Operations, Marine Operations Center, upon request.

Per OMAO procedure, the scientific party will include with their project instructions and provide to the CO of the respective ship 30 days before departure:

- List of chemicals by name with anticipated quantity
- List of spill response materials, including neutralizing agents, buffers, and absorbents
- Chemical safety and spill response procedures, such as excerpts of the program's Chemical Hygiene Plan or SOPs relevant for shipboard laboratories
- For bulk quantities of chemicals in excess of 50 gallons total or in containers larger than 10 gallons each, notify ship's Operations Officer regarding quantity, packaging and chemical to verify safe stowage is available as soon as chemical quantities are known.

Upon embarkation and prior to loading hazardous materials aboard the vessel, the scientific party will provide to the CO or their designee:

- An inventory list showing actual amount of hazardous material brought aboard
- An MSDS for each material
- Confirmation that neutralizing agents and spill equipment were brought aboard sufficient to contain and cleanup all of the hazardous material brought aboard by the program
- Confirmation that chemical safety and spill response procedures were brought aboard

Upon departure from the ship, scientific parties will provide the CO or their designee an inventory showing that all chemicals were removed from the vessel. The CO's designee will maintain a log to track scientific party hazardous materials. MSDS will be made available to the ship's complement, in compliance with Hazard Communication Laws.

Scientific parties are expected to manage and respond to incidental spills of scientific hazardous materials. Large spills will be reported to the bridge immediately, and responded to by the ship's Emergency Response Team Overboard discharge of hazardous materials is not permitted.

B. Inventory

Also see Appendix #19 (HAZMAT list *CCE1_CORC3_FTFB_Hazmat_2017_Final.xlsx*)

Lithium Batteries Contained in Equipment

Inst.	Battery Type	Li/cell (g)	Weight / cell (g)	# cells / inst.	Total Li / inst. (g)	Total Cell Weight / Inst. (g)	Qty Inst.	Net Battery weight (g)	Net Li(g)	MSDS
SeaPhox	Electrochem pack 3PD1631: (8) DD BCX85	10.2	216	8	81.6	1728	4	6912	326.4	BCX_85_MSDS.pdf
Microcat	Saft LS14500	0.7	16.7	12	8.4	200.4	28	5611.2	235.2	Saft_Li_SOCl2_rev9_2009_msd.pdf
AIS	Tadiran DD TL-5937 (Electrochem 3PD 1102)	10	190	14	140	2660	1	2660	140	CSC_PMX_MSDS.pdf
Seacat	Saft LSH-20/T D cells	3.8	100	9	34.2	900	4	3600	136.8	Saft_Li_SOCl2_rev9_2009_msd.pdf
WBAT	Saft LSH-20/T D cells	3.8	100	48	182.4	4800	2	9600	364.8	Saft_Li_SOCl2_rev9_2009_msd.pdf
Benthos ATM-965	(2) pack Electrochem 3PD1448, (7) CSC93 DD Cell per pack	10.2	213	14	142.8	2982	2	5964	285.6	CSC_PMX_MSDS.pdf
SOLO	(2) D cells BCX85 3B75; (2) Tadiran packs TLP83121/D/S01: (8) TL6930 D cells and (4) HLC1550A AA cells each	92.4	115	1	92.4	115	1	115	92.4	BCX_85_MSDS.pdf ; tadiran-batteries-pulsesplus-msds-3p9v.pdf
SIO Controller BioPackage	(1) aux pack Electrochem 3PD1436, (8) CSC93 DD Cell per pack (1) main pack	10.2	213	48	489.6	10224	3	30672	1468.8	CSC_PMX_MSDS.pdf

	Electrochem 3PD1570, (40) CSC93 DD Cell per pack										
SIO Controll er Radiom eter	Electrochem pack 3PD1631: (8) DD BCX85	10.2	216	8	81.6	1728	4	6912	326.4	BCX_85_MSDS.pdf	

Li Batteries not contained in Equipment

Unit	Battery Type	Amt Li/ battery (g)	# batteries	Total Li (g)
Battery spares for Seacat	D SAFT	3.8	9	34.2
Battery spares for Microcats	Saft LS 14500 AA cells; 12 per instrument	0.7	60	42
Spare battery pack for Seaphox	Electrochem pack 3PD1631: 8 DD BCX85	10.2	8	81.6
(2) spare battery packs for acoustic modem	Electrochem pack 3PD1448: 7 DD cells per pack	10.2	14	142.8
Spare pack for AIS	DD TL-5937	10	14	140
(1) spare aux pack for controller	Electrochem pack 3PD1436: 8 CSC93 DD Cell	10.2	8	81.6
(1) spare main Pack for controller	Electrochem pack 3PD1570: 40 CSC93 DD Cell	10.2	40	408

Other Miscellaneous Hazardous goods we are shipping

Item Name	Details	Qty
Nitrogen Tank	60 cu. Ft.	1
CO ₂ Tank	140kg/cm ² . The tank itself weighs 13.2kg.	1
LPS Silicone Lubricant	11 oz cans	10
Fluid Film Rust Protection	11 oz cans	10
Compressed Air	11 oz cans	10
Isopropyl Alcohol	Liter	1
WD 40	11oz cans	10
HgCl ₂	For carbon sampling	3ml
MnCl ₂	For oxygen sampling	500 mls

NaI + NaOH Solution	For oxygen sampling	500 mls
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C. Chemical safety and spill response procedures

Common Name of Material	Qty	Notes	Trained Individual	Spill Control
Lithium Metal Batteries Contained in Equipment	48 Instruments containing Li Batteries.	See Inventory	Durette, Jessica / Chua,Paul	L
Spare Lithium Metal Batteries	153 Li Cells.	See Inventory	Durette, Jessica / Chua,Paul	L
Nitrogen Compressed	1	See Inventory	Durette, Jessica	C
CO₂ Compressed	1	See Inventory	Durette, Jessica	C
Aerosols	40 cans	See Inventory	Durette, Jessica	A
Isopropyl Alcohol	1 X 1 Liter		Durette, Jessica	I
HgCl₂ Dilution	1 X 3ml		Durette, Jessica	O
MnCl₂ Dilution	1 X 500ml		Durette, Jessica	O
NaI + NaOH Solution	1 X 500ml		Durette, Jessica	O

Spill Control Designation

A: Aerosols

SPILLS / LEAKS

- Do not touch or walk through spilled material.
- Stop leak if you can do it without risk.
- Do not direct water at spill or source of leak.
- Use water spray to reduce vapors or divert vapor cloud drift. Avoid allowing water runoff to contact spilled material.
- If possible, turn leaking containers so that gas escapes rather than liquid.
- Prevent entry into waterways, sewers, basements or confined areas.
- Allow substance to evaporate.

FIRE

- Use Dry Chemical, CO₂ Extinguisher, or foam

C: Compressed Nitrogen, Compressed CO₂

SPILLS / LEAKS

- Do not touch or walk through spilled material.
- Stop leak if you can do it without risk.

- Use water spray to reduce vapors or divert vapor cloud drift. Avoid allowing water runoff to contact spilled material.
- Do not direct water at spill or source of leak.
- If possible, turn leaking containers so that gas escapes rather than liquid.
- Prevent entry into waterways, sewers, basements or confined areas.
- Allow substance to evaporate.

FIRE

- Use an extinguishing agent suitable for the surrounding fire.

I: Isopropyl Alcohol

SPILLS / LEAKS

- ELIMINATE all ignition sources (no smoking, flares, sparks or flames in immediate area).
- All equipment used when handling the product must be grounded.
- Do not touch or walk through spilled material.
- Stop leak if you can do it without risk.
- Prevent entry into waterways, sewers, basements or confined areas.
- A vapor suppressing foam may be used to reduce vapors.
- Absorb or cover with dry earth, sand or other non-combustible material and transfer to containers.
- Use clean non-sparking tools to collect absorbed material.

FIRE

- Use Dry Chemical, CO₂ Extinguisher, foam or water spray

L: Lithium Metal Batteries

SPILLS / LEAKS

- ELIMINATE all ignition sources (no smoking, flares, sparks or flames in immediate area).
- Do not touch or walk through spilled material.
- Stop leak if you can do it without risk.
- Use water spray to reduce vapors or divert vapor cloud drift. Avoid allowing water runoff to contact spilled material.

DO NOT GET WATER on spilled substance or inside containers.

- Cover with DRY earth, DRY sand or other non-combustible material followed with plastic sheet to minimize spreading or contact with rain.
- Dike for later disposal; do not apply water unless directed to do so.

FIRE

- Use Dry chemical, soda ash, lime or sand (Yellow Li Extinguisher we are providing)
- DO NOT USE WATER OR FOAM.

O: Other: HgCL₂, MnCl₂, NaOH / NaI

SPILLS / LEAKS

- ELIMINATE all ignition sources (no smoking, flares, sparks or flames in immediate area).
- Do not touch damaged containers or spilled material unless wearing appropriate protective clothing.
- Stop leak if you can do it without risk.
- Prevent entry into waterways, sewers, basements or confined areas.

- Absorb or cover with dry earth, sand or other non-combustible material and transfer to containers.
- DO NOT GET WATER INSIDE CONTAINERS.

FIRE

- Use Dry Chemical, CO₂ Extinshuigher, foam or water spray

Inventory of Spill Kit supplies			
Product Name	Amount	Chemicals it is useful against	Amount it can clean up
Polypropylene Sorbent Pads	50 pads	Isopropyl Alcohol, HgCl ₂ Dilution, NaI + NaOH Solution	13 gallons
Copper Dry Powder Extinguisher	1 x 30lb tank	Li Metal Natteries	4 sq ft area
KOLORSAFE® Dry Acid Neutralizer	1 x 2lb bottle	Acids	1.99 L
Kolorsafe dry BASE neutralizer	1 x 2lb bottle	Bases	1.99 L

D. Radioactive Materials

No Radioactive Isotopes are planned for this project.

V. Additional Projects

A. Supplementary (“Piggyback”) Projects

Recovery and Deployment of NOAA PMEL’s NRSO5 CINMS hydrophone buoy.

B. NOAA Fleet Ancillary Projects

No NOAA Fleet Ancillary Projects are planned.

VI. Disposition of Data and Reports

Disposition of data gathered aboard NOAA ships will conform to NAO 216-101 *Ocean Data Acquisitions* and NAO 212-15 *Management of Environmental Data and Information*. To guide the implementation of these NAOs, NOAA’s Environmental Data Management Committee (EDMC) provides the *NOAA Data Documentation Procedural Directive* (data documentation) and *NOAA Data Management Planning Procedural Directive* (preparation of Data Management Plans). OMAO is developing procedures and allocating resources to manage OMAO data and Programs are encouraged to do the same for their Project data.

A. Data Classifications: *Under Development*

- a. OMAO Data
- b. Program Data

B. Responsibilities: *Under Development*

VII. Meetings, Vessel Familiarization, and Project Evaluations

- A. Pre-Project Meeting: The Chief Scientist and Commanding Officer will conduct a meeting of pertinent members of the scientific party and ship's crew to discuss required equipment, planned operations, concerns, and establish mitigation strategies for all concerns. This meeting shall be conducted before the beginning of the project with sufficient time to allow for preparation of the ship and project personnel. The ship's Operations Officer usually is delegated to assist the Chief Scientist in arranging this meeting.
- B. Vessel Familiarization Meeting: The Commanding Officer is responsible for ensuring scientific personnel are familiarized with applicable sections of the standing orders and vessel protocols, e.g., meals, watches, etiquette, drills, etc. A vessel familiarization meeting shall be conducted in the first 24 hours of the project's start and is normally presented by the ship's Operations Officer.
- C. Post-Project Meeting: The Commanding Officer is responsible for conducted a meeting no earlier than 24 hrs before or 7 days after the completion of a project to discuss the overall success and short comings of the project. Concerns regarding safety, efficiency, and suggestions for future improvements shall be discussed and mitigations for future projects will be documented for future use. This meeting shall be attended by the ship's officers, applicable crew, the Chief Scientist, and members of the scientific party and is normally arranged by the Operations Officer and Chief Scientist.
- D. Project Evaluation Report

Within seven days of the completion of the project, a Customer Satisfaction Survey is to be completed by the Chief Scientist. The form is available at <https://sites.google.com/a/noaa.gov/omao-intranet-dev/operations/marine/customer-satisfaction-survey> and provides a "Submit" button at the end of the form. It is also located at https://docs.google.com/a/noaa.gov/forms/d/1a5hCCkgIwaSII4DmrHPudAehQ9HqhRqY3J_FXqbJp9g/viewform. Submitted form data is deposited into a spreadsheet used by OMAO management to analyze the information. Though the complete form is not shared with the ships, specific concerns and praises are followed up on while not divulging the identity of the evaluator.

VIII. Miscellaneous

A. Meals and Berthing

The ship will provide meals for the scientists listed above. Meals will be served 3 times daily beginning one hour before scheduled departure, extending throughout the project, and ending two hours after the termination of the project. Since the watch schedule is split between day and night, the night watch may often miss daytime meals and will require adequate food and beverages (for example a variety of sandwich items, cheeses, fruit, milk, juices) during what are not typically meal hours. Special dietary requirements for scientific participants will be made available to the ship's command at least seven days prior to the project.

Berthing requirements, including number and gender of the scientific party, will be provided to the ship by the Chief Scientist. The Chief Scientist and Commanding Officer will work together on a detailed berthing plan to accommodate the gender mix of the scientific party taking into consideration the current make-up of the ship's complement. The Chief Scientist is responsible for ensuring the scientific berthing spaces are left in the condition in which they were received; for stripping bedding and linen return; and for the return of any room keys which were issued. The Chief Scientist is also responsible for the cleanliness of the laboratory spaces and the storage areas utilized by the scientific party, both during the project and at its conclusion prior to departing the ship.

All NOAA scientists will have proper travel orders when assigned to any NOAA ship. The Chief Scientist will ensure that all non NOAA or non Federal scientists aboard also have proper orders. It is the responsibility of the Chief Scientist to ensure that the entire scientific party has a mechanism in place to provide lodging and food and to be reimbursed for these costs in the event that the ship becomes uninhabitable and/or the galley is closed during any part of the scheduled project.

All persons boarding NOAA vessels give implied consent to comply with all safety and security policies and regulations which are administered by the Commanding Officer. All spaces and equipment on the vessel are subject to inspection or search at any time. All personnel must comply with OMAO's Drug and Alcohol Policy dated May 17, 2000 which forbids the possession and/or use of illegal drugs and alcohol aboard NOAA Vessels.

B. Medical Forms and Emergency Contacts

The NOAA Health Services Questionnaire (NHSQ, NF 57-10-01 (3-14)) must be completed in advance by each participating scientist. The NHSQ can be obtained from the Chief Scientist or the NOAA website <http://www.corporateservices.noaa.gov/noaforms/eforms/nf57-10-01.pdf>.

All NHSQs submitted after March 1, 2014 must be accompanied by [NOAA Form \(NF\) 57-10-02](#) - Tuberculosis Screening Document in compliance with [OMAO Policy 1008](#) (Tuberculosis Protection Program).

The completed forms should be sent to the Regional Director of Health Services at the applicable Marine Operations Center. The NHSQ and Tuberculosis Screening Document should reach the Health Services Office no later than 4 weeks prior to the start of the project to allow time for the participant to obtain and submit additional information should health services require it, before clearance to sail can be granted. Please contact MOC Health Services with any questions

regarding eligibility or completion of either form. Ensure to fully complete each form and indicate the ship or ships the participant will be sailing on. The participant will receive an email notice when medically cleared to sail if a legible email address is provided on the NHSQ.

The participant can mail, fax, or email the forms to the contact information below. Participants should take precautions to protect their Personally Identifiable Information (PII) and medical information and ensure all correspondence adheres to DOC guidance (http://ocio.os.doc.gov/ITPolicyandPrograms/IT_Privacy/PROD01_008240).

The only secure email process approved by NOAA is [Accellion Secure File Transfer](#) which requires the sender to setup an account. [Accellion's Web Users Guide](#) is a valuable aid in using this service, however to reduce cost the DOC contract doesn't provide for automatically issuing full functioning accounts. To receive access to a "Send Tab", after your Accellion account has been established send an email from the associated email account to accellionAlerts@doc.gov requesting access to the "Send Tab" function. They will notify you via email usually within 1 business day of your approval. The "Send Tab" function will be accessible for 30 days.

Contact information:

Regional Director of Health Services
Marine Operations Center – Pacific
2002 SE Marine Science Dr.
Newport, OR 97365
Telephone 541-867-8822
Fax 541-867-8856
Email MOP.Health-Services@noaa.gov

Prior to departure, the Chief Scientist must provide an electronic listing of emergency contacts to the Executive Officer for all members of the scientific party, with the following information: contact name, address, relationship to member, and telephone number.

C. Shipboard Safety

Hard hats are required when working with suspended loads. Work vests are required when working near open railings and during small boat launch and recovery operations. Hard hats and work vests will be provided by the ship when required.

Wearing open-toed footwear or shoes that do not completely enclose the foot (such as sandals or clogs) outside of private berthing areas is not permitted. At the discretion of the ship CO, safety shoes (i.e. steel or composite toe protection) may be required to participate in any work dealing with suspended loads, including CTD deployment and recovery. The ship does not provide safety-toed shoes/boots. The ship's Operations Officer should be consulted by the Chief Scientist to ensure members of the scientific party report aboard with the proper attire.

D. Communications

A progress report on operations prepared by the Chief Scientist may be relayed to the program office. Sometimes it is necessary for the Chief Scientist to communicate with another vessel, aircraft, or shore facility. Through various means of communications, the ship can usually

accommodate the Chief Scientist. Special radio voice communications requirements should be listed in the project instructions. The ship's primary means of communication with the Marine Operations Center is via email and the Very Small Aperture Terminal (VSAT) link. Standard VSAT bandwidth at 128kbs is shared by all vessels staff and the science team at no charge. Increased bandwidth in 30 day increments is available on the VSAT systems at increased cost to the scientific party. If increased bandwidth is being considered, program accounting is required and it must be arranged through the ship's Commanding Officer at least 30 days in advance.

E. IT Security

Any computer that will be hooked into the ship's network must comply with the *OMAO Fleet IT Security Policy* 1.1 (November 4, 2005) prior to establishing a direct connection to the NOAA WAN. Requirements include, but are not limited to:

- (1) Installation of the latest virus definition (.DAT) file on all systems and performance of a virus scan on each system.
- (2) Installation of the latest critical operating system security patches.
- (3) No external public Internet Service Provider (ISP) connections.

Completion of the above requirements prior to boarding the ship is required.

Non-NOAA personnel using the ship's computers or connecting their own computers to the ship's network must complete NOAA's IT Security Awareness Course within 3 days of embarking.

F. Foreign National Guests Access to OMAO Facilities and Platforms

All foreign national access to the vessel shall be in accordance with NAO 207-12 and RADM De Bow's March 16, 2006 memo (<http://deemedexports.noaa.gov>). National Marine Fisheries Service personnel will use the Foreign National Registration System (FNRS) to submit requests for access to NOAA facilities and ships. The Departmental Sponsor/NOAA (DSN) is responsible for obtaining clearances and export licenses and for providing escorts required by the NAO. DSNs should consult with their designated Line Office Deemed Export point of contact to assist with the process.

Full compliance with NAO 207-12 is required.

Responsibilities of the Chief Scientist:

1. Provide the Commanding Officer with the email generated by the Servicing Security Office granting approval for the foreign national guest's visit. (For NMFS-sponsored guests, this email will be transmitted by FNRS.) This email will identify the guest's DSN and will serve as evidence that the requirements of NAO 207-12 have been complied with.
2. Escorts – The Chief Scientist is responsible to provide escorts to comply with NAO 207-12 Section 5.10, or as required by the vessel's DOC/OSY Regional Security Officer.
3. Ensure all non-foreign national members of the scientific party receive the briefing on Espionage Indicators (NAO 207-12 Appendix A) at least annually or as required by the Servicing Security Office.

4. Export Control - Ensure that approved controls are in place for any technologies that are subject to Export Administration Regulations (EAR).

The Commanding Officer and the Chief Scientist will work together to implement any access controls necessary to ensure no unlicensed export occurs of any controlled technology onboard regardless of ownership.

Responsibilities of the Commanding Officer:

1. Ensure only those foreign nationals with DOC/OSY clearance are granted access.
2. Deny access to OMAO platforms and facilities by foreign nationals from countries controlled for anti-terrorism (AT) reasons and individuals from Cuba or Iran without written approval from the Director of the Office of Marine and Aviation Operations and compliance with export and sanction regulations.
3. Ensure foreign national access is permitted only if unlicensed deemed export is not likely to occur.
4. Ensure receipt from the Chief Scientist or the DSN of the FNRS or Servicing Security Office email granting approval for the foreign national guest's visit.
5. Ensure Foreign Port Officials, e.g., Pilots, immigration officials, receive escorted access in accordance with maritime custom to facilitate the vessel's visit to foreign ports.
6. Export Control - 8 weeks in advance of the project, provide the Chief Scientist with a current inventory of OMAO controlled technology onboard the vessel and a copy of the vessel Technology Access Control Plan (TACP). Also notify the Chief Scientist of any OMAO-sponsored foreign nationals that will be onboard while program equipment is aboard so that the Chief Scientist can take steps to prevent unlicensed export of Program controlled technology. The Commanding Officer and the Chief Scientist will work together to implement any access controls necessary to ensure no unlicensed export occurs of any controlled technology onboard regardless of ownership.
7. Ensure all OMAO personnel onboard receive the briefing on Espionage Indicators (NAO 207-12 Appendix A) at least annually or as required by the Servicing Security Office.

Responsibilities of the Foreign National Sponsor:

1. Export Control - The foreign national's sponsor is responsible for obtaining any required export licenses and complying with any conditions of those licenses prior to the foreign national being provided access to the controlled technology onboard regardless of the technology's ownership.
2. The DSN of the foreign national shall assign an on-board Program individual, who will be responsible for the foreign national while on board. The identified individual must be a U.S. citizen and a NOAA or DOC employee. According to DOC/OSY, this requirement cannot be altered.
3. Ensure completion and submission of Appendix C (Certification of Conditions and Responsibilities for a Foreign National

IX. Appendices

All Appendices are attached below, specific names for files are in italics.

1. Cruise plan (*201710_Shimada_Send_Cruise_plan_V4.pdf*)

2. CCE1-10 mooring diagram to be recovered (*CCE1_10_deployed_dwg.pdf*)
3. CCE1-11 mooring diagram to be deployed (*CCE1_11_dwg.pdf*)
4. CCE1 Assets Map (*plot_map_cce1_pos04.pdf*)
5. Surface Buoy PATON (*CG_2554_CCE1.pdf*)
6. Deep HARP Mooring diagram to be recovered (*DEEP_HARP_MOORING_dwg.pdf*)
7. CORC3-02 mooring diagram to be recovered (*CORC3_02_deployed_dwg.pdf*)
8. CORC3-03 mooring diagram to be deployed (*CORC3_03_sphere_dwg.pdf*)
9. CORC3 Asset Map (*CORC3_asset_map.pdf*)
10. 43 Fathom Bank mooring diagram to be recovered (*43fathom-1_deployed_dwg.pdf*)
11. 43 Fathom Bank-2 mooring diagram to be deployed (*43fathom-2_dwg.pdf*)
12. Surface Buoy PATON (*CG_2554_43_Fathom.pdf*)
13. NOAA PMEL Hydrophone Mooring (*NRS05 CINMS.pdf*)
14. Main Deck layout plan (*CCE1_CORC3_43FB_Deckplan.pdf*)
15. Deck load (*CCE1_CORC3_43Fathom_deckweights_2017.pdf*)
16. Cruise Participants (*CCE1CORC4_participants_2017.pdf*)
17. Mooring Operations Plans (*Mooring Operations.pdf*)
18. Dragging Operations Plan (*Dragging operations plan 2017 for CORC3.pdf*)
19. HAZMAT list (*CCE1_CORC3_FTFB_Hazmat_2017_Final.pdf*)

Cruise Plan for CCE1, CCE HARP, CORC3 & FTFB cruise 2017

RV Shimada

0800 departure / 1600 arrival = 16hr time loss

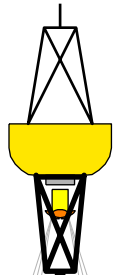
From	To
1-Nov-2017 8:00	8-Nov-2017 17:30

Time start	Time end	hours (hh:mm)	Activity	Starting point	End Point	Distance in nautical miles	transit (hrs) @10 knots
1-Nov-2017 8:00	1-Nov-2017 8:00		Depart 10th Ave Marine Terminal, San Diego				
1-Nov-2017 8:00	1-Nov-2017 10:00	02:00	Harbor transit				1
1-Nov-2017 10:00	1-Nov-2017 16:00	06:00	Transit to CCE via CTD Site1	32.7166N, 117.175W	32N 41.894', 118W 11.875'W	60	6.0
1-Nov-2017 16:00	1-Nov-2017 18:00	02:00	CTD Cast 1 pre-deployment calibration cast to 1000m for instrument calibration with water samples (S). Attach 4x MCP-1000 & 4 acoustic release to CTD rosette				
1-Nov-2017 18:00	1-Nov-2017 21:00	03:00	Continue transit to CCE1 site	32N 41.894', 118W 11.875'W	32° 48.589'N, 118° 41.106'W	30	3.0
1-Nov-2017 21:00	1-Nov-2017 23:00	02:00	CTD Cast2 pre-deployment calibration cast to 50m for instrument calibration with water samples (O, S, chl, nuts, C). Attach Biopackage Cage, 1 Seacat w/ 2 FLNTUS, & 1 Seaphox to CTD rosette.				
1-Nov-2017 23:00	2-Nov-2017 8:00	09:00	Continue transit to CCE1 site	32N 50.55', 119W 7.75'	33N 8.671'N, 120W 44.322'	90	9
2-Nov-2017 8:00	2-Nov-2017 10:00	02:00	CTD Cast 3 pre-deployment calibration casts to 2000m for instrument calibration water samples (salinity, O). Attach 20 MC to CTD Rosette.				
2-Nov-2017 10:00	2-Nov-2017 20:30	10:30	Continue transit to CCE1 site	33N 8.671'N, 120W 44.322'	33N 31.21', 122W 30.26'	105	10.5
2-Nov-2017 20:30	2-Nov-2017 20:30	00:00	Arrive at CCE1 site				
2-Nov-2017 20:30	3-Nov-2017 3:30	07:00	Downtime (reserve time for extra CTD Casts)				
3-Nov-2017 3:30	3-Nov-2017 5:30	02:00	CCE1 Drift Test				
3-Nov-2017 5:30	3-Nov-2017 17:30	12:00	Deployment of CCE1-11	33N 31.21', 122W 30.26'			
3-Nov-2017 17:30	3-Nov-2017 18:30	01:00	Transit to DEEP HARP Mooring			10	1
3-Nov-2017 18:30	3-Nov-2017 22:30	04:00	Recover CCE1 Deep HARP Mooring	33N28.97', 122W 34.56			
3-Nov-2017 22:30	3-Nov-2017 23:00	00:30	Transit to CTD Cast 4 site			5	0.5
3-Nov-2017 23:00	4-Nov-2017 0:00	01:00	CTD Cast 4 calibration cast to 1000m between CCE1 buoys with water samples (O, S, chl, nuts, C)				
4-Nov-2017 0:00	4-Nov-2017 8:00	08:00	Downtime (release buoy at 0700)				
4-Nov-2017 8:00	4-Nov-2017 15:00	07:00	CCE1-10 Recovery	33N 28.81' N, 122W 32.01'			
4-Nov-2017 15:00	4-Nov-2017 16:00	01:00	CTD Cast 5 post-deployment calibration casts to 500m for instrument calibration near CCE1-11 Buoy; water samples (S, chl). Attach 1 seacat w/ FLNTUS to CTD Rosette	33N 31.21', 122W 30.26'			
4-Nov-2017 16:00	4-Nov-2017 16:00	00:00	Deploy SOLO Float				
4-Nov-2017 16:00	4-Nov-2017 21:00	05:00	Transit to PMEL Hydrophone NRS05 Mooring	33N 31.21', 122W 30.26'	33N 39.220', 121W 32.584'	50	5
4-Nov-2017 21:00	4-Nov-2017 23:00	02:00	CTD Cast 6 post-deployment calibration cast to 50m with water samples (O, S, chl, nuts, C). Attach Biopackage Cage, 1 Seacat w/ 1 FLNTUS, & 1 Seaphox to CTD rosette.	33N 39.220', 121W 32.584'			
4-Nov-2017 23:00	5-Nov-2017 9:00	10:00	Continue transit to PMEL Hydrophone Mooring	33N 39.220', 121W 32.584'	33N 54', 119W 34.80'	100	10
5-Nov-2017 9:00	5-Nov-2017 9:00	00:00	Arrive at PMEL Hydrophone Mooring	33N 54', 119W 34.80'			
5-Nov-2017 9:00	5-Nov-2017 13:00	04:00	Recover & Deploy PMEL Hydrophone Mooring				
5-Nov-2017 13:00	6-Nov-2017 0:00	11:00	Transit to 43 fathom bank	33N 54', 119W 34.80'	32N 39.01', 117W 58.32'	110	10
6-Nov-2017 0:00	6-Nov-2017 4:00	04:00	Recover 43 Fathom Bank Mooring	32N 39.01', 117W 58.32'			
6-Nov-2017 4:00	6-Nov-2017 8:00	04:00	Transit to CORC3 Site	32N 39.01', 117W 58.32'	32N 18.50', 119W 1.77'	40	4
6-Nov-2017 8:00	6-Nov-2017 9:00	01:00	CTD Cast 7 post-deployment calibration casts to 180m for instrument calibration; water samples (S). Attach 2 old seacats				
6-Nov-2017 9:00	6-Nov-2017 10:00	01:00	CTD Cast 8 post-deployment calibration casts to 50m for instrument calibration; water samples (S, O, C). Attach Seaphox to CTD Rosette				
6-Nov-2017 10:00	6-Nov-2017 12:00	02:00	Continue transit to CORC3 Site			20	2
6-Nov-2017 12:00	6-Nov-2017 12:00	00:00	Arrive at CORC3 Site	32N 18.5', 119W 01.77'			
6-Nov-2017 12:00	6-Nov-2017 16:00	04:00	Recover CORC3-02 Mooring	32N 18.50', 119W 1.77'			
6-Nov-2017 16:00	6-Nov-2017 18:00	02:00	Prep for CORC3 & 43 Fathom Bank moorings				
6-Nov-2017 18:00	6-Nov-2017 22:00	04:00	Deploy CORC3-03 Mooring	32N 18.50', 119W 1.77'			
6-Nov-2017 22:00	6-Nov-2017 23:00	01:00	CORC3-03 Mooring Triangulation and mooring communication				
6-Nov-2017 23:00	7-Nov-2017 3:00	04:00	CORC3 PIES communication	32N 18.30', 119W 2.04'			
7-Nov-2017 3:00	7-Nov-2017 23:00	20:00	CORC3-01 dragging operations	32N 18.09', 119W 01.83'			
7-Nov-2017 23:00	8-Nov-2017 1:00	02:00	Transit to 43 fathom bank	32N 18.50', 119W 1.77'	32N 39.099', 117W 58.336'	20	2
8-Nov-2017 1:00	8-Nov-2017 3:00	02:00	CTD Cast 9 post-deployment calibration casts to 2000m; water samples (S); Attach 16 MC				
8-Nov-2017 3:00	8-Nov-2017 7:00	04:00	Continue transit to 43 fathom bank			40	4
8-Nov-2017 7:00	8-Nov-2017 7:00	00:00	Arrive at 43 Fathom bank				
8-Nov-2017 7:00	8-Nov-2017 8:00	01:00	Recover WBAT Lander	32N 39.099', 117W 58.336'			
8-Nov-2017 8:00	8-Nov-2017 10:30	02:30	Deploy 43 Fathom Bank Mooring	32N 39.01', 117W 58.32'			
8-Nov-2017 10:30	8-Nov-2017 11:30	01:00	Deploy WBAT bottom Lander, triangulate position	32N 39.099', 117W 58.336'			
8-Nov-2017 11:30	8-Nov-2017 15:30	04:00	Transit to San Diego			40	4
8-Nov-2017 15:30	8-Nov-2017 17:30	02:00	Harbor transit				

CCE1-10 Surface Buoy
Deployment 08-Oct-2016 33N00.000, 122W00.000 Recovery ??-??-2017

Source: 22-Feb-2017 17:23:59, ...Paul's m-files\CCE\CCE1-10\cce1_10_old_WBAT_deploy.cfg
 Author: 22-Feb-2017 17:24:19, pchua@(PCWIN64)

depth (incl. stretch)	component	S/N description	rope # & Length	Distance from Upper / Lower rope end	in/out of water comment
33N00.00, 122W00.00			!!! Check for Cotter Pins !!!		08-Oct-2016 ??-??-2017

		MELO 300034012197210 Yellow Light VAISALA E1640009 AIS Transmitter OCR #228 Shutter Controller #09889		Assembled Buoyancy 2597kg UTC <i>Deployed Tower to radiometer cage in a few</i>	
-0 m	Seaward Buoy	LR-ADCP #24472 ACOM SN _____ MapCO2 # SeapHet #345 PMEL SBE16+V2 #50054 FLNTUS #2400 Optode #1126		upper Seawater Ground bypass up insulated termination	
9 m	MC-IM	MC#6979 /ID79	chain 1.3m 5/8" MR PL 3t 3/4" #1 35m 3/8" ins	AS 8t 1" AS 5t 3/4" AS 5t 3/4" AS 5t 3/4" 6.0 29.0	
19 m	SC-IM	SeaCat IM #4598 /ID 98 FLNTUS #3719		16.0 19.0	
29 m	MC-IM	MC#6982 /ID 82		26.0 9.0	
39 m	Frame	Controller #15588 FLNTUS #1167 Suna #726 SeapHOx 029, Pump MC #12230	#1 bottom PL 3t 3/4" PL 3t 3/4" PL 3t 3/4" #2 38m 3/8" ins	AS 5t 3/4" AS 5t 3/4" AS 3t 5/8" AS 5t 3/4" AS 5t 3/4" insulated termination insulated termination	
60 m	MC-IM	MC#6988 /ID 88		19.0 19.0	
75 m	MC-IM	MC#6989 /ID 89		34.0 4.0	
80 m	Frame	OCR #278 Shutter Controller #09533	#2 bottom PL 3t 3/4" PL 3t 3/4" PL 3t 3/4" #3 70m 3/8" ins	AS 5t 3/4" AS 3t 5/8" AS 3t 5/8" AS 5t 3/4" AS 5t 3/4" insulated termination insulated termination	<i>All to surface buoy in water at</i>
150 m	MC-IM	MC#5950 /ID95		69.0 1.0	15:50
301 m	MC-IM	MC#4825 /ID25	#3 bottom PL 3t 3/4" #4 351m 3/8" ins	AS 5t 3/4" AS 5t 3/4" insulated termination	Ind. com test ok 16:01

CCE1-10 Surface Buoy
Deployment 08-Oct-2016 33N00.000, 122W00.000 Recovery ??-??-2017

Source: 22-Feb-2017 17:23:59, ...Paul's m-files\CCE\CCE1-10\cce1_10_old_WBAT_deploy.cfg
 Author: 22-Feb-2017 17:24:19, pchua@(PCWIN64)

depth (incl. stretch)	component	S/N description	rope # & Length	Distance from Upper / Lower rope end	in/out of water comment
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33N00.00, 122W00.00 !!! Check for Cotter Pins !!! 08-Oct-2016 ??-??-2017

			#4 bottom PL 3t 3/4"	AS 5t 3/4" AS 5t 3/4"	
504 m	Frame	WBAT NOAA NMFS SN			16:36
			PL 3t 3/4" PL 3t 3/4"	AS 5t 3/4" AS 5t 3/4"	
509 m	MC-IM	MC wODO#14898 /ID48	#5 500m 3/8" ins	4.0 496.0	
755 m	MC-IM	MC#5105 /ID6		250.0 250.0	16:51
1000 m	MC-IM	MCp#7995 /ID75, 1000m		495.0 5.0	
			#5 bottom PL 3t 3/4" Swivel 5t PL 3t 3/4"	AS 5t 3/4" AS 5t 3/4" AS 5t 3/4" AS 5t 3/4"	17:40
			#6 1110m 8xNylon-3/4"		Inductive Com test ok, Buoy Com test Ok
2214 m	MC-IM	MC#5122 /ID 22	#7 2m 3/8" ins	1.0 1.0	18:14
			#7 bottom PL 3t 3/4" PL 3t 3/4"	AS 5t 3/4" AS 5t 3/4"	
			#8 1560m 8xNylon-3/4"		
3901 m	40 17" Float (42m)		chain 4.0m PL 3t 3/4" MR PL 3t 3/4"	AS 5t 3/4" AS 3t 5/8" AS 3t 5/8" AS 5t 3/4"	20:54
			PL 3t 3/4"	AS 3t 5/8" AS 3t 5/8"	Round y-r-y-y
			PL 3t 3/4"	AS 3t 5/8" AS 3t 5/8"	Round yellow
			PL 3t 3/4"	AS 3t 5/8" AS 3t 5/8"	Round yellow
			PL 3t 3/4"	AS 3t 5/8" AS 3t 5/8"	Round yellow
			PL 3t 3/4"	AS 3t 5/8" AS 3t 5/8"	Keg Red
			PL 3t 3/4"	AS 3t 5/8" AS 3t 5/8"	Keg yellow
			PL 3t 3/4"	AS 3t 5/8" AS 3t 5/8"	Keg yellow
			PL 3t 3/4"	AS 3t 5/8" AS 3t 5/8"	Keg yellow
			PL 3t 3/4"	AS 3t 5/8" AS 3t 5/8"	Keg yellow
			PL 3t 3/4"	AS 3t 5/8" AS 3t 5/8"	Keg yellow
3949 m	MCP-IM	MC#10606 Ocean Sites	chain 4.0m MR PL 3t 3/4"	AS 3t 5/8" AS 3t 5/8" AS 5t 3/4"	22:01
			#9 5m 3/8" ins	4.0 1.0	#41854: RX 8.5 / TX 12.0
3952 m	2 AR Benthos	#41854	#9 bottom PL 3t 3/4" Swivel 5t PL 3t 3/4"	AS 5t 3/4" AS 5t 3/4" AS 5t 3/4"	#41854: Enable A / Release E
		#47454	chain 1.0m MR 1/2" chain	AS 5t 3/4" AS 5t 3/4"	22:01
			EL 5t 3/4"	AS 6t 5/8" AS 6t 5/8"	#47454: RX 8.5 / TX 12.0
			#10 20m Nylon-1"	AS 6t 5/8" AS 5t 3/4"	#47454: Enable B / Release D
3980 m	Anchor		chain 4.0m 3/4" MR EL 5t 3/4"	AS 5t 3/4"	22:38
	2500 kg dry 2182 kg wet			5 wheels, long post	

drop: 33N 28.81',
122W 32.01' 33



CCE1-10 Surface Buoy

Deployment 08-Oct-2016 33N00.000, 122W00.000 Recovery ??-??-2017

Source: 22-Feb-2017 17:23:59, ...Paul's m-files\CCE\CCE1-10\cce1_10_old_WBAT_deploy.cfg

Author: 22-Feb-2017 17:24:19, pchua@(PCWIN64)

Element List

Code	Count	Description	Label	Weight in air	/	water

Components						
32	26	5/8" BTAS 3.2t	AS 3t 5/8"	19.8 kg		17.2 kg
33	34	3/4" BTAS 4.7t	AS 5t 3/4"	41.8 kg		36.3 kg
34	3	7/8" BTAS 6.5t	AS 6t s7/8"	5.4 kg		4.7 kg
35	1	1" BTAS 8t	AS 8t 1"	2.9 kg		2.5 kg
53	30	3/4" pear link 2.7t	PL 3t 3/4"	25.8 kg		22.2 kg
55	1	1" pear link 4.8	PL 5t 1"	2.0 kg		1.7 kg
63	3	3/4" end link 5.4t	EL 5t 3/4"	2.0 kg		1.8 kg
75	1	1" master link 11t	ML 11t 1"	2.6 kg		2.3 kg
94	2	SS Swivel 5t	Swivel 5t	12.4 kg		10.7 kg
196	1	Benth-AR DropChain SL 1/2"-4ft	1/2" dropcha	7.8 kg		6.8 kg
274	4	4 17" 204HR serial	HR17-4 seria	384.0 kg		-352.0 kg
284	6	4 17" 204H serial	H17-4 serial	624.0 kg		-528.0 kg
301	3	Instrument Frame	Frame	195.0 kg		135.0 kg
331	1	Seacat 16plus IM	SC-IM	10.7 kg		9.8 kg
336	10	MicroCAT IM37	MC-IM	38.0 kg		28.0 kg
337	1	MicroCAT IM37 + pressure	MCP-IM	3.8 kg		2.8 kg
421	1	Buoy + Bridle + RDI-WH 300	Seaward Buoy	600.0 kg		-0.0 kg
476	1	Dual AR Benthos 865 A	2 AR Benthos	75.0 kg		62.0 kg

Components weight:				2053.0 kg		-536.2 kg

Ropes						
104	1001m	3/8" 3x19 NILSPIN insulated	3/8" ins	446.4 kg		317.3 kg
112	2670m	8 strand Nylon 3/4"	8xNylon-3/4"	571.4 kg		69.4 kg
113	20m	Samson Nystroon 1"	Nystroon-1"	10.1 kg		2.0 kg
181	8m	Mooring chain 1/2", 2.7t	1/2" MR	28.0 kg		24.3 kg
182	1m	Mooring chain 5/8", 4.0t	5/8" MR	6.5 kg		5.7 kg
183	4m	Mooring chain 3/4", 6.0t	3/4" MR	30.4 kg		26.4 kg

Ropes weight:				1092.8 kg		445.1 kg

Summary						
				Components		2053.0 kg -536.2 kg
				Ropes		1092.8 kg 445.1 kg
520	1	Anchor variable	Anchor	2500.0 kg		2181.5 kg

Mooring total weight:				5645.8 kg		2090.4 kg

Safe Clump Anchor Weight (no currents): 1483kg wet (1699kg dry)

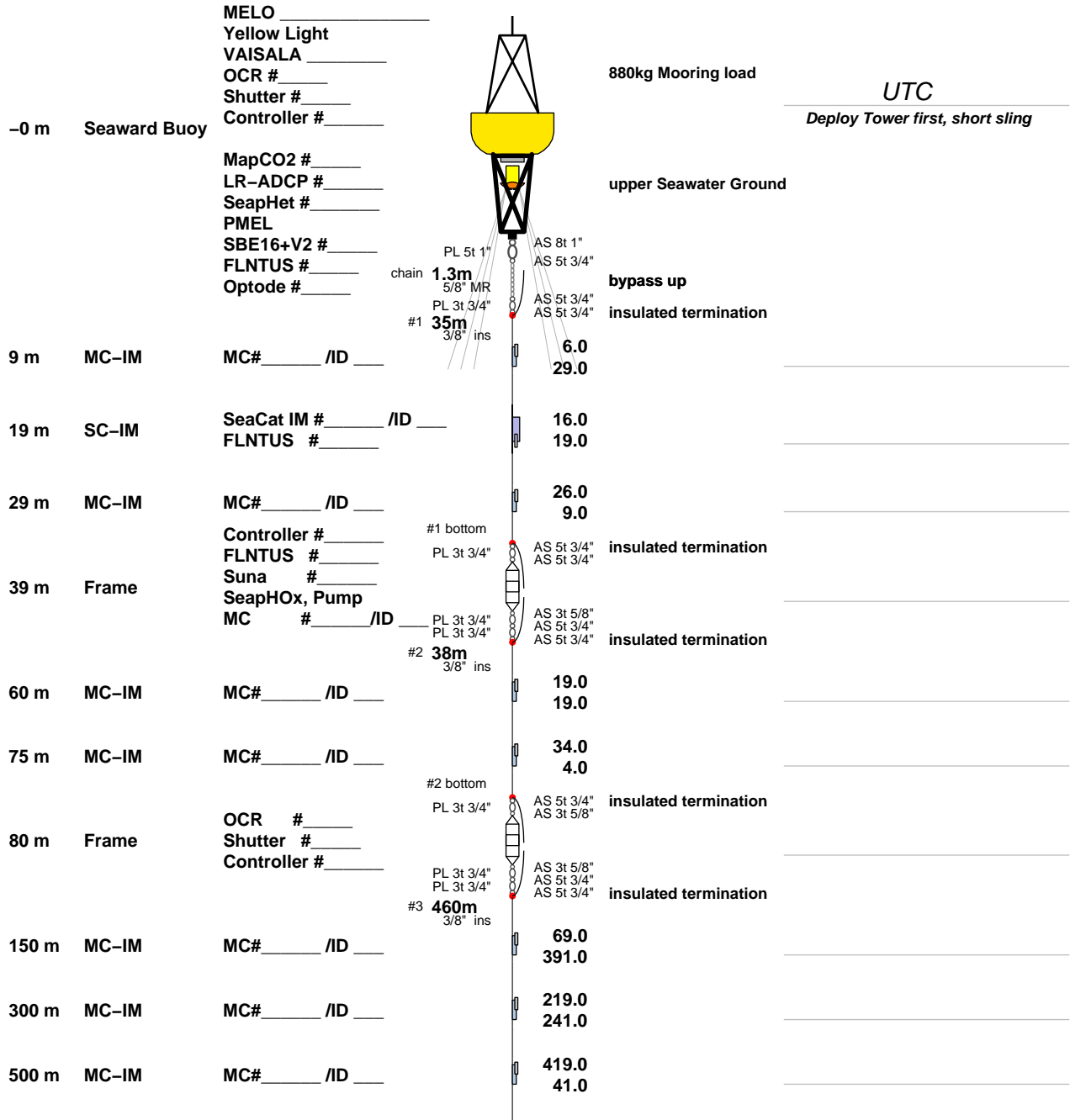
CCE1-11 Surface Buoy

Deployment ___-NOV-2017 33N00.000, 122W00.000 Recovery ___-___-2018

Source: 08-Aug-2017 12:03:28, ...Projects\Paul's m-files\CCE\CCE1-11\cce1_11.cfg
 Author: 08-Aug-2017 12:08:10, pchua@(PCWIN64)

depth (incl. stretch)	component	S/N description	rope # & Length	Distance from Upper / Lower rope end	in/out of water comment
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33N00.00, 122W00.00 !!! Check for Cotter Pins !!! ___-NOV-2017 ___-___-2018



CCE1-11 Surface Buoy
 Deployment ___-NOV-2017 33N00.000, 122W00.000 Recovery ___-___-2018

Source: 08-Aug-2017 12:03:28, ...Projects\Paul's m-files\CCE\CCE1-11\cce1_11.cfg
 Author: 08-Aug-2017 12:08:10, pchua@(PCWIN64)

depth (incl. stretch)	component	S/N description	rope # & Length	Distance from Upper / Lower rope end	in/out of water comment
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33N00.00, 122W00.00 **!!! Check for Cotter Pins !!!** **___-NOV-2017 ___-___-2018**

542 m	Frame	WBAT NOAA NMFS SN	#3 bottom PL 3t 3/4"	AS 5t 3/4" AS 5t 3/4"	
752 m	MC-IM	MC# _____ /ID _____	#4 460m 3/8" Ins	AS 5t 3/4" AS 5t 3/4" AS 5t 3/4"	208.0 252.0
1002 m	MC-IM	MC# _____ /ID _____	#4 bottom PL 3t 3/4" Swivel 5t PL 3t 3/4"	AS 5t 3/4" AS 5t 3/4" AS 5t 3/4" AS 5t 3/4"	458.0 2.0
			#5 1110m 8xNylon-3/4"		insulated termination lower Seawater Ground
2215 m	MC-IM	MC# _____ /ID _____	#6 2m 3/8" ins	AS 5t 3/4" AS 5t 3/4"	1.0 1.0
3905 m	40 17" Float (42m)		#7 1560m 8xNylon-3/4"	AS 5t 3/4" AS 5t 3/4"	
			chain 5.0m 1/2" MR PL 3t 3/4"	AS 5t 3/4" AS 5t 3/4" AS 5t 3/4" AS 5t 3/4"	
			PL 3t 3/4"	AS 3t 5/8" AS 3t 5/8"	
			PL 3t 3/4"	AS 3t 5/8" AS 3t 5/8"	
			PL 3t 3/4"	AS 3t 5/8" AS 3t 5/8"	
			PL 3t 3/4"	AS 3t 5/8" AS 3t 5/8"	
			PL 3t 3/4"	AS 3t 5/8" AS 3t 5/8"	
			PL 3t 3/4"	AS 3t 5/8" AS 3t 5/8"	
			PL 3t 3/4"	AS 3t 5/8" AS 3t 5/8"	
			PL 3t 3/4"	AS 3t 5/8" AS 3t 5/8"	
			PL 3t 3/4"	AS 3t 5/8" AS 3t 5/8"	
			PL 3t 3/4"	AS 3t 5/8" AS 3t 5/8"	
3949 m	MCP-IM	MC# _____ Ocean Sites	#8 5m 3/8" ins	AS 5t 3/4" AS 5t 3/4"	4.0 1.0
			#8 bottom PL 3t 3/4"	AS 5t 3/4" AS 5t 3/4"	# _____ : RX _____ / TX _____
			Swivel 5t PL 3t 3/4"	AS 5t 3/4" AS 5t 3/4"	# _____ : Enable _____ / Release _____
3952 m	2 AR Benthos		chain 1.0m 1/2" MR	AS 6t 5/8" AS 6t 5/8"	# _____ : RX _____ / TX _____
			#9 20m Nystro-1" EL 5t 3/4"	AS 6t 5/8" AS 6t 5/8"	# _____ : Enable _____ / Release _____
			chain 4.0m 3/4" MR	AS 5t 3/4"	5 wheels, long post

drop: 33N_____, 122W_____
 median: 33N_____, 122W_____



CCE1-11 Surface Buoy

Deployment ___-NOV-2017 33N00.000, 122W00.000 Recovery ___-___-2018

Source: 08-Aug-2017 12:03:28, ...\Projects\Paul's m-files\CCE\CCE1-11\cce1_11.cfg

Author: 08-Aug-2017 12:08:10, pchua@(PCWIN64)

Element List

Code	Count	Description	Label	Weight in air	/	water

Components						
32	24	5/8" BTAS 3.2t	AS 3t 5/8"	18.2 kg		15.9 kg
33	32	3/4" BTAS 4.7t	AS 5t 3/4"	39.4 kg		34.2 kg
34	3	7/8" BTAS 6.5t	AS 6t s7/8"	5.4 kg		4.7 kg
35	1	1" BTAS 8t	AS 8t 1"	2.9 kg		2.5 kg
53	28	3/4" pear link 2.7t	PL 3t 3/4"	24.1 kg		20.7 kg
55	1	1" pear link 4.8	PL 5t 1"	2.0 kg		1.7 kg
63	2	3/4" end link 5.4t	EL 5t 3/4"	1.3 kg		1.2 kg
75	1	1" master link 11t	ML 11t 1"	2.6 kg		2.3 kg
94	2	SS Swivel 5t	Swivel 5t	12.4 kg		10.7 kg
196	1	Benth-AR DropChain SL 1/2"-4ft	1/2" dropcha	7.8 kg		6.8 kg
284	10	4 17" 204H serial	H17-4 serial	1040.0 kg		-880.0 kg
301	3	Instrument Frame	Frame	195.0 kg		135.0 kg
331	1	Seacat 16plus IM	SC-IM	10.7 kg		9.8 kg
336	10	MicroCAT IM37	MC-IM	38.0 kg		28.0 kg
337	1	MicroCAT IM37 + pressure	MCP-IM	3.8 kg		2.8 kg
421	1	Buoy + Bridle + RDI-WH 300	Seaward Buoy	600.0 kg		-0.0 kg
476	1	Dual AR Benthos 865 A	2 AR Benthos	75.0 kg		62.0 kg

				Components weight:	2078.6 kg	-541.7 kg

Ropes						
104	1000m	3/8" 3x19 NILSPIN insulated	3/8" ins	446.0 kg		317.0 kg
112	2670m	8 strand Nylon 3/4"	8xNylon-3/4"	571.4 kg		69.4 kg
113	20m	Samson Nystron 1"	Nystron-1"	10.1 kg		2.0 kg
181	5m	Mooring chain 1/2", 2.7t	1/2" MR	17.5 kg		15.2 kg
182	1m	Mooring chain 5/8", 4.0t	5/8" MR	6.5 kg		5.7 kg
183	4m	Mooring chain 3/4", 6.0t	3/4" MR	30.4 kg		26.4 kg

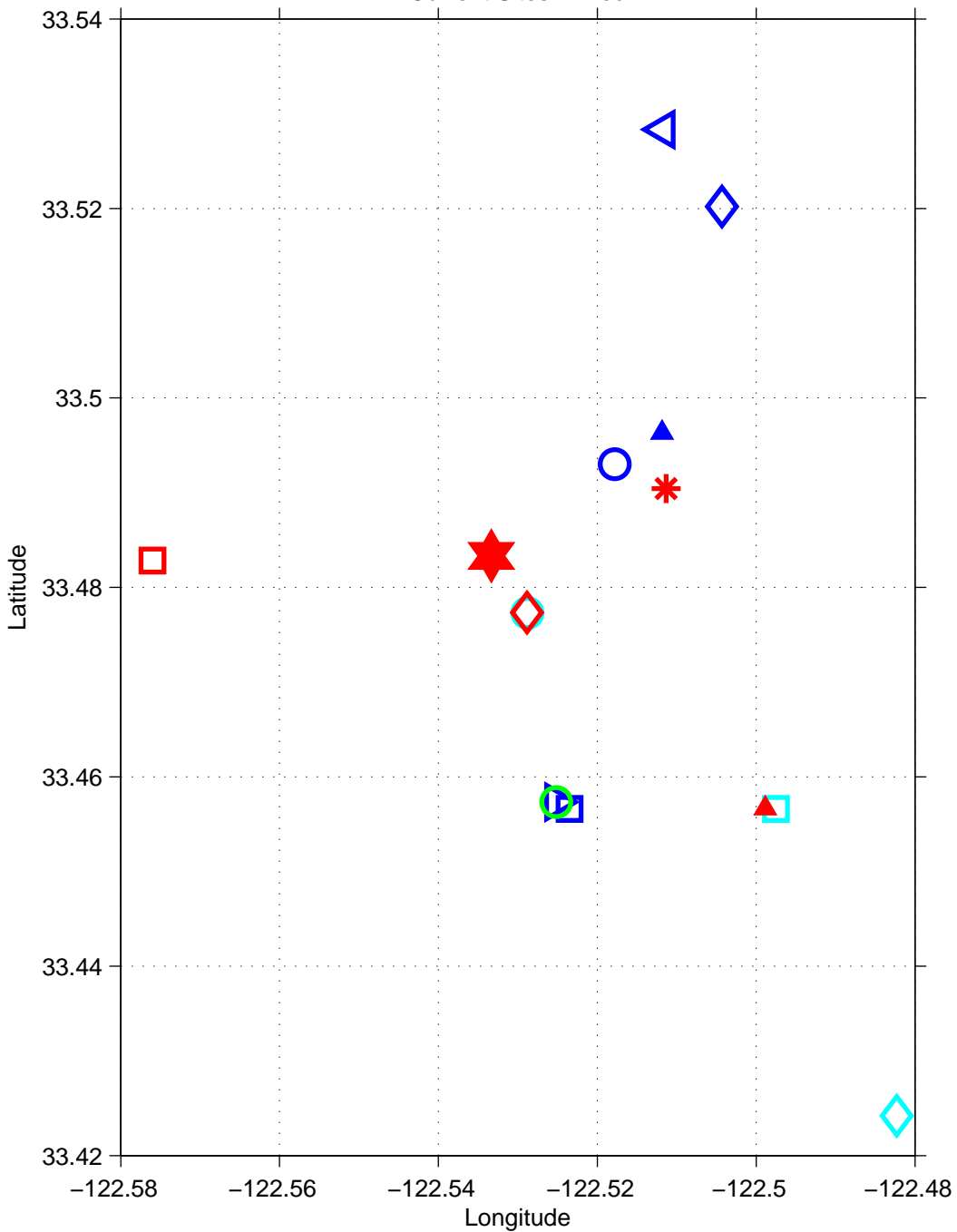
				Ropes weight:	1081.9 kg	435.7 kg
















Summary						
				Components	2078.6 kg	-541.7 kg
				Ropes	1081.9 kg	435.7 kg
520	1	Anchor variable	Anchor	2500.0 kg		2181.5 kg

				Mooring total weight:	5660.5 kg	2075.5 kg

Safe Clump Anchor Weight (no currents): 1507kg wet (1727kg dry)

CCE1 Assets as of 07/2017
Current Sites in Red



-  CCE1-01/02:
33° 28.64' N
122° 31.73' W
-  CCE1-03:
33° 25.45' N
122° 28.94' W
-  CCE1-04:
33° 27.40' N
122° 29.85' W
-  CCE1-05:
33° 29.58' N
122° 31.07' W
-  CCE1-06 fragments:
33° 29.43' N
122° 30.68' W
-  CCE1-07 until 7/2014:
33° 31.21' N
122° 30.26' W
-  CCE1-07 after 7/2014:
33° 27.40' N
122° 31.41' W
-  CCE1-08:
33° 31.70' N
122° 30.70' W
-  CCE1-09:
33° 27.44' N
122° 31.51' W
-  CCE1-10:
33° 28.64' N
122° 31.73' W
-  PIES 2012-2014:
33° 29.78' N
122° 30.71' W
-  PIES deployed 11/2015:
33° 27.40' N
122° 29.93' W
-  Deep HARP Mooring:
33° 28.97' N
122° 34.56' W
-  CalCOFI 080.080:
33° 29.00' N
122° 32.00' W
-  CCE1-11 planned for 11/2017:
33° 27.44' N
122° 31.51' W

PRIVATE AIDS TO NAVIGATION APPLICATION

(See attached instructions and copy of Code of Federal Regulations, Title 33, Chap. 1, Part 66)

NO PRIVATE AID TO NAVIGATION MAY BE AUTHORIZED UNLESS A COMPLETED APPLICATION FORM HAS BEEN RECEIVED (14 U.S.C. 83; 33 CFR. 66. 01-5).

1. ACTION REQUESTED FOR PRIVATE AIDS TO NAVIGATION: A. ESTABLISH AND MAINTAIN B. DISCONTINUE C. CHANGE D. TRANSFER OWNERSHIP 2. DATE ACTION TO START: 08/25/2015

3. AIDS WILL BE OPERATED: A. YEAR-ROUND B. TEMPORARILY UNTIL _____ C. SEASONAL FROM _____ TO _____

4. NECESSITY FOR AID (Continue in Block 8)
SCIENTIFIC RESEARCH

5. GENERAL LOCALITY
Offshore CAPE MENDOCINO

6. AUTHORIZING PERMIT FOR THIS STRUCTURE OR BUOY
USACE PERMIT AND/OR STATE PERMIT (Valid Permit Number) NWP-1

FOR DISTRICT COMMANDERS ONLY **7. APPLICANT WILL FILL IN APPLICABLE REMAINING COLUMNS**

LIGHT LIST NUMBER	NAME OF AID	NO. OR LTR (7a)	LIGHT			POSITION (7e)	DEPTH OF WATER (7f)	CANDELA (7g)	FOCAL PLANE HEIGHT (7h)	STRUCTURE	REMARKS (See instructions) (7j)
			FLASH PERIOD (7b)	FLASH LENGTH (7c)	COLOR (7d)					TYPE, COLOR, AND HEIGHT ABOVE GROUND (7i)	
85	Scripps Offshore CCE-1 Research Buoy SIO		4s	.4s	Y	33-31.69 N 122-30.16W	3980m			Yellow disc-shaped buoy with aluminum tower.	2.5 meter yellow sphere w/ 3 meter aluminum tower

8. ADDITIONAL COMMENTS
CHART 18020

9a. NAME AND ADDRESS OF PERSON IN DIRECT CHARGE OF THE AID(S) David Gassier CASPO Department	10a. NAME AND ADDRESS OF PERSON OR CORPORATION AT WHOSE EXPENSE THE AID(S) WILL BE MAINTAINED Scripps Institute of Oceanography University of California San Diego 9500 Gilman Drive 0230 La Jolla, CA 92093-0230	10b. THE APPLICANT AGREES TO SAVE THE COAST GUARD HARMLESS WITH RESPECT TO ANY CLAIM OR CLAIMS THAT MAY RESULT ARISING FROM THE ALLEGED NEGLIGENCE OF THE MAINTENANCE OR OPERATION OF THE APPROVED AID(S).
9b. TELEPHONE NO. 858-534-9413		10c. DATE 08/25/2015
9c. E-MAIL ADDRESS dgassier@ucsd.edu		10d. SIGNATURE AND TITLE OF OFFICIAL SIGNING

FOR USE BY DISTRICT COMMANDER		RECD	DATE APPROVED	SIGNATURE (By direction)
SERIAL NO.	CLASSIFICATION OF AIDS(S)	CHART		
		LNM		

DEEP MOORING HARP SUBSURFACE 4000m
Deployment Oct-2015 Recovery Apr-2016

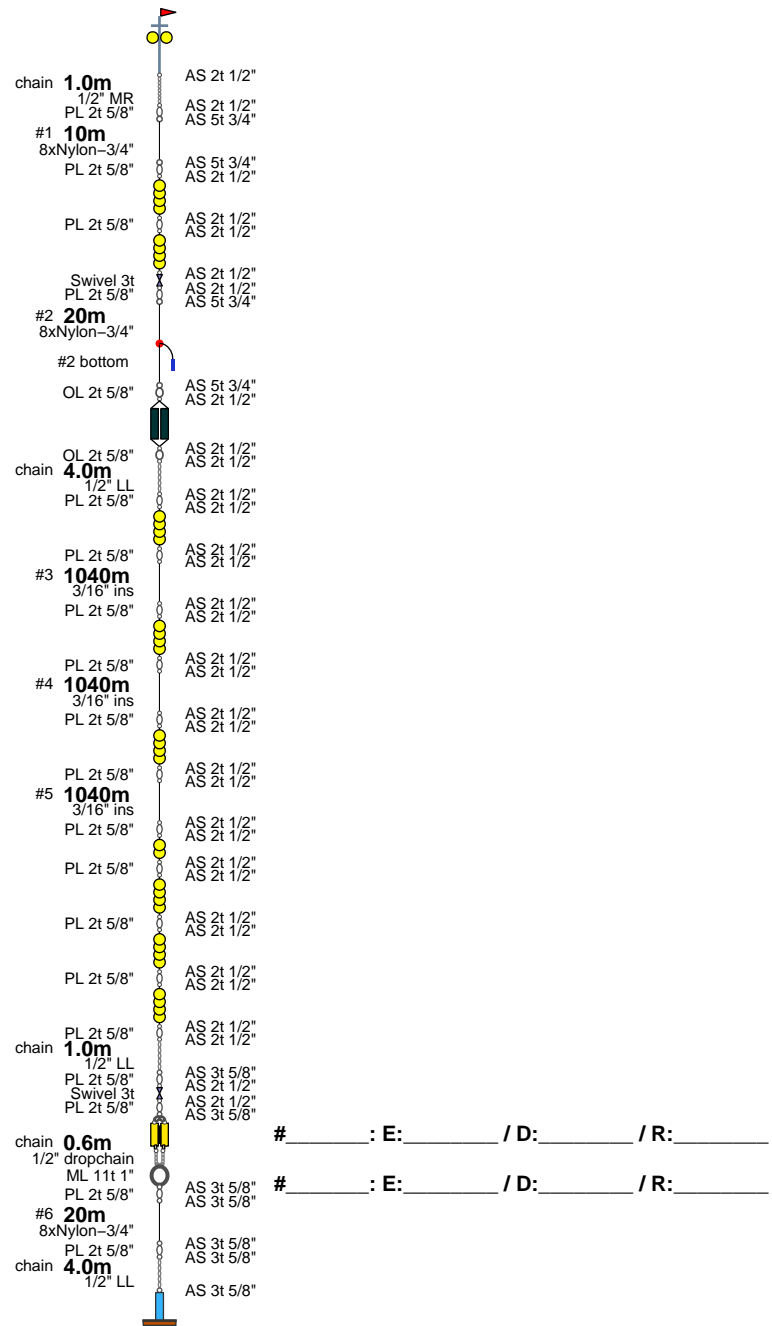
Source: 04-Nov-2016 12:26:38, ...\Paul's m-files\CCE\DEEP_MOORING_HARP\DEEP_MOORING_HARP.cfg
 Author: 04-Nov-2016 12:50:49, pchua@(PCWIN64)

depth (incl. stretch)	component	instruments	rope # & Length	Distance from Upper / Lower rope end
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!!! Check for Cotter Pins !!!

Oct-2015 Apr-2016

		GPS BEACON	
768 m	BE2-frame	Radio Flasher	
783 m	8 17" Float (8m)		
812 m	HARP	HARP Hydrophone	
819 m	4 17" Float (4m)		
1865 m	4 17" Float (4m)		
2910 m	4 17" Float (4m)		
3955 m	14 17" Float (15m)		
3971 m	2 AR ORE	ORE8242 # _____ ORE8242 # _____	# _____ : E: _____ / D: _____ / R: _____ # _____ : E: _____ / D: _____ / R: _____
4000 m	Anchor 650 kg dry 567 kg wet		





DEEP MOORING HARP SUBSURFACE 4000m

Deployment Oct-2015 Recovery Apr-2016

Source: 04-Nov-2016 12:26:38, ...\Paul's m-files\CCE\DEEP_MOORING_HARP\DEEP_MOORING_HARP.cfg

Author: 04-Nov-2016 12:50:49, pchua@(PCWIN64)

Element List

Code	Count	Label	Weight in air	/	water

Components					
31	34	1/2" BTAS 2.0t	12.2 kg		10.6 kg
32	7	5/8" BTAS 3.2t	5.3 kg		4.6 kg
33	4	3/4" BTAS 4.7t	4.9 kg		4.3 kg
42	2	5/8" oval link 1.9t	1.3 kg		1.2 kg
52	19	5/8" pear link 1.9t	9.1 kg		7.9 kg
75	1	1" master link 11t	2.6 kg		2.3 kg
93	2	SS Swivel 3t	6.2 kg		5.3 kg
240	1	2-Benthos 17" - Top Frame	65.0 kg		-38.0 kg
272	1	2 17" 204HR serial	48.0 kg		-44.0 kg
274	8	4 17" 204HR serial	768.0 kg		-704.0 kg
302	1	HARP	105.0 kg		39.0 kg
478	1	Dual AR ORE 8242XS	75.0 kg		60.0 kg
480	1	DropChain 1/2"-4ft	7.8 kg		6.8 kg

Components weight :			1110.6 kg		-643.9 kg

Ropes					
101	3120m	3/16" 3x19 NILSPIN insulated	343.2 kg		240.9 kg
112	50m	8 strand Nylon 3/4"	10.7 kg		1.3 kg
171	9m	Long Lk chain 1/2", 2.9t	27.0 kg		23.5 kg
181	1m	Mooring chain 1/2", 2.7t	3.5 kg		3.0 kg

Ropes weight :			384.4 kg		268.7 kg

Summary					

		Components	1110.6 kg		-643.9 kg
		Ropes	384.4 kg		268.7 kg
520	1	Anchor variable	650.0 kg		567.2 kg

Mooring total weight :			2145.0 kg		192.0 kg

CORC3-02 mooring on shelf

32N18.50', 119W01.77', 800m

By: PC	19-Oct-2016	CORC3_02_A_830m	32N18.50, 119W01.77, 800m
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Source: 19-Oct-2016 13:54:40, ...\Paul's m-files\CORC\Corc3_02\corc3_02_deployed.cfg

Author: 19-Oct-2016 13:55:16, pchua@(PCWIN64)

depth (incl. stretch)	component	S/N description	rope # & Length	Distance from Upper / Lower rope end	in/out of water comment
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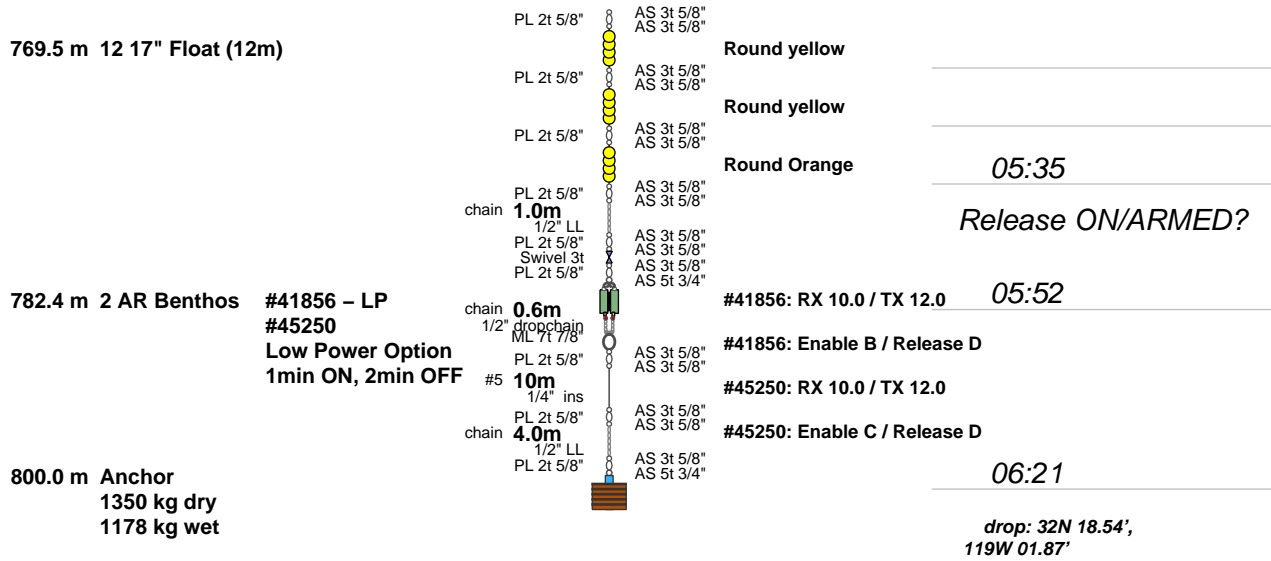
32N18.50, 119W01.77 **!!! Check for Cotter Pins !!!** **10-13-2016** **2018**

		IMEI 300034012482540			
		Radio SN 213			
		Radio 156.625 MHz, Ch72			
27.2 m	BE2-frame	Flasher SN V11-174			
		upper SW ground			
29.1 m	MCP-IM	#6359, ID69, p1000m			02:47
		chain PL 2t 5/8" 1.2m	AS 3t 5/8" AS 3t 5/8"		
		1/2" MR PL 2t 5/8"	AS 3t 5/8" AS 3t 5/8"		
		#1 10m 1/4" ins	AS 3t 5/8" AS 3t 5/8"		
43.0 m	12 17" Float (12m)		AS 3t 5/8" AS 3t 5/8"		
		PL 2t 5/8"	AS 3t 5/8" AS 3t 5/8"	Keg Orange	
		PL 2t 5/8"	AS 3t 5/8" AS 3t 5/8"	Keg Orange	
		PL 2t 5/8"	AS 3t 5/8" AS 3t 5/8"	Keg Orange	02:56
		#2 250m 1/4" ins	AS 3t 5/8" AS 3t 5/8"		
58.7 m	MC-IM	#5940, ID40	5.0	245.0	03:03
98.7 m	MC-IM	#5107, ID07	45.0	205.0	03:11
138.8 m	MC-IM	#5698, ID96	85.0	165.0	03:14
178.8 m	MCP-IM	#6355, ID63	125.0	125.0	03:18
253.9 m	MC-IM	#5945, ID45	200.0	50.0	03:23
		#2 bottom			
306.1 m	4 17" Float (4m)		AS 3t 5/8" AS 3t 5/8"		03:44
		PL 2t 5/8"	AS 3t 5/8" AS 3t 5/8"	Keg Orange	
		#3 250m 1/4" ins	AS 3t 5/8" AS 3t 5/8"		
458.5 m	MCP-IM	#5701, ID17, p 3500m	150.0	100.0	
		#3 bottom			
559.6 m	Frame	Controller #12367 ATM #48781, ID:81 ICC	PL 2t 5/8"	AS 3t 5/8" AS 3t 5/8"	Ind. test failed above 5701
		chain PL 2t 5/8" 1.0m	AS 3t 5/8" AS 3t 5/8"		Mooring hauled back, broken inductive conn Second Ind. test passed 04:15-04:55
		1/2" LL PL 2t 5/8"	AS 3t 5/8" AS 3t 5/8"		
563.8 m	4 17" Float (4m)		AS 3t 5/8" AS 3t 5/8"		04:59
		PL 2t 5/8"	AS 3t 5/8" AS 3t 5/8"	Keg Orange	
		#4 201m 1/4" ins	AS 3t 5/8" AS 3t 5/8"		
761.2 m	MCP-IM	#5700, ID70, p 3500m	195.0	6.0	05:15
		lower SW ground			
		#4 bottom			

Inductive Com Ok. Controller Com ok.

CORC3-02 mooring on shelf 32N18.50', 119W01.77', 800m			
By: PC	19-Oct-2016	CORC3_02_A_830m	32N18.50, 119W01.77, 800m
Source: 19-Oct-2016 13:54:40, ...\Paul's m-files\CORC\Corc3_02\corc3_02_deployed.cfg			
Author: 19-Oct-2016 13:55:16, pchua@(PCWIN64)			
depth (incl. stretch)	component description	S/N	Distance from Upper / Lower rope end in/out of water comment

32N18.50, 119W01.77 **!!! Check for Cotter Pins !!!** **10-13-2016** **2018**



CORC3-02 mooring on shelf 32N18.50', 119W01.77', 800m			
By: PC	19-Oct-2016	CORC3_02_A_830m	32N18.50, 119W01.77, 800m
Source: 19-Oct-2016 13:54:40, ...\\Paul's m-files\CORC\Corc3_02\corc3_02_deployed.cfg			
Author: 19-Oct-2016 13:55:16, pchua@(PCWIN64)			
Element List			

Code	Count	Description	Label	Weight in air	/	water

Components						
32	40	5/8" BTAS 3.2t	AS 3t 5/8"	30.4 kg		26.4 kg
33	2	3/4" BTAS 4.7t	AS 5t 3/4"	2.5 kg		2.1 kg
52	21	5/8" pear link 1.9t	PL 2t 5/8"	10.1 kg		8.8 kg
74	1	7/8" master link 6.7t	ML 7t 7/8"	1.6 kg		1.4 kg
93	1	SS Swivel 3t	Swivel 3t	3.1 kg		2.6 kg
240	1	2-Benthos 17" - Top Frame	BE2-frame	65.0 kg		-38.0 kg
274	3	4 17" 204HR serial	HR17-4 seria	288.0 kg		-264.0 kg
284	5	4 17" 204H serial	H17-4 serial	520.0 kg		-440.0 kg
300	1	Controller Frame	Frame	50.0 kg		30.0 kg
336	4	MicroCAT IM37	MC-IM	15.2 kg		11.2 kg
337	4	MicroCAT IM37 + pressure	MCP-IM	15.2 kg		11.2 kg
476	1	Dual AR Benthos 865 A	2 AR Benthos	75.0 kg		62.0 kg
480	1	DropChain 1/2"-4ft	1/2" dropcha	7.8 kg		6.8 kg

				Components weight:	1083.8 kg	-579.4 kg

Ropes						
102	721m	1/4" 3x19 NILSPIN insulated	1/4" ins	138.4 kg		101.7 kg
171	6m	Long Lk chain 1/2", 2.9t	1/2" LL	18.0 kg		15.7 kg
181	1m	Mooring chain 1/2", 2.7t	1/2" MR	4.2 kg		3.6 kg

				Ropes weight:	160.6 kg	121.0 kg

Summary						
				Components	1083.8 kg	-579.4 kg
				Ropes	160.6 kg	121.0 kg
520	1	Anchor variable	Anchor	1350.0 kg		1178.0 kg

				Mooring total weight:	2594.5 kg	719.6 kg

Safe Clump Anchor Weight (no currents): 688kg wet (788kg dry)

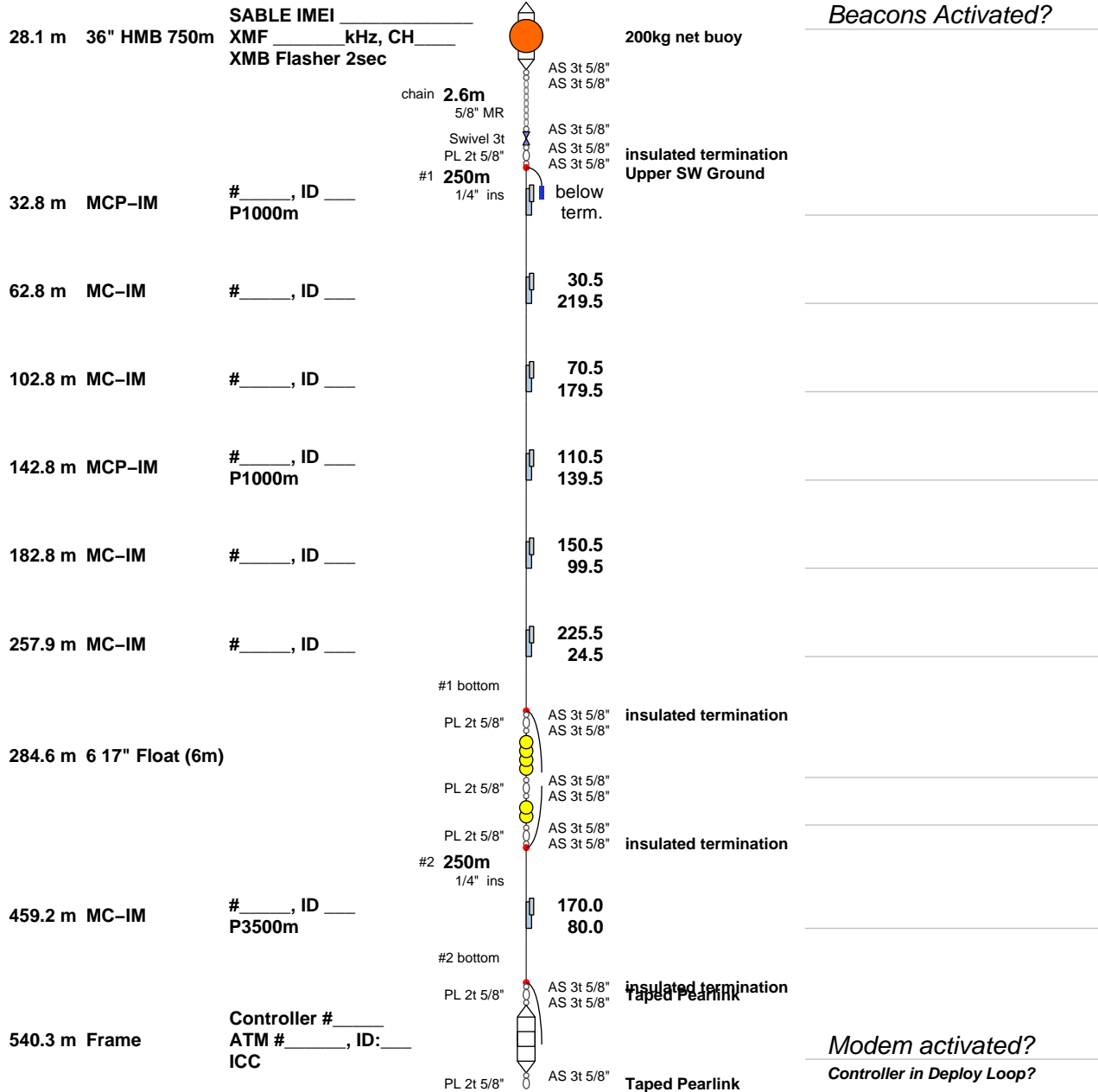
CORC3-03 Sphere, 830m depth
CORC3-03 mooring on shelf

By: PC	27-Sep-2017	DWG.NO.	REV. 1.1
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Source: 27-Sep-2017 12:43:08, ...Paul's m-files\CORC\CORC3_03\corc3_03_sphere_alt.cfg

Author: 27-Sep-2017 12:43:12, pchua@(PCWIN64)

depth (incl. stretch)	component	S/N description	rope # & Length	Distance from Upper / Lower rope end	in/out of water comment
			!!! Check for Cotter Pins !!!		Oct __, 2017 2019



CORC3-03 Sphere, 830m depth CORC3-03 mooring on shelf

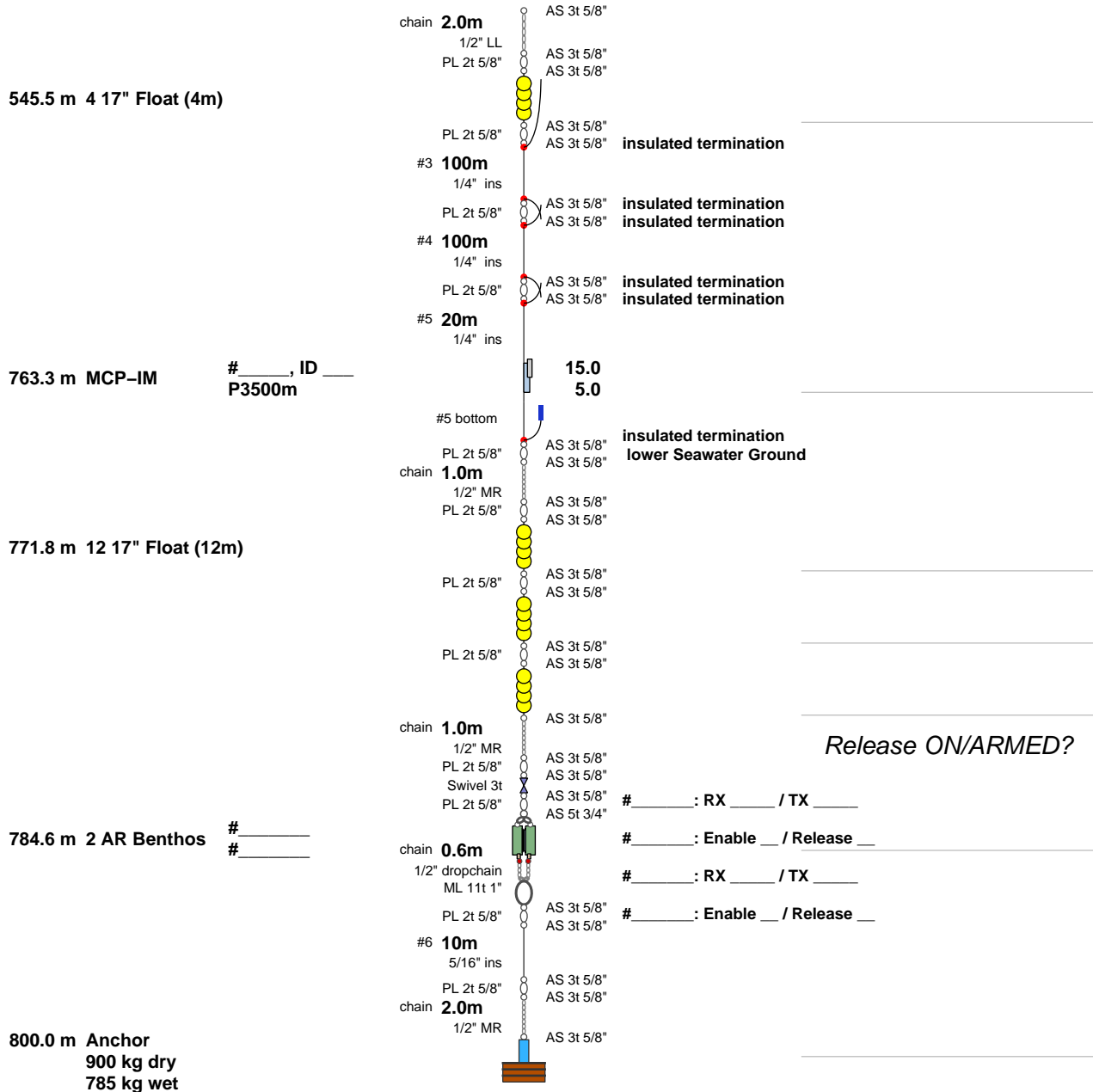
By: PC	27-Sep-2017	DWG.NO.	REV. 1.1
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Source: 27-Sep-2017 12:43:08, ...Paul's m-files\CORC\CORC3_03\corc3_03_sphere_alt.cfg

Author: 27-Sep-2017 12:43:12, pchua@(PCWIN64)

depth (incl. stretch)	component S/N description	rope # & Length	Distance from Upper / Lower rope end	in/out of water comment
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32N18.00, 119W01.72		!!! Check for Cotter Pins !!!		Oct __, 2017 2019
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CORC3-03 Sphere, 830m depth
CORC3-03 mooring on shelf

By: PC

27-Sep-2017

DWG.NO.

REV. 1.1

Source: 27-Sep-2017 12:43:08, ...Paul's m-files\CORC\CORC3_03\corc3_03_sphere_alt.cfg

Author: 27-Sep-2017 12:43:12, pchua@(PCWIN64)

Element List

Code	Count	Description	Label	Weight in air	/	water

Components						
32	40	5/8" BTAS 3.2t	AS 3t 5/8"	30.4 kg		26.4 kg
33	1	3/4" BTAS 4.7t	AS 5t 3/4"	1.2 kg		1.1 kg
52	18	5/8" pear link 1.9t	PL 2t 5/8"	8.6 kg		7.5 kg
75	1	1" master link 11t	ML 11t 1"	2.6 kg		2.3 kg
93	2	SS Swivel 3t	Swivel 3t	6.2 kg		5.3 kg
216	1	36" float 750m	36" HMB 750m	200.0 kg		-200.0 kg
272	1	2 17" 204HR serial	HR17-2 seria	48.0 kg		-44.0 kg
274	5	4 17" 204HR serial	HR17-4 seria	480.0 kg		-440.0 kg
300	1	Controller Frame	Frame	50.0 kg		30.0 kg
336	5	MicroCAT IM37	MC-IM	19.0 kg		14.0 kg
337	3	MicroCAT IM37 + pressure	MCP-IM	11.4 kg		8.4 kg
476	1	Dual AR Benthos 865 A	2 AR Benthos	75.0 kg		62.0 kg
480	1	DropChain 1/2"-4ft	1/2" dropcha	7.8 kg		6.8 kg

				Components weight: 940.3 kg -520.1 kg		

Ropes						
102	720m	1/4" 3x19 NILSPIN insulated	1/4" ins	138.2 kg		101.5 kg
103	10m	5/16" 3x19 NILSPIN insulated	5/16" ins	3.1 kg		2.1 kg
171	2m	Long Lk chain 1/2", 2.9t	1/2" LL	6.0 kg		5.2 kg
181	4m	Mooring chain 1/2", 2.7t	1/2" MR	14.0 kg		12.2 kg
182	3m	Mooring chain 5/8", 4.0t	5/8" MR	13.0 kg		11.3 kg

				Ropes weight: 174.4 kg 132.3 kg		

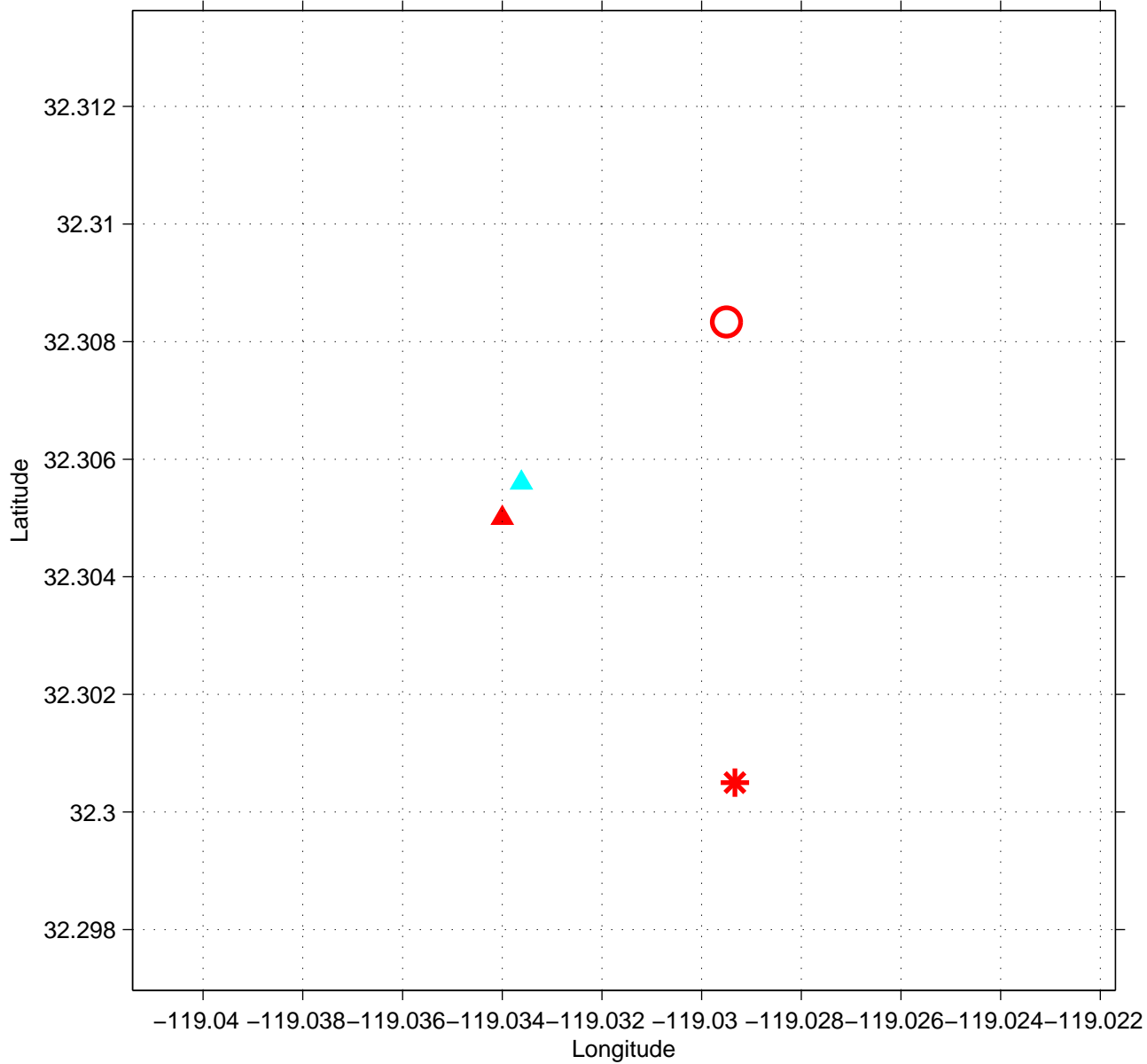
Summary						

				Components 940.3 kg -520.1 kg		
				Ropes 174.4 kg 132.3 kg		
520	1	Anchor variable	Anchor	900.0 kg		785.3 kg

				Mooring total weight: 2014.7 kg 397.5 kg		

Safe Clump Anchor Weight (no currents): 582kg wet (667kg dry)

CORC3 Assets as of 10/2016



CORC3-01 (triangulation Oct. 2013):
32° 18.03' N
119° 1.76' W

CORC3-02 (triangulation Oct. 2016):
32° 18.50' N
119° 1.77' W

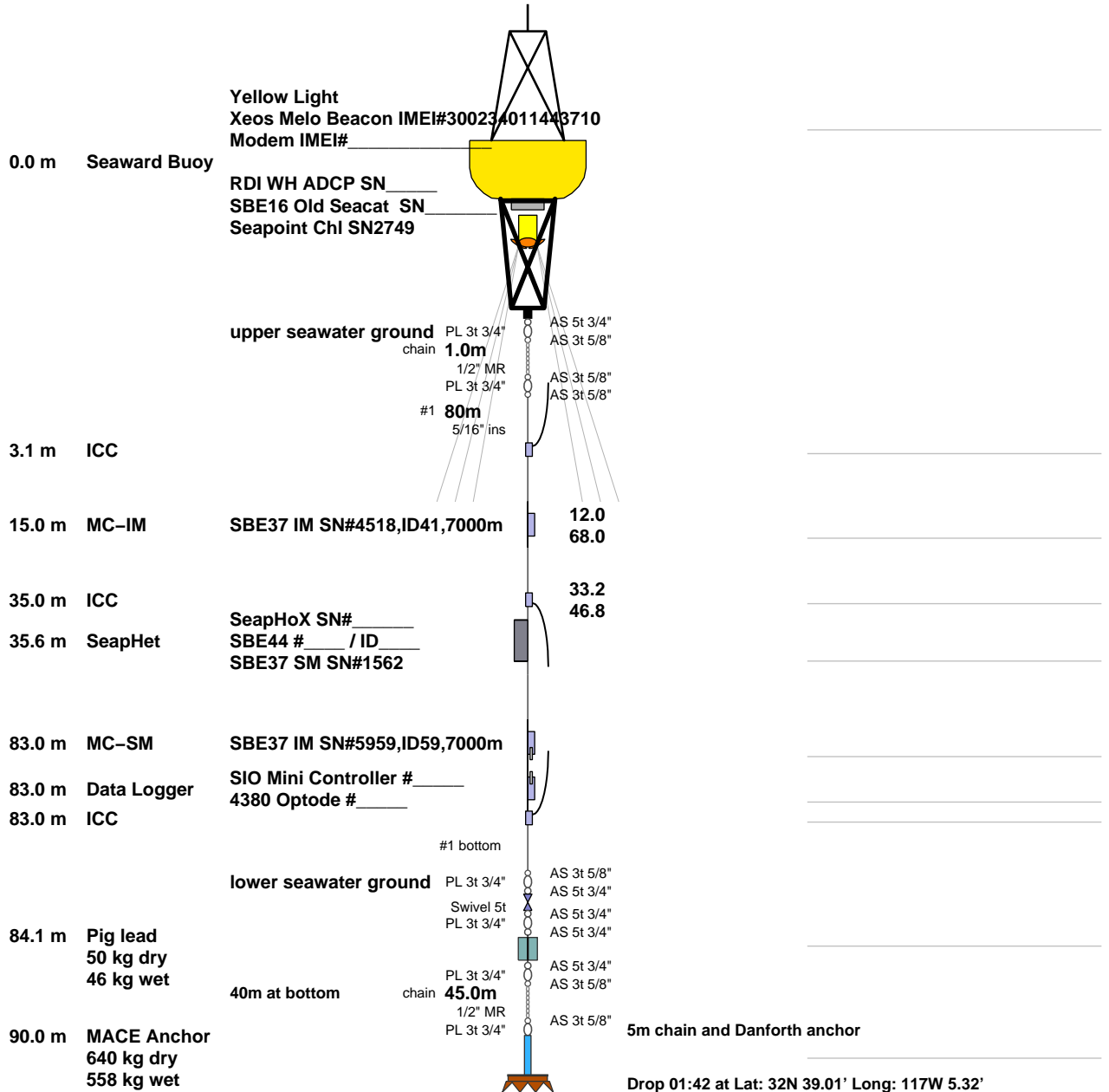
PIES 2012-2015:
32° 18.34' N
119° 2.02' W

PIES deployed 2015:
32° 18.30' N
119° 2.04' W

43 Fathom Bank designed for 90m Depth					
By: P. Chua	05-Dec-2016	DCN: 7190-00001	REV: A	REF.DES. Tollgate-FTFB	
Source: 05-Dec-2016 12:27:35, ...\Projects\Paul's m-files\43fathom\43fathom_deployed.cfg					
Author: 05-Dec-2016 12:27:38, pchua@(PCWIN64)					
depth (incl. stretch)	component	S/N description	rope # & Length	Distance from Upper / Lower rope end	in/out of water comment

!!! Check for Cotter Pins !!!

Dep. Sep-08-2016 Rec. 2017



43 Fathom Bank designed for 90m Depth				
By: P. Chua	05-Dec-2016	DCN: 7190-00001	REV: A	REF.DES. Tollgate-FTFB
Source: 05-Dec-2016 12:27:35, ...Projects\Paul's m-files\43fathom\43fathom_deployed.cfg				
Author: 05-Dec-2016 12:27:38, pchua@(PCWIN64)				
Element List				

Code	Count	Label	Weight in air	/	water

Components					

32	6	5/8" BTAS 3.2t	4.6 kg		4.0 kg
33	5	3/4" BTAS 4.7t	6.2 kg		5.3 kg
53	6	3/4" pear link 2.7t	5.2 kg		4.4 kg
94	1	SS Swivel 5t	6.2 kg		5.3 kg
333	1	MicroCAT SM37	3.8 kg		2.8 kg
336	1	MicroCAT IM37	3.8 kg		2.8 kg
341	2	Inductive Cable Coupler Up	4.0 kg		2.0 kg
342	1	Inductive Cable Coupler Down	2.0 kg		1.0 kg
348	1	SeapHet clamp	11.0 kg		7.5 kg
381	1	Data Logger	15.0 kg		8.0 kg
421	1	Buoy + Bridle + RDI-WH 300	600.0 kg		-0.0 kg

Components weight :			661.7 kg		43.2 kg

Ropes					

103	79m	5/16" 3x19 NILSPIN insulated	24.6 kg		16.8 kg
181	46m	Mooring chain 1/2", 2.7t	161.0 kg		139.8 kg

Ropes weight :			185.6 kg		156.6 kg

Summary					

		Components	661.7 kg		43.2 kg
		Ropes	185.6 kg		156.6 kg
521	1	MACE Anchor variable	640.0 kg		558.5 kg
526	1	Pig variable lead	50.0 kg		45.6 kg

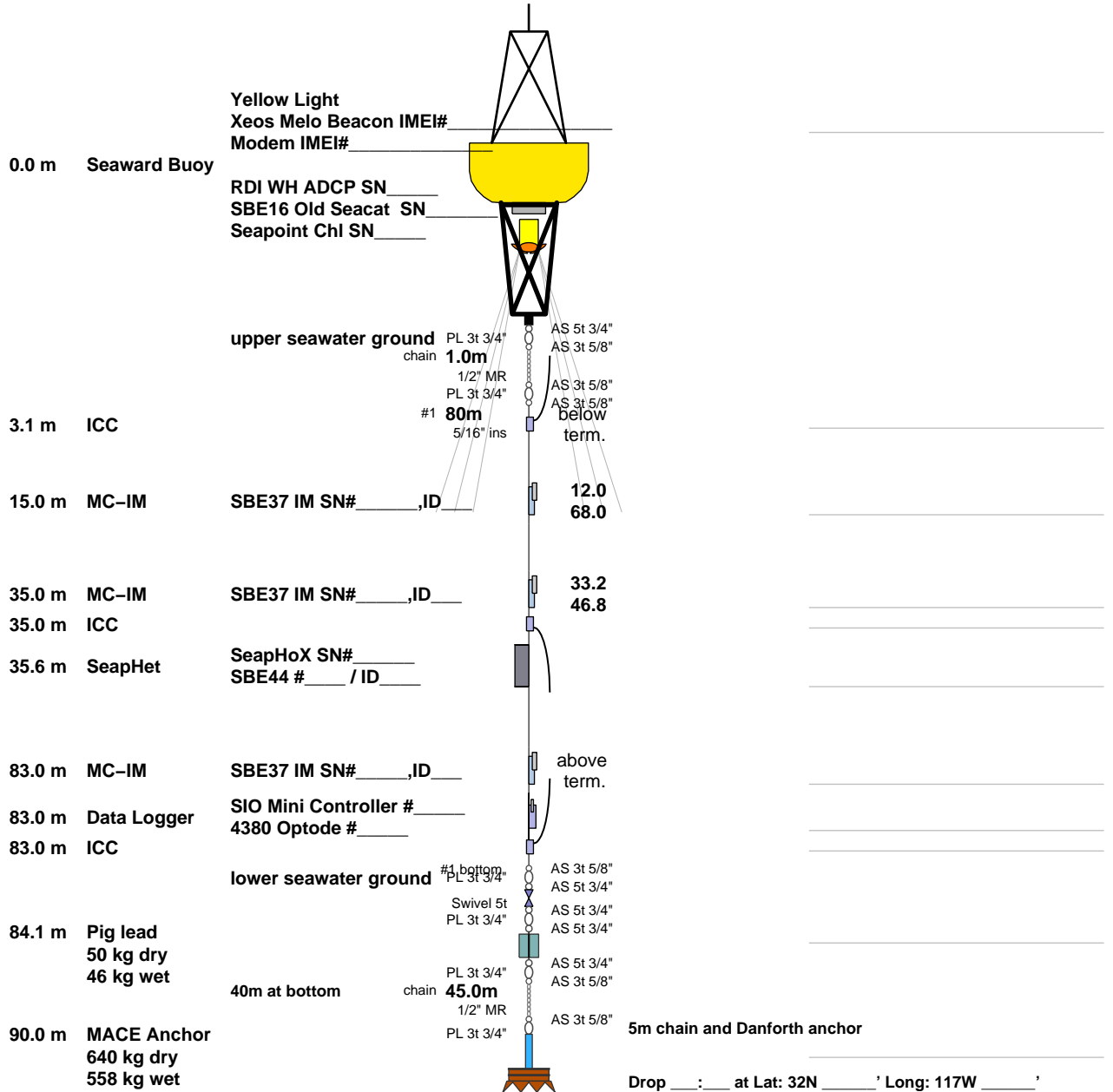
Mooring total weight :			1537.3 kg		803.9 kg

43 Fathom Bank designed for 90m Depth					
By: P. Chua	04-Oct-2017	DCN: 7190-00001	REV: A	REF.DES. Tollgate-FTFB	
Source: 04-Oct-2017 10:46:14, ...\Projects\Paul's m-files\43fathom\43fathom-2.cfg					
Author: 04-Oct-2017 10:46:35, pchua@(PCWIN64)					
depth (incl. stretch)	component	S/N description	rope # & Length	Distance from Upper / Lower rope end	in/out of water comment

32N00.00, 117W00.00

!!! Check for Cotter Pins !!!

Dep. ___-___-2017 Rec. 2018



43 Fathom Bank designed for 90m Depth				
By: P. Chua	04-Oct-2017	DCN: 7190-00001	REV: A	REF.DES. Tollgate-FTFB
Source: 04-Oct-2017 10:46:14, ...\\Projects\Paul's m-files\43fathom\43fathom-2.cfg				
Author: 04-Oct-2017 10:46:35, pchua@(PCWIN64)				
Element List				

Code	Count	Description	Label	Weight in air / water	

Components					
32	6	5/8" BTAS 3.2t	AS 3t 5/8"	4.6 kg	4.0 kg
33	5	3/4" BTAS 4.7t	AS 5t 3/4"	6.2 kg	5.3 kg
53	6	3/4" pear link 2.7t	PL 3t 3/4"	5.2 kg	4.4 kg
94	1	SS Swivel 5t	Swivel 5t	6.2 kg	5.3 kg
336	3	MicroCAT IM37	MC-IM	11.4 kg	8.4 kg
341	2	Inductive Cable Coupler Up	ICC	4.0 kg	2.0 kg
342	1	Inductive Cable Coupler Down	ICC	2.0 kg	1.0 kg
348	1	SeapHet clamp	SeapHet	11.0 kg	7.5 kg
381	1	Data Logger	Data Logger	15.0 kg	8.0 kg
421	1	Buoy + Bridle + RDI-WH 300	Seaward Buoy	600.0 kg	-0.0 kg
				Components weight:	665.5 kg 46.0 kg

Ropes					
103	79m	5/16" 3x19 NILSPIN insulated	5/16" ins	24.6 kg	16.8 kg
181	46m	Mooring chain 1/2", 2.7t	1/2" MR	161.0 kg	139.8 kg
				Ropes weight:	185.6 kg 156.6 kg

Summary					
				Components	665.5 kg 46.0 kg
				Ropes	185.6 kg 156.6 kg
521	1	MACE Anchor variable	MACE Anchor	640.0 kg	558.5 kg
526	1	Pig variable lead	Pig lead	50.0 kg	45.6 kg
				Mooring total weight:	1541.1 kg 806.7 kg

Safe MACE Anchor Weight (no currents): -0kg wet (-0kg dry)

PRIVATE AIDS TO NAVIGATION APPLICATION
(See attached instructions and copy of Code of Fed. Reg., Title 33, Chap. 1, Part 66)

Form Approved
OMB-1625-0011

NO PRIVATE AID TO NAVIGATION MAY BE AUTHORIZED UNLESS A COMPLETED APPLICATION FORM HAS BEEN RECEIVED (14 U.S.C. 83; 33 C.F.R. 166.01-5)

1. ACTION REQUESTED FOR PRIVATE AIDS TO NAVIGATION: A. ESTABLISH AND MAINTAIN B. DISCONTINUE C. CHANGE D. TRANSFER OWNERSHIP

2. DATE ACTION TO START
09/07/2016

3. AIDS WILL BE OPERATED: A. THROUGHOUT THE YEAR B. TEMPORARILY UNTIL _____ C. ANNUALLY _____ TO _____

4. NECESSITY FOR AID (Continue in Block 8)
Scientific Research

5. GENERAL LOCALITY
San Diego

6. CORPS OF ENGINEERS AUTHORIZED THIS STRUCTURE OR BUOY BY
 PERMIT OR LETTER (file and date) NWP-1

FOR DISTRICT COMMANDERS ONLY

7. APPLICANT WILL FILL IN APPLICABLE REMAINING COLUMNS

LIGHT LIST NUMBER OR PAGE	NAME OF AID	NO. OR LTR. (7a)	LIGHT			POSITION (7e)	DEPTH OF WATER (7f)	CAN-DLE POWER (7g)	HT. ABOVE WATER (7h)	STRUCTURE	REMARKS (See Instructions) (7j)
			PER. (7b)	FLASH LGTH. (7c)	COLOR (7d)					TYPE, COLOR, AND HEIGHT ABOVE GROUND (7i)	
			3.5s	.5s	Y	32-39.333N 117-58.417W	80m			Yellow Disc Shaped buoy with amulinium tower.	59" diameter sphere with 69" tall tower

8. ADDITIONAL COMMENTS
CHART 18740

9a. NAME AND ADDRESS OF PERSON IN DIRECT CHARGE OF AID
Uwe Send
Scripps Institution of Oceanography

10a. NAME AND ADDRESS OF PERSON OR CORPORATION AT WHOSE EXPENSE
Scripps Institution of Oceanography
9500 Gilman Drive
La Jolla, CA 92093

10b. THE APPLICANT AGREES TO SAVE THE COAST GUARD HARMLESS WITH RESPECT TO ANY CLAIM OR CLAIMS THAT MAY RESULT ARISING FROM THE ALLEGED NEGLIGENCE OF THE MAINTENANCE OR OPERATION OF THE APPROVED AID(S).

9b. TELEPHONE NO.
(858) 822-6710

10c. DATE
08/31/2016

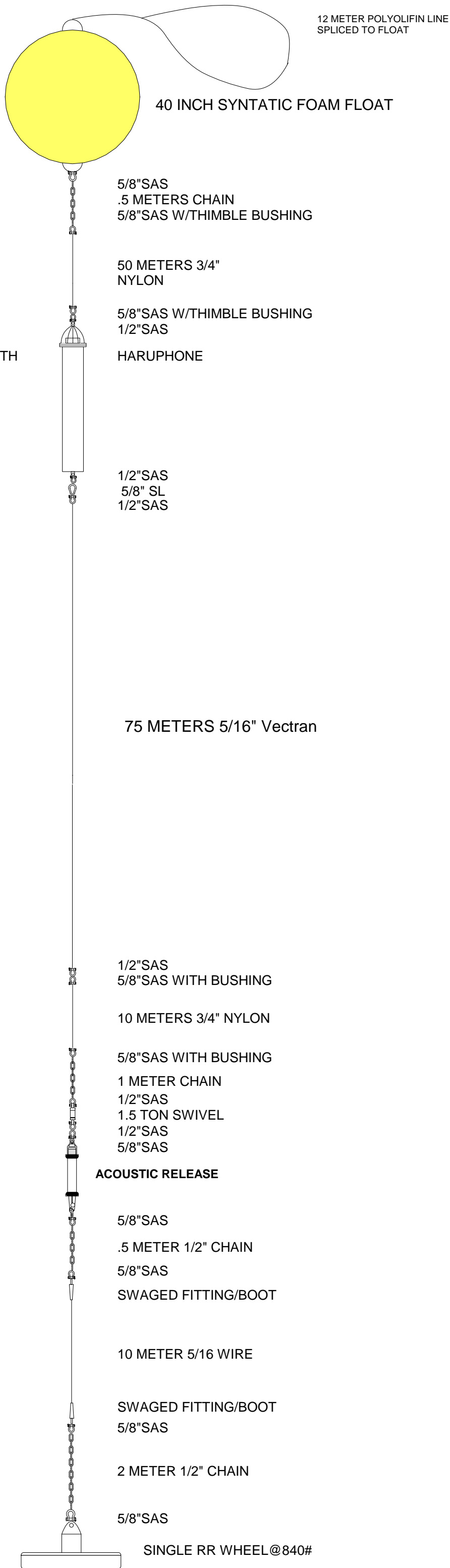
10d. SIGNATURE AND TITLE OF OFFICIAL SIGNING
Jessica D. Wette
Developmental Technician

FOR USE BY DISTRICT COMMANDER

SERIAL NO.	CLASSIFICATION OF AIDS	RECD.		
		CHART		
		L. N. M.		

DATE APPROVED

SIGNATURE (By direction)



12 METER POLYOLIFIN LINE
SPLICED TO FLOAT

40 INCH SYNTATIC FOAM FLOAT

5/8" SAS
.5 METERS CHAIN
5/8" SAS W/THIMBLE BUSHING

50 METERS 3/4" NYLON

5/8" SAS W/THIMBLE BUSHING
1/2" SAS
HARUPHONE

900 METER DEPTH

1/2" SAS
5/8" SL
1/2" SAS

75 METERS 5/16" Vectran

1/2" SAS
5/8" SAS WITH BUSHING

10 METERS 3/4" NYLON

5/8" SAS WITH BUSHING

1 METER CHAIN
1/2" SAS
1.5 TON SWIVEL
1/2" SAS
5/8" SAS

ACOUSTIC RELEASE


5/8" SAS
.5 METER 1/2" CHAIN
5/8" SAS
SWAGED FITTING/BOOT

10 METER 5/16 WIRE

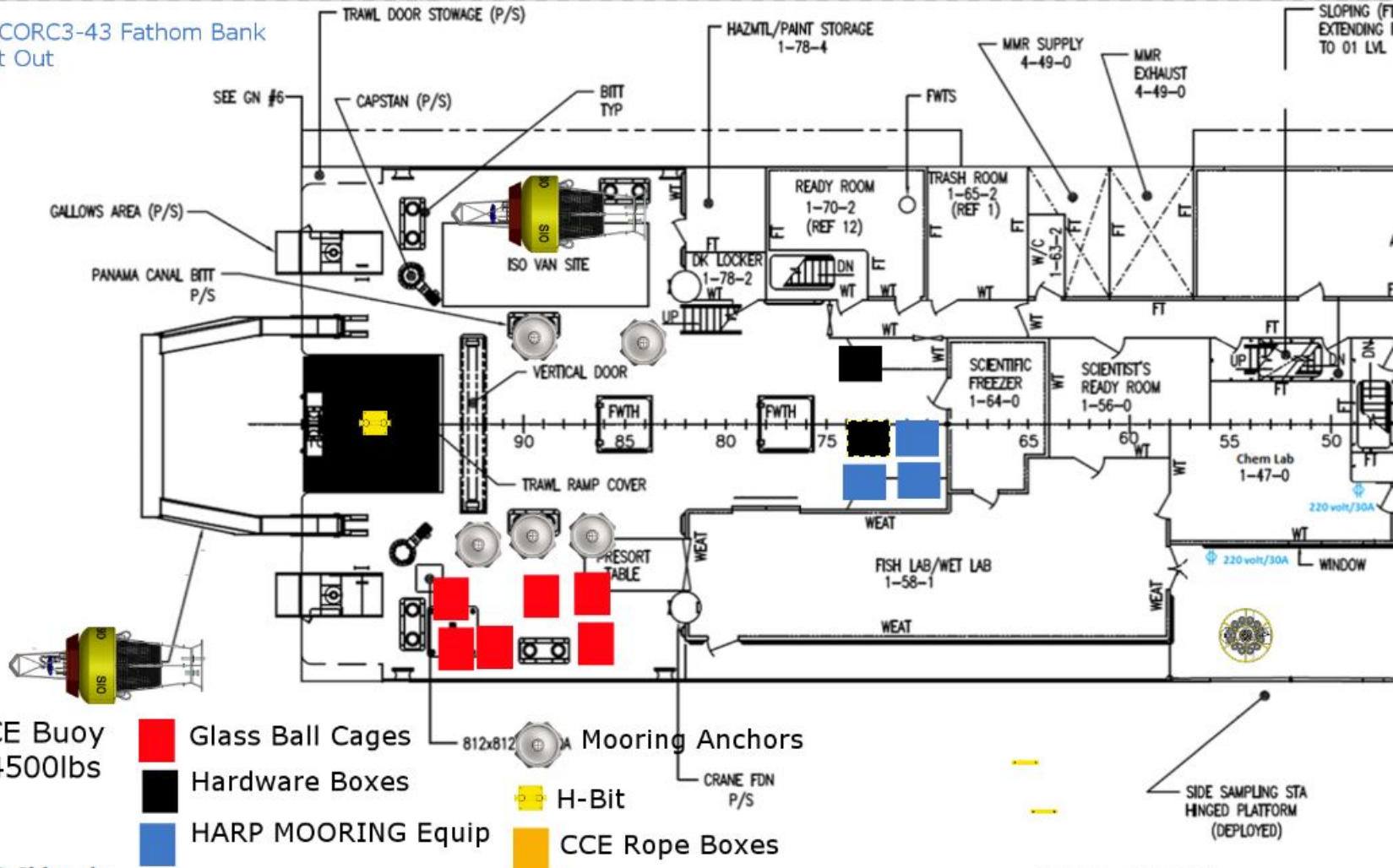
SWAGED FITTING/BOOT
5/8" SAS

2 METER 1/2" CHAIN

5/8" SAS
SINGLE RR WHEEL@840#

33.90N 119.58W 1000 METER BOTTOM	
	NOAA-PMEL 7600 Sandpoint Way NE Seattle, Wa. 98115 (206) 526-6023
	MOORING: NRSO5
LOCATION: SOUTHERN CA. CINMS	
DRAWN BY: MIKE CRAIG	DATE: 7 JULY 2014
APPROVED BY:	DATE:

CCE1-CORC3-43 Fathom Bank
Transit Out



CCE Buoy
~4500lbs

■ Glass Ball Cages

■ Hardware Boxes

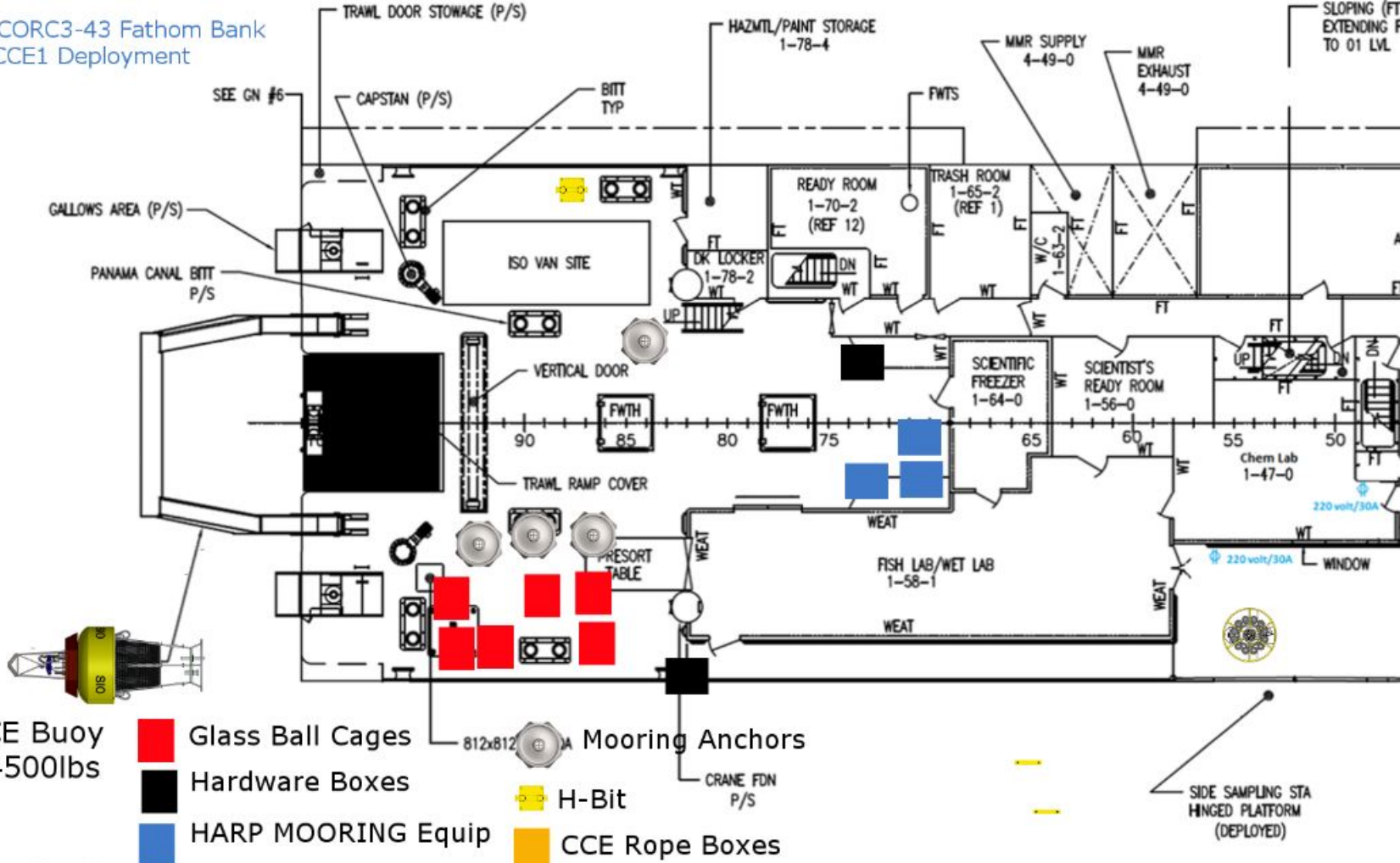
■ HARP MOORING Equip

■ Mooring Anchors

■ H-Bit

■ CCE Rope Boxes

CCE1-CORC3-43 Fathom Bank After CCE1 Deployment

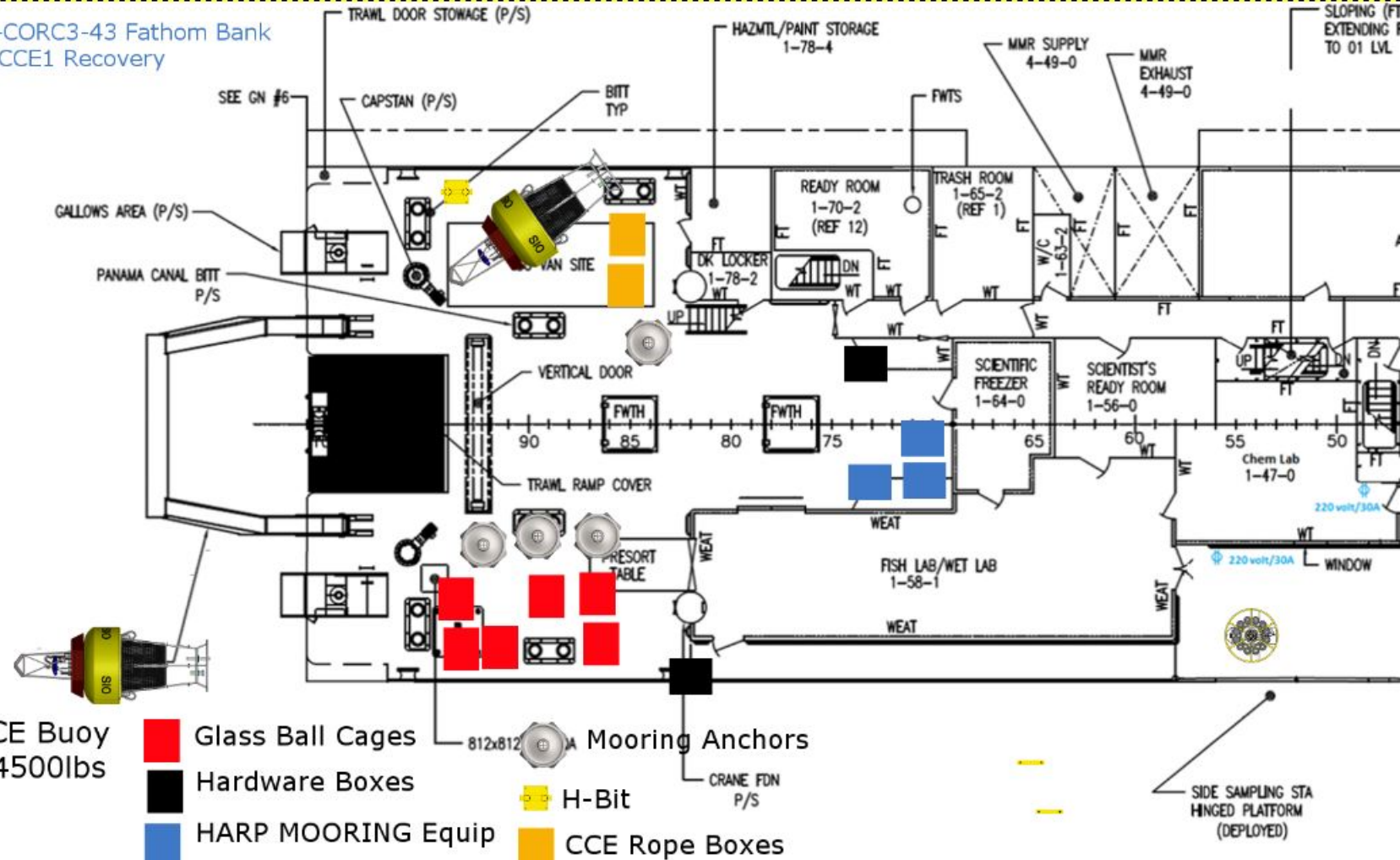


CCE Buoy
~4500lbs

- Glass Ball Cages
- Hardware Boxes
- HARP MOORING Equip
- H-Bit
- CCE Rope Boxes

MAIN DECK

CCE1-CORC3-43 Fathom Bank
After CCE1 Recovery



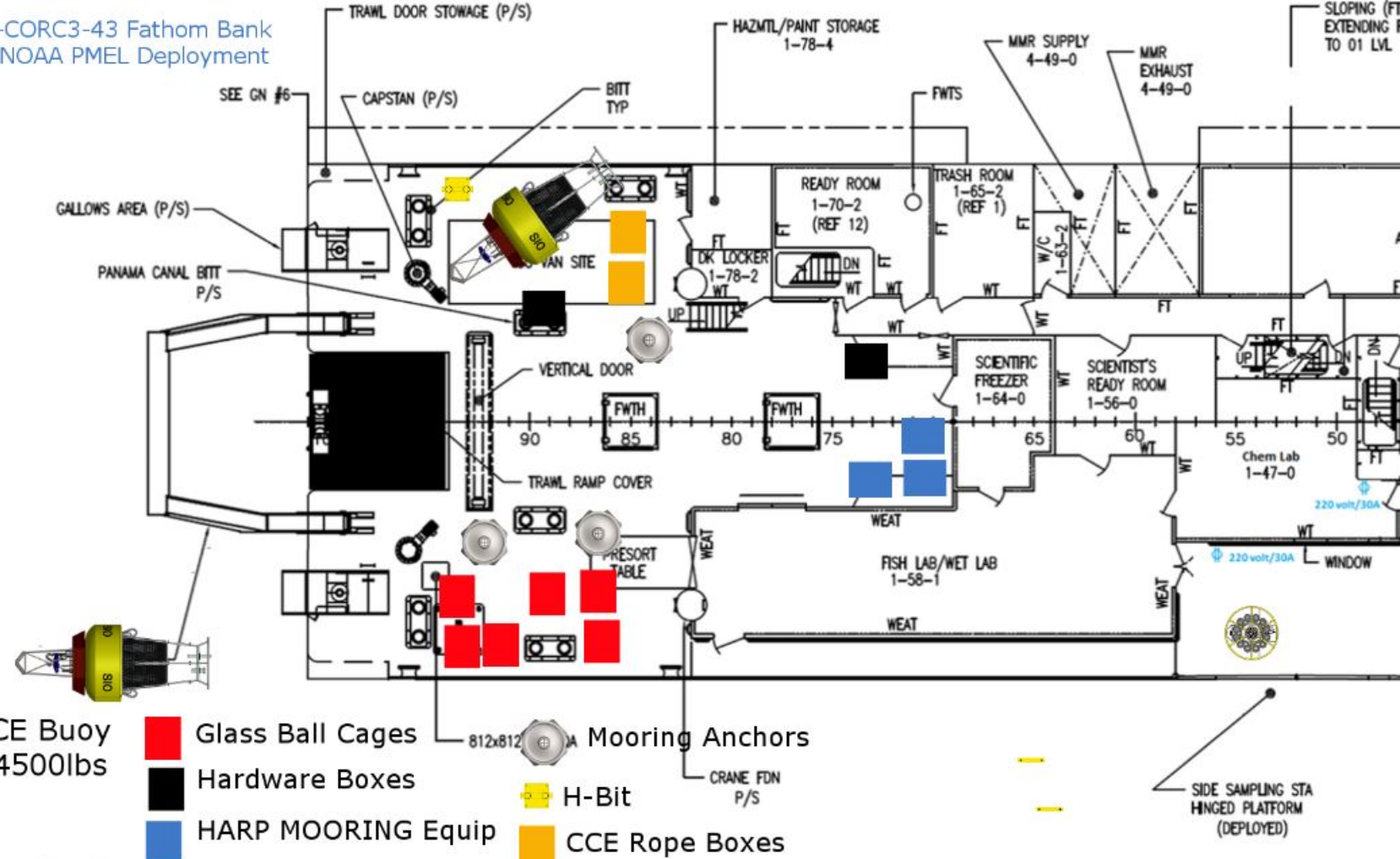
CCE Buoy
~4500lbs

- Glass Ball Cages
- Hardware Boxes
- HARP MOORING Equip
- CCE Rope Boxes
- Mooring Anchors
- H-Bit

Bell M. Shimada

MAIN DECK

CCE1-CORC3-43 Fathom Bank
After NOAA PMEL Deployment

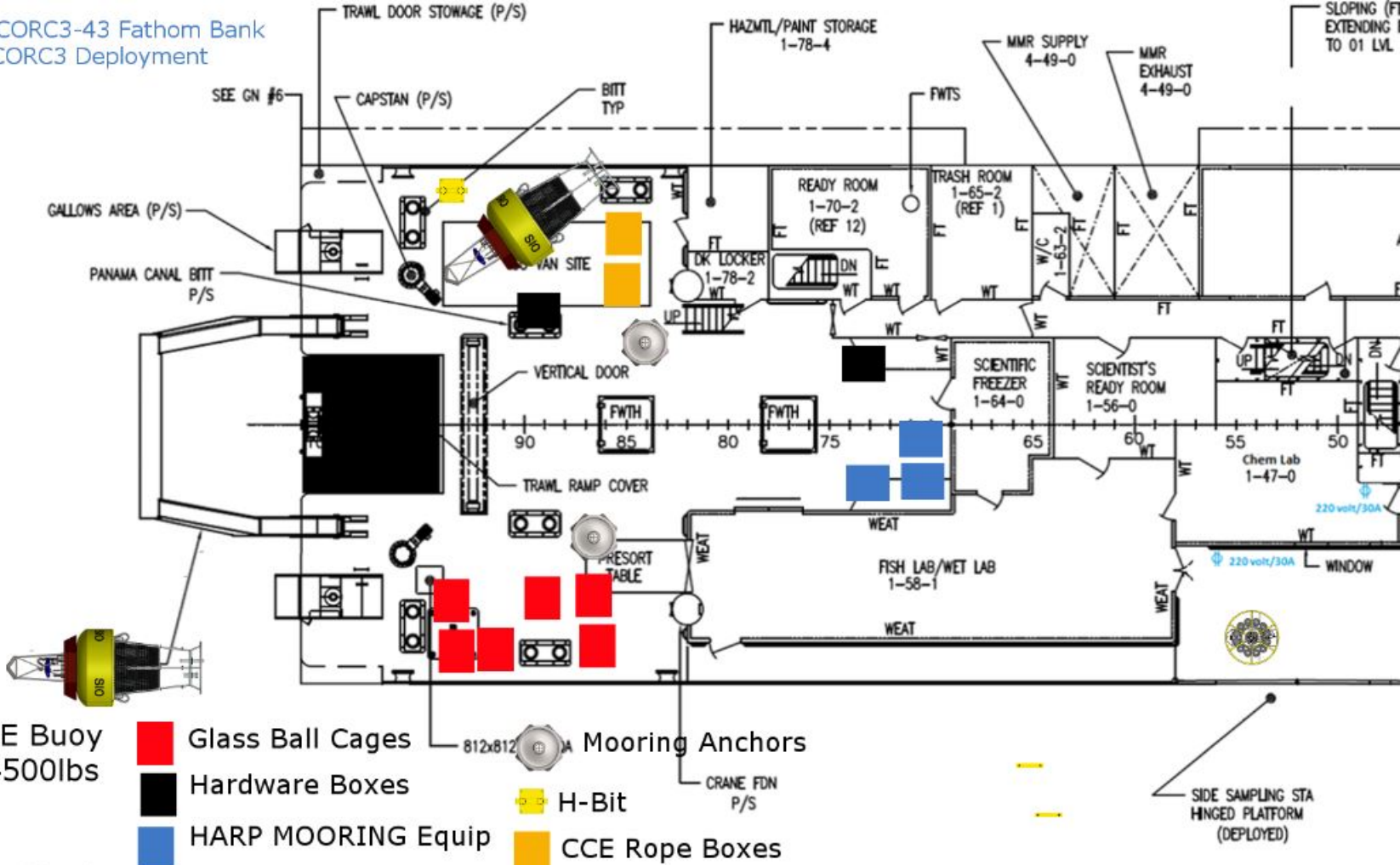


CCE Buoy
~4500lbs

- Glass Ball Cages
- Hardware Boxes
- HARP MOORING Equip
- Mooring Anchors
- H-Bit
- CCE Rope Boxes

MAIN DECK

CCE1-CORC3-43 Fathom Bank After CORC3 Deployment



CCE Buoy
~4500lbs

- Glass Ball Cages
- Hardware Boxes
- HARP MOORING Equip
- CCE Rope Boxes
- Mooring Anchors
- H-Bit

Equipment	weight (lbs)	total qty.	weight (lbs)	size	weight to be deployed	Weight to be recovered
CCE buoy	4500	1	4500	9' x 20'		
cce anchors 2x 5500lbs	5500	2	11000	4' x 4'	5500	
corc3 anchor	1980	2	3960	4' x 4'	1980	
glass balls 5x	1000	5	5000	4' x 4'		
CORC3 sphere	546	1	546	4' x 4'		546
winding cart	860	1	860	4' x 6'		
tension cart	532	1	532	4' x 6'		
mooring hardware box	1200	1	1200	4' x 4'		
deck rope box	275	1	275	2' x 2'		
cce mooring rope box 1	700	1	700	4' x 4'		
cce mooring rope box 2	930	1	930	4' x 4'		
spare mooring rope spool	150	1	150	2' x 2'		
cce wire 460m	455	3	1365	2' x 2'		
corc wire 3x 250m 162lb, 273lb	162	3	486	2' x 2'		
corc small wire	273	1	273	2' x 2'		
43 fathom mooring hardware	550	1	550			
43 fathom mooring wire	95	2	190	2' x 2'		
lab boxes	400	6	2400			
bio load cages	275	1	275			
rad load cages	240	1	240			
spare bio load cages in box	395	1	395			
spare rad load cages in box	353	1	353			
acoustic release pallet	690	1	690	4' x 4'		
H-bit	250	1	250	2' x 2'		
Spare Cage with pressure washer	500	1	500	4' x 4', 2' x 2'		
Empty Harp Cages for glass and spools	1000	1	1000	4' x 4'		3286
dragging box	1500	1	1500	4' x 4'		
dragging wire	455	4	1820	2' x 2'		
NOAA PMEL Anchor	840	1	840			
NOAA PMEL Deck Equipment	300	1	300	4' x 4'		
NOAA PMEL Lab Equipment	200	1	200	4' x 4'		
43080 sum total						

2017 CCE1 & CORC4 Cruise

Name	Title	Role
Send, Uwe	Professor	Chief Scientist
Borsack, Eden	Volunteer	deck operations
Chua, Paul	Asc. Dev. Eng	Deck Operations and mooring component lead
Durette, Jessica	Dev. Tech	Hazmat, water sampling lead and deck operations
Fuentes, Michael	Volunteer	deck operations
Heux, Romain	Sen. Dev. Eng	Instrument lead, and deck operations
Lankhorst, Matthias	Proj. Scientist	CTD lead, Data lead and deck operations
Lowcher, Caroline	Grad Student	CTD operations and deck operations
Morris, Ethan	Mar. Tech	Deck operations, winch and overboard handling
Palance, Danial	NOAA Corp.	Deck and survey Operations
Reshef, Eadoh	Grad Student	HARP tech and deck operations
Sevadjian, Jeff	Dev. Eng.	Data analysis and deck operations
Lauren Roche	Mar. Tech	HARP tech and deck operations

13 total, with 1 grad students, & 2 volunteers

TWIC

Affiliation	Expiration	Citizenship	email	phone	
SIO/UCSD		USA	usend@ucsd.edu	(858) 822-6710	
volunteer		USA	eborsack19@gmail.com		
SIO/UCSD		Canada (Green Card)	pchua@ucsd.edu	(858) 534-4607	cleared to sail
SIO/UCSD	Aug-19	USA	jdurette@ucsd.edu	(858) 822-3583	cleared to sail
volunteer		USA	sdfuentes@gmail.com	(619) 884-5857	
SIO/UCSD		France	rheux@ucsd.edu		
SIO/UCSD	Apr-18	Germany	mlankhorst@ucsd.edu	(858) 822-5013	
SIO/UCSD		USA	clowcher@ucsd.edu		cleared to sail
SIO/UCSD	Sep-19	USA	e2morris@ucsd.edu	(858) 534-5477	
NOAA		USA			
SIO/UCSD		USA	ereshef@ucsd.edu		cleared to sail
SIO/UCSD		USA	jsevadjian@ucsd.edu		
NOAA		USA	lauren.roche@noaa.gov		

Mooring Operations:

By Paul Chua, SIO

CCE1 Deployment

The deck will be set up with the intention that the buoy will go over the port rail. Just before deployment, a conductivity test will be performed through the buoy and the mooring wire below the radiometer cage. The bio cage will be hung over the port corner for deployment and slipped out after the buoy is in the water. The radiometer cage will be hung from the travel block which will be connected to the Gilson winch. Once there is load on the radiometer cage it will be lowered into the water.

Instruments will be attached at specific points on the mooring wire. Inductive tests will be conducted at the end of each wire termination. This is done by placing a seawater ground into the water and testing communication with each of the wires. The mooring wire will be stoppered off and the WBAT on load frame will be installed and the mooring rope attached. The mooring rope will either be deployed through the H-bit or on the net winch.

One of the drogues will be attached at this point using roughly 1.5 meters of line. The shots of chain with hard hats and glass spheres are then installed. Each section of the glass is shackled on the mooring then slipped out, using a stopper line and the winch leader line. After the first couple sets of glass, the second drogue is attached using roughly 1.5 meters of line. The rest of the glass is attached and slipped out.

After the glass is installed, the 5 meter oceansites wire and microcat, swivel, releases, drop chain, master link, and chain that is under the releases. The quick release will be attached to a sling through the master link. The winch leader line attached to the 5 meters of chain after the releases and then lowered to the water, the quick release is pulled.

The 1" Nystron mooring line will be attached to the winch leader line using a ¾" Nystron line doubled up with two bowline knots tied in it. After shackling that together, the Nystron will be slipped out, transferring the load to the anchor which will be on the edge of the stern.

The anchor will be lowered over the fantail with taglines and the gilson winch. Once in the water at the target position the release line will be cleated off and the winch line lowered.

CCE1 Recovery

The buoy will be released from its anchor with the acoustic releases. The glass balls at the bottom will take 45 minutes to ascend to the surface. Once the glass balls are on the surface the recovery operation can begin. The buoy will be connected to the lifting line either along the side of the ship with the happy hooker pole or by launching the small boat and towing the lifting line out and attaching a small lifting sling. Once the buoy is connected and at the fantail tag lines will be connected to the tower, and two side hook up points to control the buoy as it comes aboard.

Once the buoy is aboard and secured, it will be tied down, stopper lines connected to the mooring wire. The lifting line will be connected to the mooring line. The buoy will be disconnected from the mooring line and then moved out of the way with the crane. The mooring line will be connected to the net winch through the travel block and then recovery operations will begin.

Load cages and other inline equipment will be removed after the mooring line is secured. All other instruments attached to mooring line will be removed.

Dragging operations plan 2017 for CORC3-01

Dragging operations for CORC-3 mooring which was deployed 4 years ago. Ship will use EK-60 and DP to locate geographic position of fouled mooring. Wire will be spooled out from the net reel during deployment, and then the load will be shared with deck cleats, or padeyes. The initial deployment of the first 600m of line will be in a 250m radius semi-circle around the target position. Then the rest of the line will be paid out in a straight line depending on conditions. At the end of the dragging wire, the ship will steam 400m ahead, then hold position and recovery of the dragging equipment will begin from the stationary position. (note: this same operation was approved by on RL-16-05)

Strength of the weak link (x2)= 10,000lbs

Strength of the weak link rope (3x 20m shots of 1/4" plastic coated wire)

Weight of the dragging gear = 2,125lbs

Water depth = 800m

Length of dragging gear 1,900m= (1,300 before hook configuration, 600m hook configuration)

Hook diagram (below) 4' hook, 50lbs each. will use four of them.



Weight of fouled mooring including anchor = 5,251lbs

Weight of fouled mooring except the anchor (expected, and scientists have confirmed acoustic release was activated when mooring recovery was attempted. Acoustic release is 100m above the water surface)= 2,281lbs cause of fouling is unknown.

Therefore, worst case scenario, total weight of fouled gear and the total weight of the dragging wire = 7,380lbs. Ship maintains a safety level > 2:1 at the A-frame block. Here is a picture of what a recovered anchor looks like after being in the water for 2 years. It is likely that an anchor 4 years ago will not be strong enough to continue sustaining the mooring during dragging operations, and will fall apart.



Dragging gear configuration from net reel to depth:

460m of 3/8" wire, rated at 13,000lbs (322lbs)
6.5 ton shackle
350m of 3/8" wire, rated at 13,000lbs (250lbs)
weak link, rated at 10,000lbs
20m shot of plastic-coated 1/4" wire, rated at 6,600lbs (6-lbs)
6.5 ton shackle
500m of 3/8" wire, rated at 13,000lbs (350lbs)
6.5 ton shackle
70m of 3/8" wire, rated at 13,000lbs (50lbs)
6.5 ton shackle
20m shot of plastic-coated 1/4" wire, rated at 6,600lbs (6-lbs)
6.5 ton shackle
45m 5/8" chain (430lbs)
6.5 ton shackle
4' hook (50lbs)
6.5 ton shackle
4m 5/8" chain (35lbs)
6.5 ton shackle
4' hook (50lbs)
6.5 ton shackle
20m shot of plastic-coated 1/4" wire, rated at 6,600lbs (6-lbs)
6.5 ton shackle
60m 3/8" wire, rated at 13,000lbs (50lbs)
6.5 ton shackle
4' hook (50lbs)
6.5 ton shackle
20m 3/4" chain (300lbs)
6.5 ton shackle
4' hook (50lbs)
Total mass of shackles = 120lbs

Instrument	Battery Type	Li/ cell (g)	weight/cell (g)	# cells/ instrument	Total Li / instrument (g)	Total Cell Weight / Instrument (g)	Qty Instruments	Net Battery weight (g)	Net Li(g)	MSDS
SeaPhox	Electrochem pack 3PD1631: (8) DD BCX85	10.2	216	8	81.6	1728	4	6912	326.4	BCX_85_MSDS.pdf
Microcat	Saft LS14500	0.7	16.7	12	8.4	200.4	28	5611.2	235.2	Saft_Li_SOCl2_rev9_2009_msds.pdf
AIS	Tadiran DD TL-5937 (Electrochem 3PD 1102)	10	190	14	140	2660	1	2660	140	CSC_PMX_MSDS.pdf
Seacat	Saft LSH-20/T D cells	3.8	100	9	34.2	900	4	3600	136.8	Saft_Li_SOCl2_rev9_2009_msds.pdf
WBAT	Saft LSH-20/T D cells	3.8	100	48	182.4	4800	2	9600	364.8	Saft_Li_SOCl2_rev9_2009_msds.pdf
Benthos ATM-965	(2) pack Electrochem 3PD1448, (7) CSC93 DD Cell per pack	10.2	213	14	142.8	2982	2	5964	285.6	CSC_PMX_MSDS.pdf
SOLO	(2) D cells BCX85 3B75; (2) Tadiran packs TLP83121/D/S01: (8) TL6930 D cells and (4) HLC1550A AA cells each	92.4	115	1	92.4	115	1	115	92.4	BCX_85_MSDS.pdf; tadiran-batteries-pulsesplus-msds-3p9v.pdf
SIO Controller BioPackage	(1) aux pack Electrochem 3PD1436, (8) CSC93 DD Cell per pack (1) main pack Electrochem 3PD1570, (40) CSC93 DD Cell per pack	10.2	213	48	489.6	10224	3	30672	1468.8	CSC_PMX_MSDS.pdf
SIO Controller Radiometer	Electrochem pack 3PD1631: (8) DD BCX85	10.2	216	8	81.6	1728	4	6912	326.4	BCX_85_MSDS.pdf

Li Batteries not contained in Equipment

Unit	Battery Type	Amt Li/ battery (g)	# batteries	Total Li (g)
Battery spares for Seacat	D SAFT	3.8	9	34.2
Battery spares for Microcats	Saft LS 14500 AA cells; 12 per instrument	0.7	60	42
Spare battery pack for Seaphox	Electrochem pack 3PD1631: 8 DD BCX85	10.2	8	81.6
(2) spare battery packs for acoustic modem	Electrochem pack 3PD1448: 7 DD cells per pack	10.2	14	142.8
Spare pack for AIS	DD TL-5937	10	14	140
(1) spare aux pack for controller	Electrochem pack 3PD1436: 8 CSC93 DD Cell	10.2	8	81.6
(1) spare main Pack for controller	Electrochem pack 3PD1570: 40 CSC93 DD Cell	10.2	40	408

Other Miscellaneous Hazardous goods we are shipping

Item Name	Details	Qty
Nitrogen Tank	60 cu. Ft.	1
CO ₂ Tank	140kg/cm ² . The tank itself weighs 13.2kg.	1
LPS Silicone Lubricant	11 oz cans	10
Fluid Film Rust Protection	11 oz cans	10
Compressed Air	11 oz cans	10
Isopropyl Alcohol	Liter	1
WD 40	11oz cans	10
HgCl ₂	For carbon sampling	3ml
MnCl ₂	For oxygen sampling	500 mls
NaI + NaOH Solution	For oxygen sampling	500 mls

Common Name of Material	Qty	Notes	Trained Individual	Spill Control
Lithium Metal Batteries Contained in Equipment	48 Instruments containing Li Batteries.	See Inventory	Durette, Jessica / Chua,Paul	L
Spare Lithium Metal Batteries	153 Li Cells.	See Inventory	Durette, Jessica / Chua,Paul	L
Nitrogen Compressed	1	See Inventory	Durette, Jessica	C
CO₂ Compressed	1	See Inventory	Durette, Jessica	C
Aerosols	40 cans	See Inventory	Durette, Jessica	A
Isopropyl Alcohol	1 Liter		Durette, Jessica	I
HgCl₂ Dilution	3ml		Durette, Jessica	O
MnCl₂ Dilution	500ml		Durette, Jessica	O
Nal + NaOH Solution	500ml		Durette, Jessica	O

Inventory of Spill Kit supplies			
Product Name	Amount	Chemicals it is useful against	Amount it can clean up
Polypropylene Sorbent Pads	50 pads	Isopropyl Alcohol, HgCl ₂ Dilution, Nal + NaOH Solution	13 gallons
Copper Dry Powder Extinguisher	1 x 30lb tank	Li Metal Batteries	4 sq ft area
KOLORSAFE® Dry Acid Neutralizer	1 x 2lb bottle	Acids	1.99 L
Kolorsafe dry BASE neutralizer	1 x 2lb bottle	Bases	1.99 L

APPENDIX

A: Aerosols

SPILLS / LEAKS

- Do not touch or walk through spilled material.
- Stop leak if you can do it without risk.
- Do not direct water at spill or source of leak.
- Use water spray to reduce vapors or divert vapor cloud drift. Avoid allowing water runoff to contact spilled material.
- If possible, turn leaking containers so that gas escapes rather than liquid.

- Prevent entry into waterways, sewers, basements or confined areas.
- Allow substance to evaporate.

FIRE

- Use Dry Chemical, CO₂ Extinshuigher, or foam

C: Compressed Nitrogen, Compressed CO₂

SPILLS / LEAKS

- Do not touch or walk through spilled material.
- Stop leak if you can do it without risk.
- Use water spray to reduce vapors or divert vapor cloud drift. Avoid allowing water runoff to contact spilled material.
- Do not direct water at spill or source of leak.
- If possible, turn leaking containers so that gas escapes rather than liquid.
- Prevent entry into waterways, sewers, basements or confined areas.
- Allow substance to evaporate.

FIRE

- Use an extinguishing agent suitable for the surrounding fire.

I: Isopropyl Alcohol

SPILLS / LEAKS

- ELIMINATE all ignition sources (no smoking, flares, sparks or flames in immediate area).
- All equipment used when handling the product must be grounded.
- Do not touch or walk through spilled material.
- Stop leak if you can do it without risk.
- Prevent entry into waterways, sewers, basements or confined areas.
- A vapor suppressing foam may be used to reduce vapors.
- Absorb or cover with dry earth, sand or other non-combustible material and transfer to containers.
- Use clean non-sparking tools to collect absorbed material.

FIRE

- Use Dry Chemical, CO₂ Extinshuigher, foam or water spray

L: Lithium Metal Batteries

SPILLS / LEAKS

- ELIMINATE all ignition sources (no smoking, flares, sparks or flames in immediate area).
- Do not touch or walk through spilled material.
- Stop leak if you can do it without risk.
- Use water spray to reduce vapors or divert vapor cloud drift. Avoid allowing water runoff to contact spilled material.

DO NOT GET WATER on spilled substance or inside containers.

- Cover with DRY earth, DRY sand or other non-combustible material followed with plastic sheet to minimize spreading or contact with rain.
- Dike for later disposal; do not apply water unless directed to do so.

FIRE

- Use Dry chemical, soda ash, lime or sand (Yellow Li Extinguisher we are providing)
- DO NOT USE WATER OR FOAM.

O: Other: HgCL₂, MnCl₂, NaOH / NaI

SPILLS / LEAKS

- ELIMINATE all ignition sources (no smoking, flares, sparks or flames in immediate area).
- Do not touch damaged containers or spilled material unless wearing appropriate protective clothing.
- Stop leak if you can do it without risk.
- Prevent entry into waterways, sewers, basements or confined areas.
- Absorb or cover with dry earth, sand or other non-combustible material and transfer to containers.
- DO NOT GET WATER INSIDE CONTAINERS.

FIRE

- Use Dry Chemical, CO₂ Extinguisher, foam or water spray