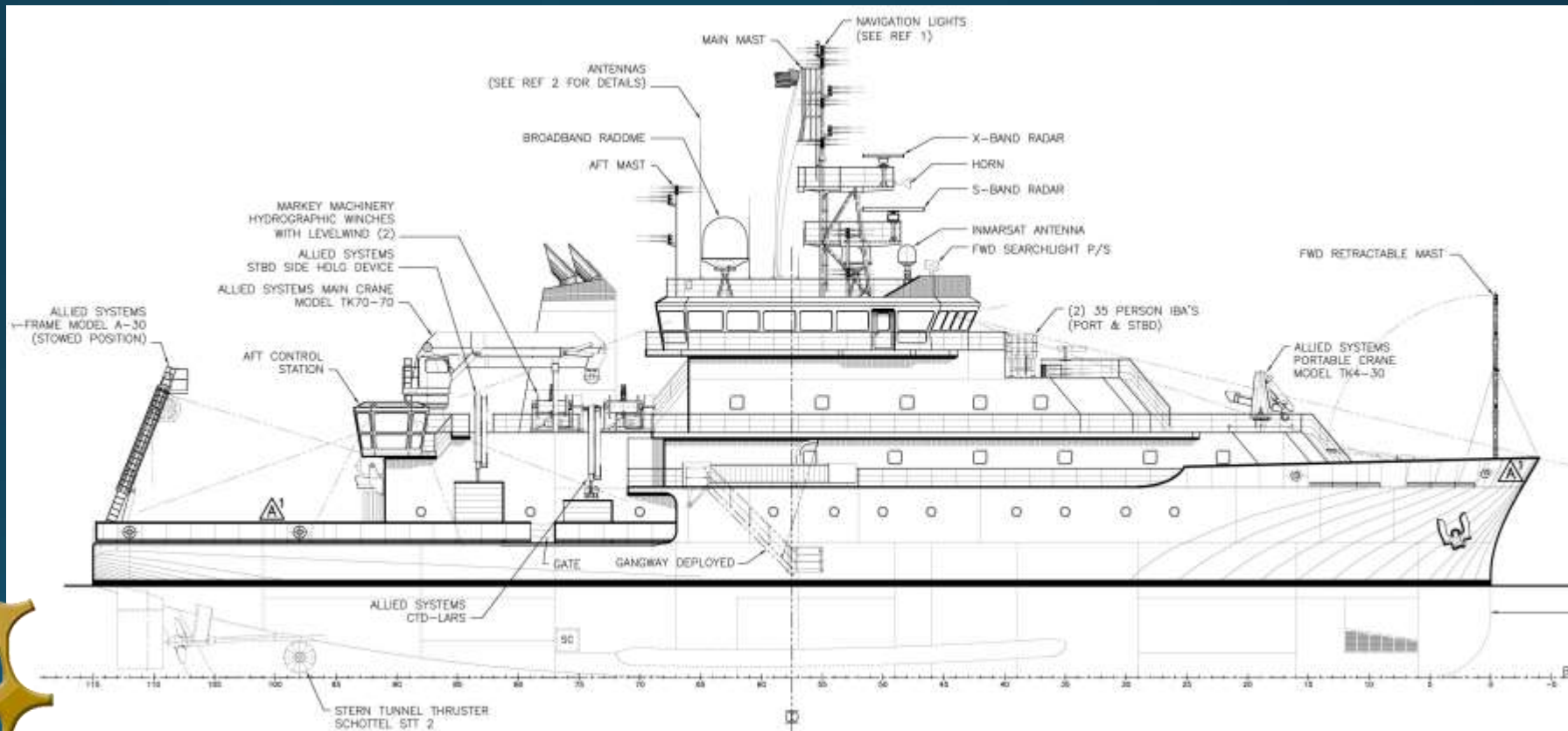


AGOR 27 JPC



Woods Hole
Oceanographic
INSTITUTION

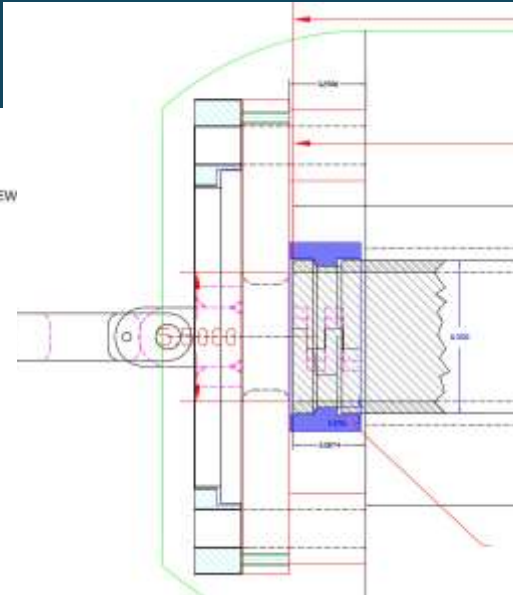
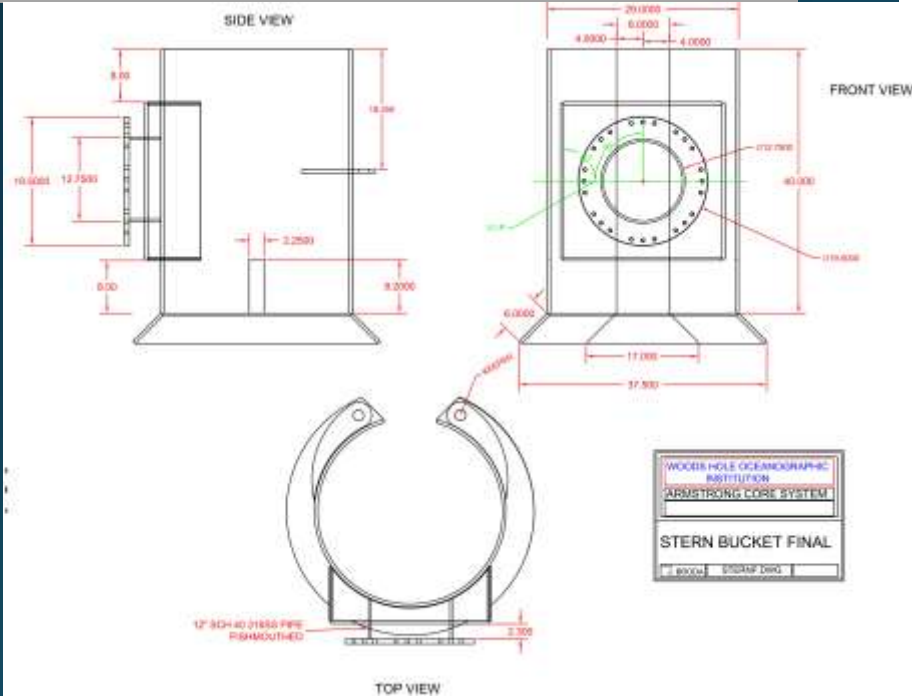
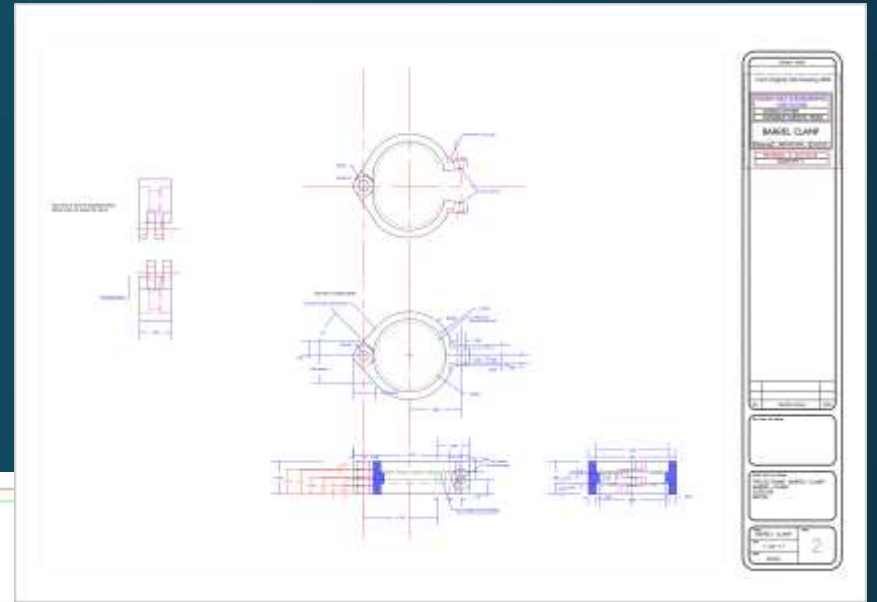
LONG CORE-CDH



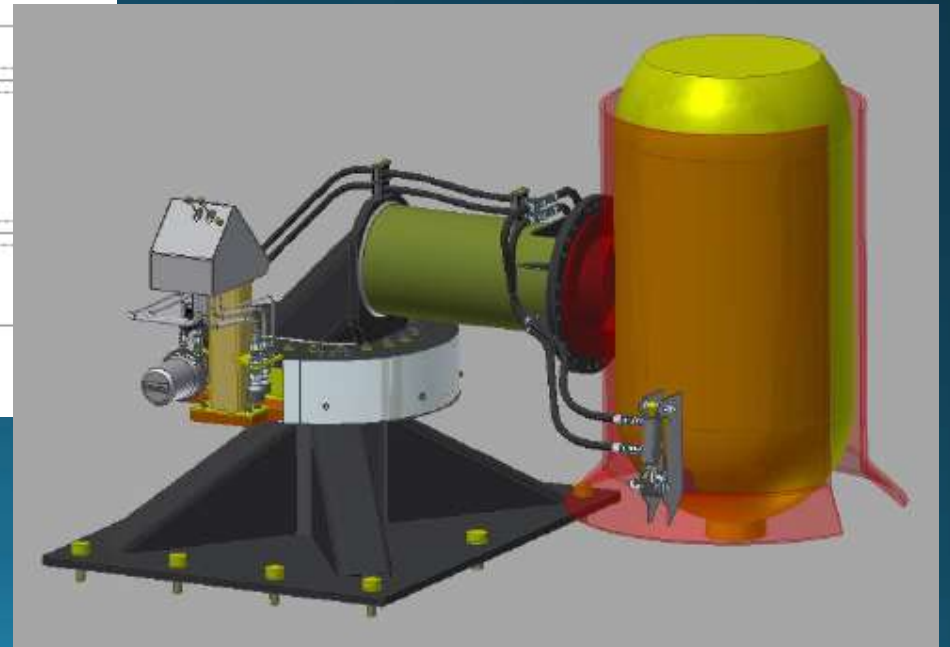
2007-2014

port 250,000 #
42m 87M





NEW
*HANDLING
*CORE HARDWARE
*ROPE



SYSTEM OVERVIEW:

- TARGET LENGTH: 25 – 30 meters.
- WEIGHT: Variable weight coreheads- the driving force. The coreheads are constructed of 316 SS shells, hemispheres and tubing, then filled with lead. The mass of the coreheads can be adjusted by adding are-cast cylinders of lead: weight range 5000-6500 pounds. 2 coreheads were fabricated for the project.



SYSTEM OVERVIEW:

Core Barrel system- The new core barrels are fabricated from a high strength cold drawn seamless alloy -4140. The barrels have a fixed inside diameter of 4.625", and have two wall thicknesses: 0.750" for the upper sections of the array, and 0.375" for the lower. The super strong upper barrels resist bending, and the thinner walled lower barrels encourage efficient penetration. All the barrels are coated with a two part process: a primer of CERMET, an ceramic coating alloyed with Aluminum to resist corrosion, and a 2X topcoat of hardened Teflon [PTFE]. The couplings that join the barrel sections are 316 SS, and that stainless alloy is used throughout the internal components of the piston corer. Liner = 4" Schedule 40 PVC 'threaded riser'.



SYSTEM OVERVIEW:

Four new major pieces of handling equipment were created for the project:

1.



Starboard Davit. Custom built by Allied Systems Co. Inc. , this device with a safe working load of 5 tons enables the horizontal/vertical transition of the core [and reverse] while keeping the core system under complete control. The davit also has the ability to extend and retract the core capture bucket with its hydraulic locking pawls outboard upon launch and inboard during recovery and lands the core on pre-configured retractable supports along the starboard rail of the Armstrong.

SYSTEM OVERVIEW:

2. Stern Davit. Also built by Allied this 5 ton SWL handling device recaptures the core on the aft centerline of the vessel to enable release rigging and final deployment of the ready system. In addition to locking hydraulic pawls, the Stern Davit has a slew capability to rotate the mechanism inboard and forward to clear the area beneath the A-Frame during winch operations



TAPPING THE AORTA



SYSTEM OVERVIEW

3. Double sheave Load-Transfer Block. This robust and unique 'waterfall' sheave was built and tested [SWL 50,000 pounds] by Smith Berger Inc. Seattle, WA. and hangs from the center tab on the aft A-frame. The main overboarding component sheave is 52" in diameter with a 0.750" groove is comprised of a steel hub and a Nylatron outer ring, and is employed to fairlead the 9/16" HICO during lowering and retrieval of the core system. Directly beneath and on the same centerline is a 25" diameter Nylatron sheave with a 3 1/2" diameter groove, and this component of the assembly is used during load transfer operations during removal of the acoustic release in the recovery process. The large diameter groove enables the passage of a soft shackle and sling combination that's used in the process of removal of the acoustic release.

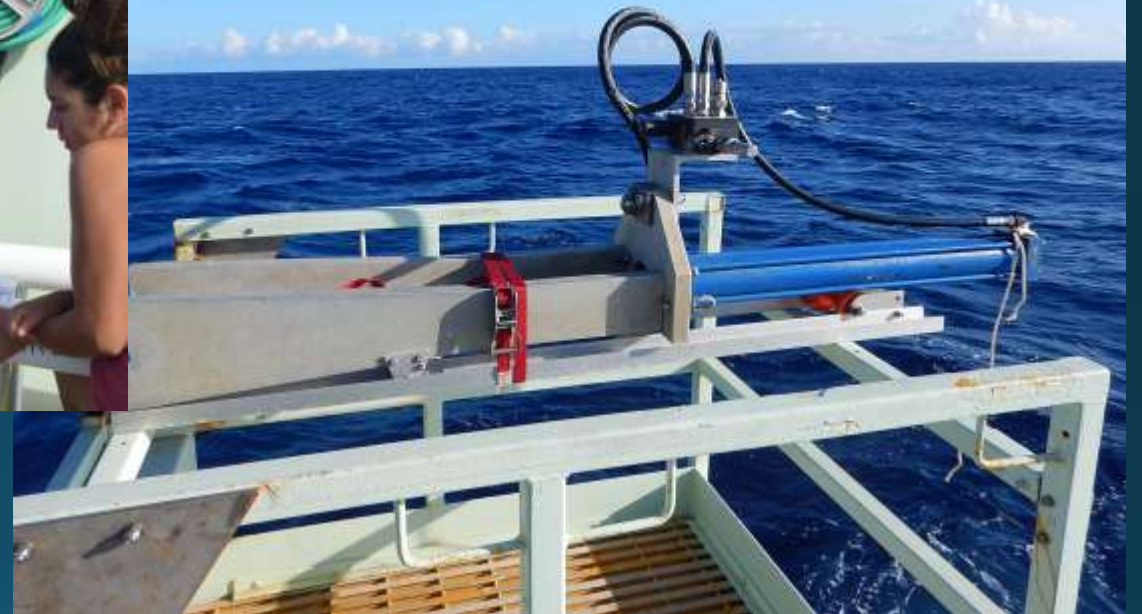


4. D.T. Marine 'Tugger'. This heavy duty deck winch is used during the final recovery phase, hauling the core assembly vertically into the Stern Davit. The winch is totally self contained, has a 30 HP Hydraulic Power supply within, and has as rated line pull of 15,000 pounds.



SYSTEM OVERVIEW

HYDRAULIC EXTRUDER



DEEP SEA DELI



SYSTEM LAUNCH AND RECOVERY



A NEW LARGE DIAMETER PISTON CORER FOR AGOR 27 : R/V NEIL ARMSTRONG

Jim Broda Woods Hole Oceanographic Institution





Plasma[®] HiCo 12 Strand

High coefficient of friction Plasma[®] HiCo[®] 12 Strand retains all of the features and benefits of standard Plasma[®] rope with the added characteristic of an increased coefficient of friction (allowing for better gripping in applications such as H-Bitt or capstan reeling, and traction winch systems).

Plasma[®] 12 strand is the highest strength synthetic rope available. Plasma[®] 12 strand is manufactured from High-Modulus Polyethylene (HMWPE) that has been enhanced by Cortland's patented reorganization process.

Features & Benefits

- Highest strength
- Lowest stretch
- Low creep
- Soft hand
- Torque-free
- Easy splicing
- Floats

Applications

- Replacement for wire rope
- Mutual mooring lines
- Inland river barge lines
- Recreational windsurfer lines
- Lifting, winch and pulling lines
- Theoretical rigging
- For use on H-bitts, capstans and traction winch systems

Type approved product



Diameter	Strands	Size (dia in.)	Approximate Weight		Minimum Tensile Strength		Minimum Tensile Strength ISO	
			Lbs/100ft	Kg/100m	Lbs	Tk	Lbs	Tk
0.64	1	0.64	8.90	8.1	370	0.1	500	8.11
0.68	1	0.68	8.27	8.1	380	0.2	520	8.23
0.68	1	0.78	10.1	8.1	475	0.2	600	10.23
0.67	1	0.71	8.14	8.2	390	0.3	500	8.38
0.7	1	0.7	8.27	8.4	400	0.8	550	8.7
1.0	3	1.0	18.6	2.9	2,000	1.3	2,100	1.3
1.18	3	1.18	11.8	1.7	5,000	1.3	5,150	1.8
1.4	3	1.4	1.8	2.4	6,000	1.8	6,800	4.0
1.74	3	1.74	2.5	3.7	11,700	1.8	13,200	5.3
2.0	3	2.0	2.7	4.5	17,000	1.8	18,400	8.8

ADG and DSW Flow Approved Sizes

Diameter	Strands	Size (dia in.)	Weight (Lbs/100ft)	Weight (Kg/100m)	Minimum Tensile Strength (Lbs)	Minimum Tensile Strength (Tk)
1.18	11	1-1/4	4.2	0.7	21,000	9.5
1.74	12	1-1/2	6.4	0.7	31,200	14.2
2.0	12	1-3/4	7.9	11.8	37,000	17.2
2.4	16	2	10.8	18.8	47,000	21.5
3.0	16	2-1/4	13.3	19.8	62,000	28.1
3.6	20	3-1/4	18.9	23.7	82,000	37.2
4.0	20	3-1/2	19.8	28.2	92,000	42.0
4.8	24	4	25.4	34.6	118,000	49.8
5.4	24	4-1/4	27.5	40.3	128,000	56.6
6.0	24	4-1/2	31.8	47.5	137,000	60.7
6.4	30	5-1/4	36.3	52.9	162,000	74.9
7.0	30	5-1/2	41.2	62.1	176,000	85.9
8.0	36	6-1/2	61.7	78.9	227,000	102.3

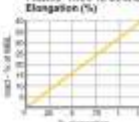
Tensile Strengths are determined in accordance with Cortland Institute 1500.2 Test Methods for Fiber Rope. Minimum Tensile Strength (MTS) published assumes standard rope construction at each end of the rope. Strengths are only indicated at break severity factor stated (normal 2000% plus 4%). Diameter and circumference are published to nominal and actual rope size after loading (1% creep) to 80% of MTS. See website for application and safety information.

Technical Information

Specific gravity	96°
Melting point	284° F (140° C)
Critical limits	180° F (80° C)
Coefficient of friction	0.13-0.18*
Elongation at break	4%-9%
Fiber water absorption	0%
UV resistance	excellent
Wet abrasion	superior
Dry abrasion	superior

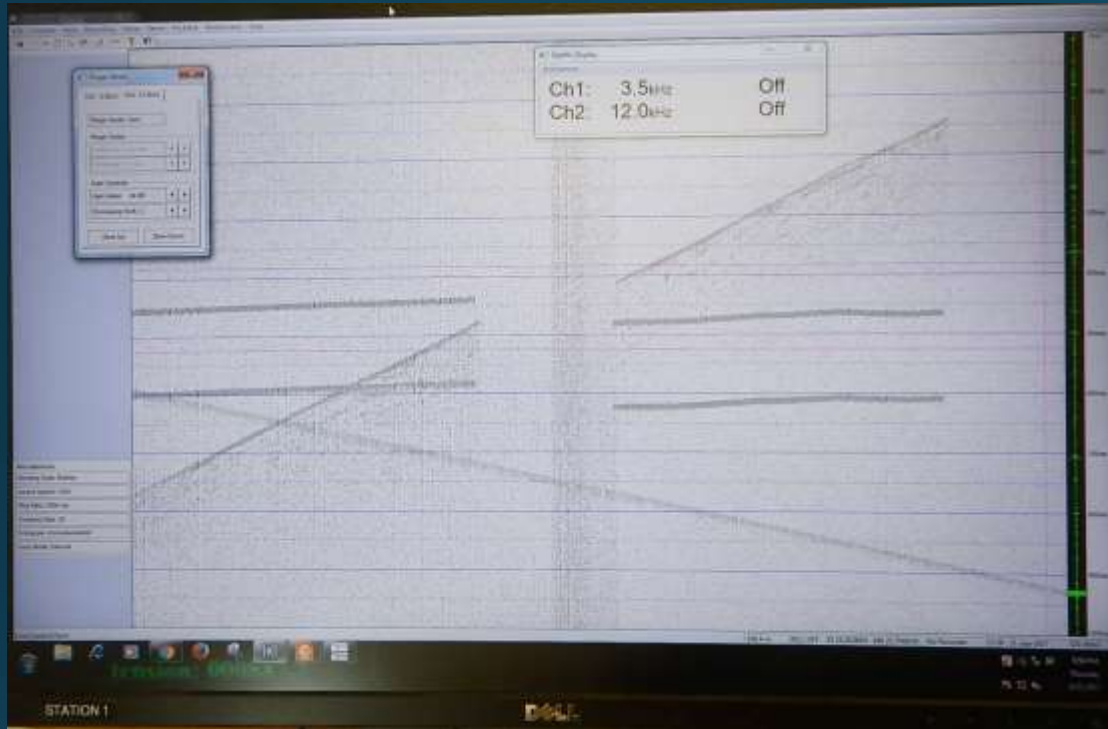
* values based on data supplied by the manufacturer for new, dry fiber

Plasma[®] HiCo 12 Strand



UHMWPE Main Winch Line: Onboard Armstrong and specifically installed for the new JPC operations, the 0.681" diameter fiber optic cable usually on the Port storage drum of the dual purpose Markey traction winch was replaced with 12,000 meters of HICO. HICO is composed of Plasma, a heat strengthened 'alloy' of Spectra. The high strength rope is 9/16" diameter, has a break strength of 42,000 pounds and the primary fibers are coated with a proprietary coating to enhance the ropes coefficient of friction. The 12KM long rope was purchased with funds earmarked for its acquisition in the proposal budget.

ACOUSTICS



Acoustic Modem Releases: Using key components from the retired Long Core system, two new compact release modules were created to operate with the new corer. Utilizing force multiplying strong-backs and directional transducers from the Long Core inventory, these Benthos modems provide reliable communication and release capabilities for the JPC

SOFT SHACKLES & PENNANTS



 **Woods Hole Oceanographic Institution**
Mooring Lab
Woods Hole, MA 02543
508-289-2385

CERTIFICATE OF BREAK TEST

Project: Jim Brooks Description: 9/16" Hico soft shackle
Test Date: 7/11/2017 P.O. or Serial Number: 42,000 WWL
TestID: 2412 Termination 1:
Termination 2:



Channel	Peak
Load	48,300

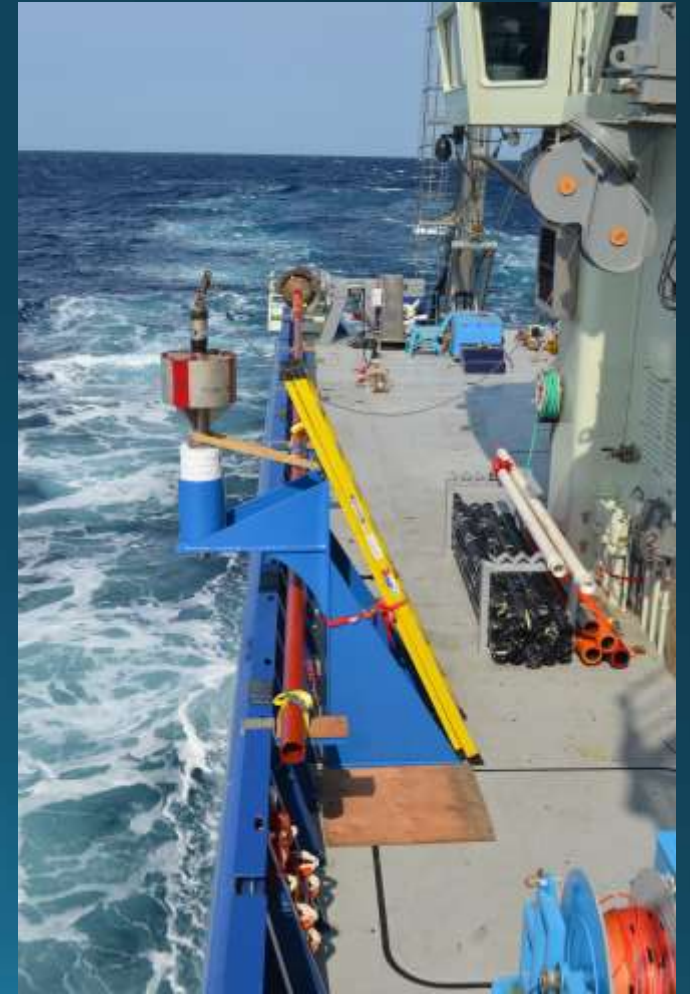
Test Results (Max Load) lbs.:
Break Notes:

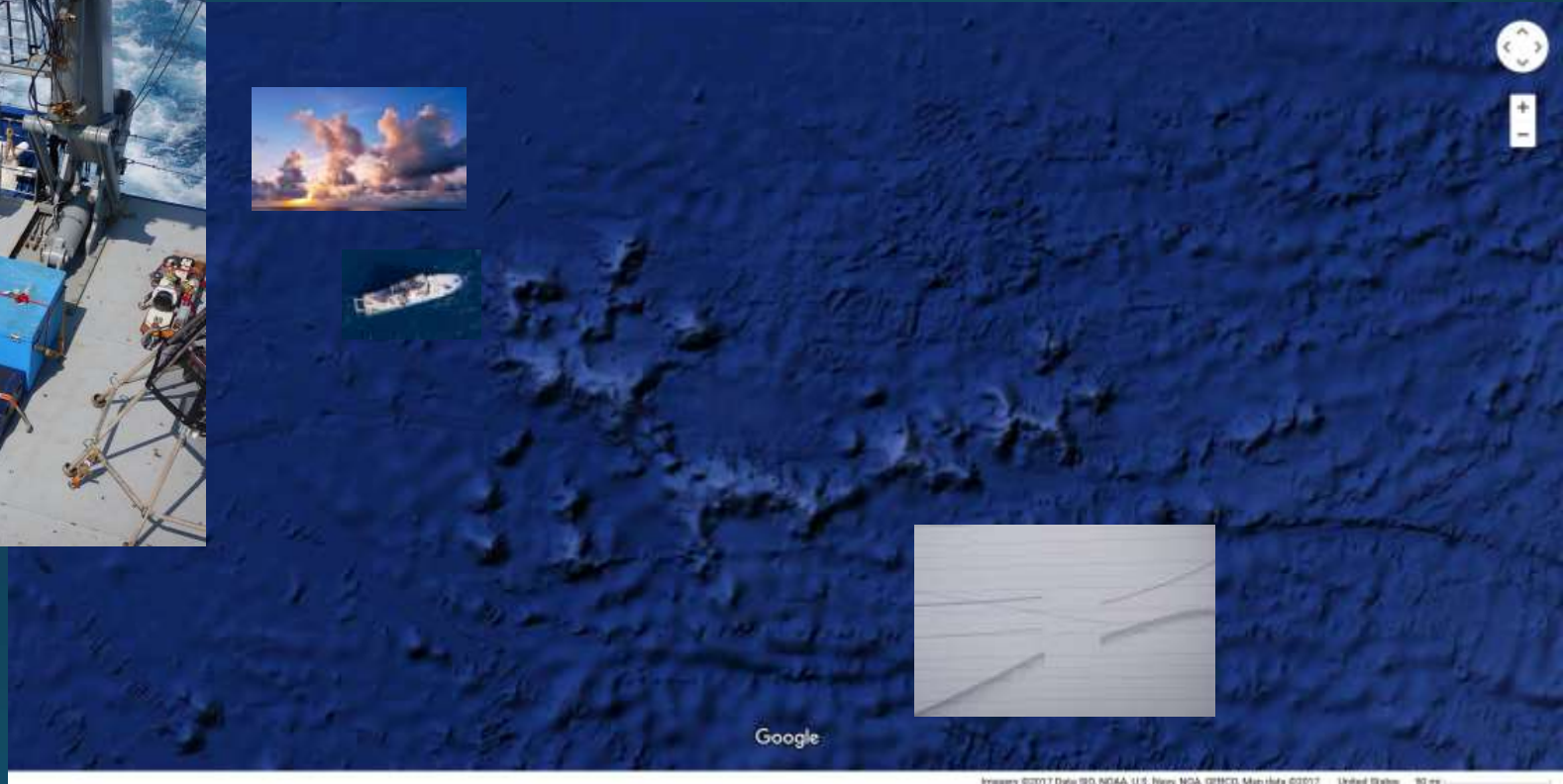


LONG CORE PENNANTS



ARMSTRONG 023
SEPTEMBER 2017





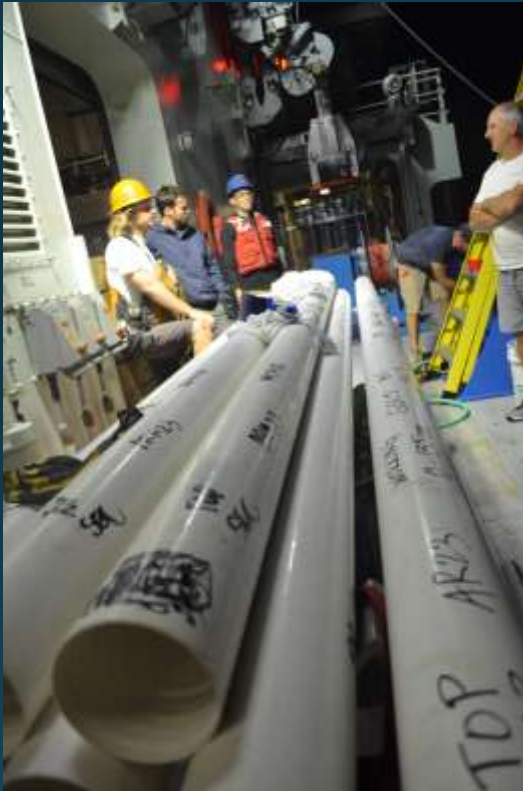
GILLIS SEAMOUNT

35 41.13'N 58 43.367'W DEPTH 5235 meters

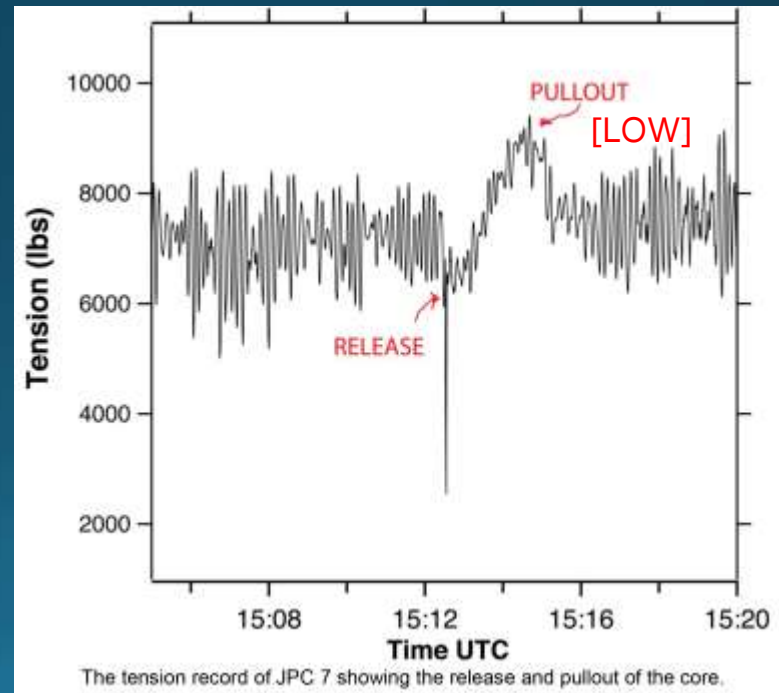
ARM23 JPC7

SMOOTH LAUNCH

WELL PREPPED

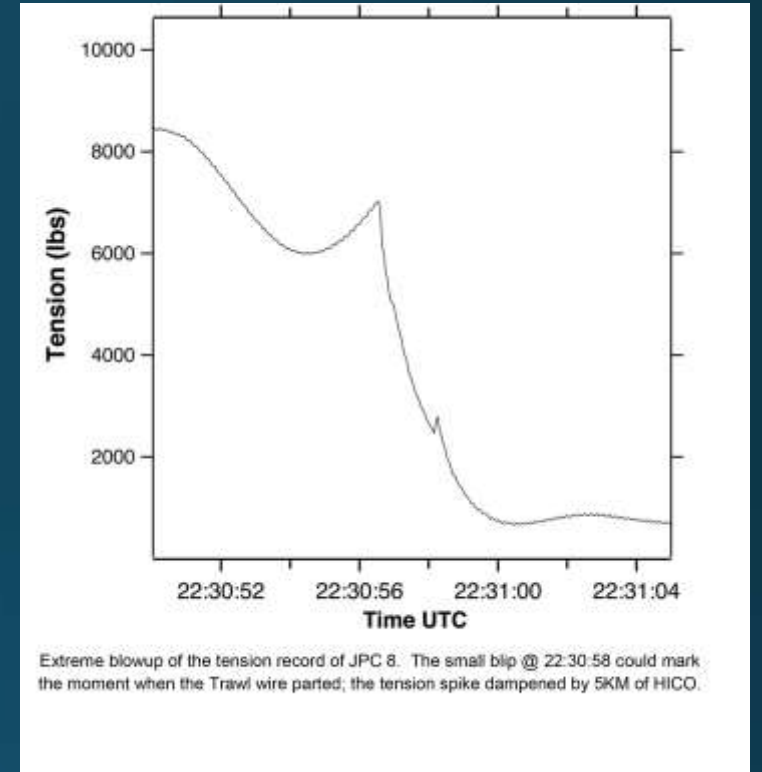
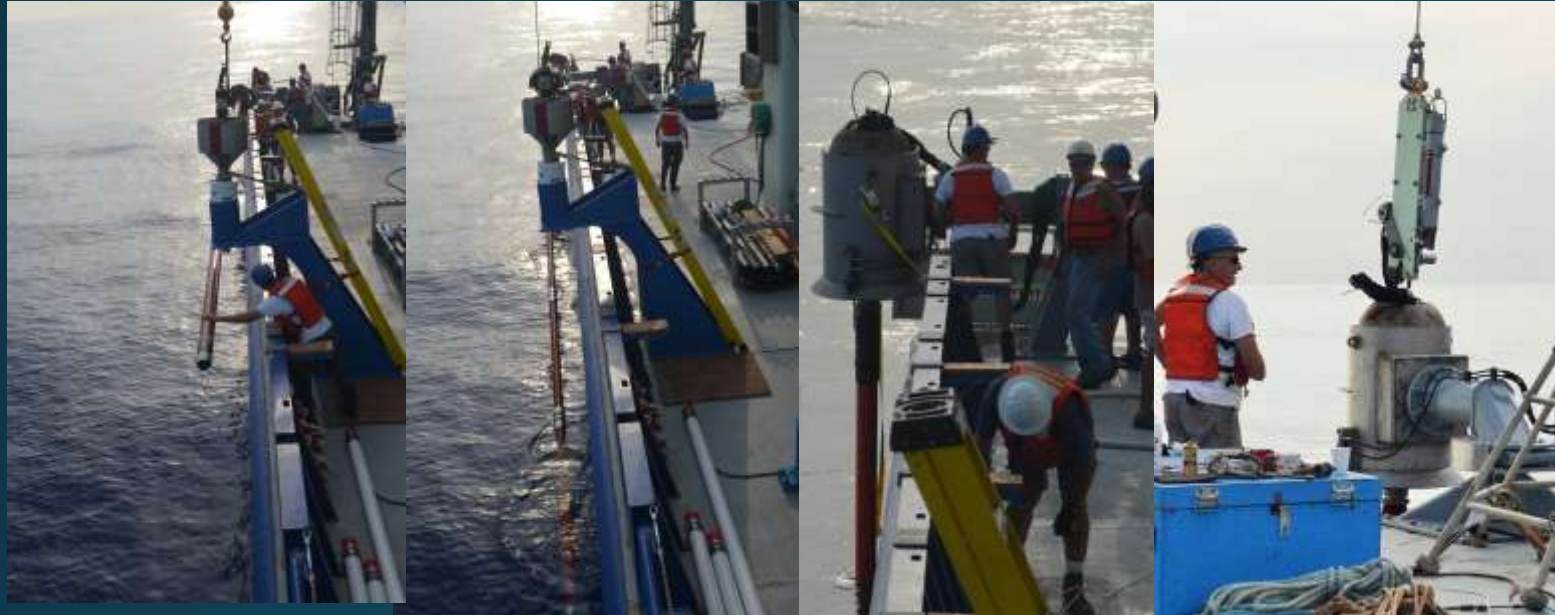


PERFECT TRIP



UGLY

ARM₂₃ JPC8

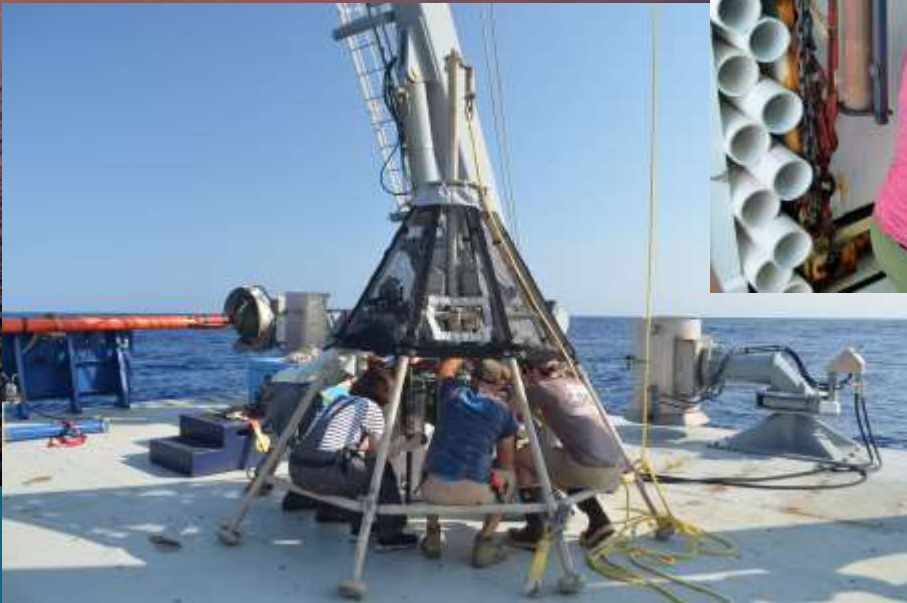
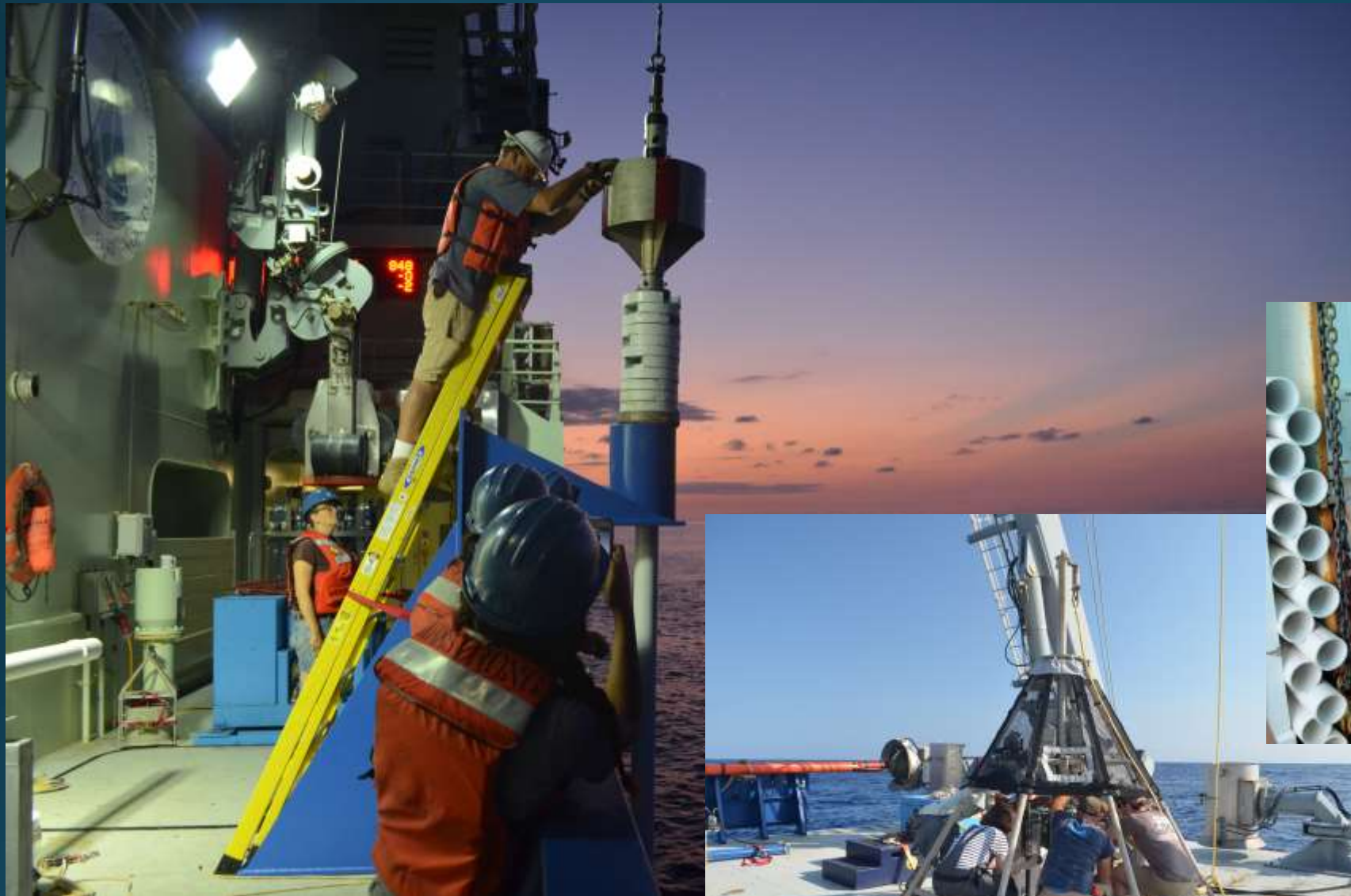


JPC 7

- ROBUST JACKETING
- UPSIZED PENNANT STOCK
- FARE THE FLARE [NYLATRON, WELDED/ROLLED ROUND BAR
- UHMWPE PENNANT HELD UP TO STRESS

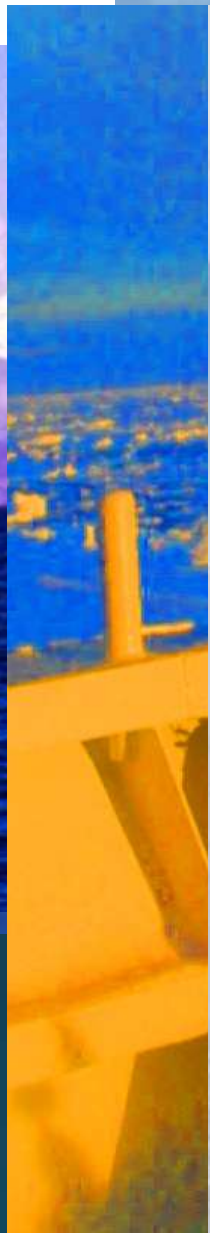
JPC 8

- LOTS OF ENERGY TO SPARE
- PTFE/TAPER GOOD
- MORE PIPE/LESS MASS





- HICO
- HANDLING GEAR
- LAUNCH/RECOVERY
- ACOUSTICS
- ARMSTRONG D.P.

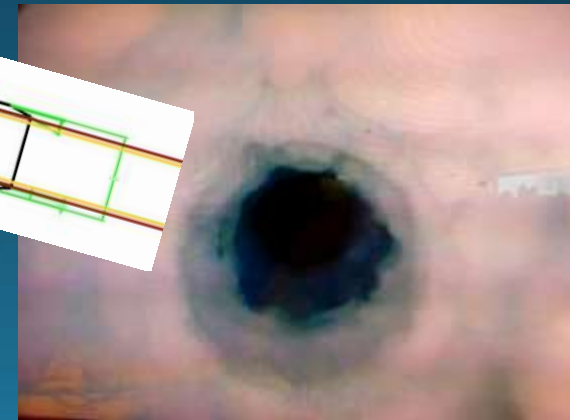
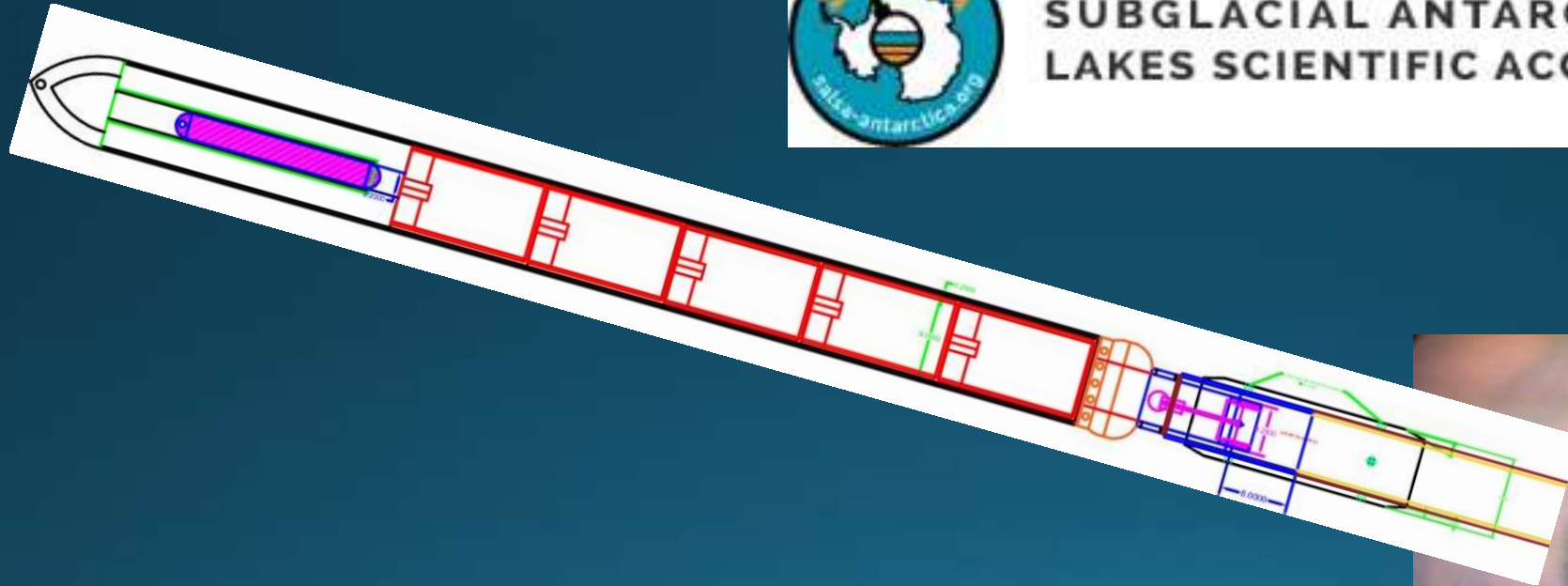




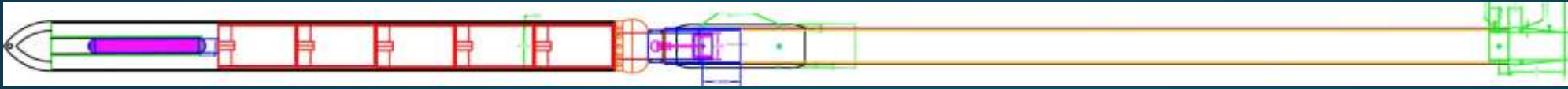
VARIABLE LENGTH @ 5' INCREMENTS UP TO 20 FEET MAX
VARIABLE WEIGHT: 575 #'S MIN.-1500# MAX --~200 LB. INCREMENT.



**SUBGLACIAL ANTARCTIC
LAKES SCIENTIFIC ACCESS**



NIWA



WEIGHT STAND LENGTH $\geq 5m$ [8 ft.] MAX. DIA. = 23 cm [9"]



'METERING BLOCK
'HALL-EFFECT'

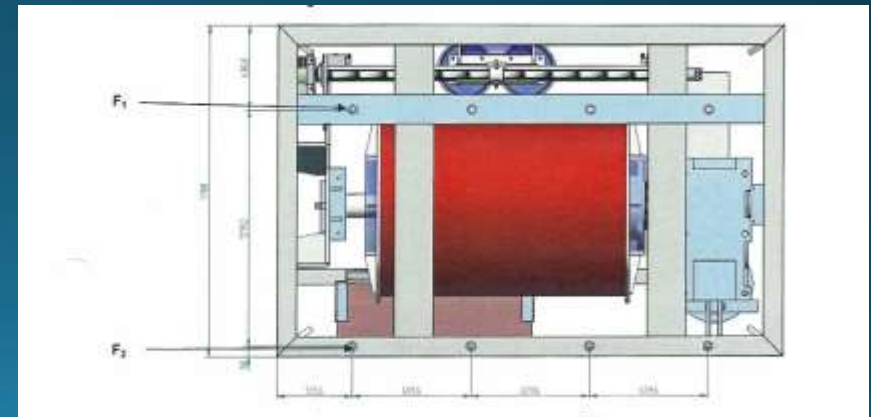


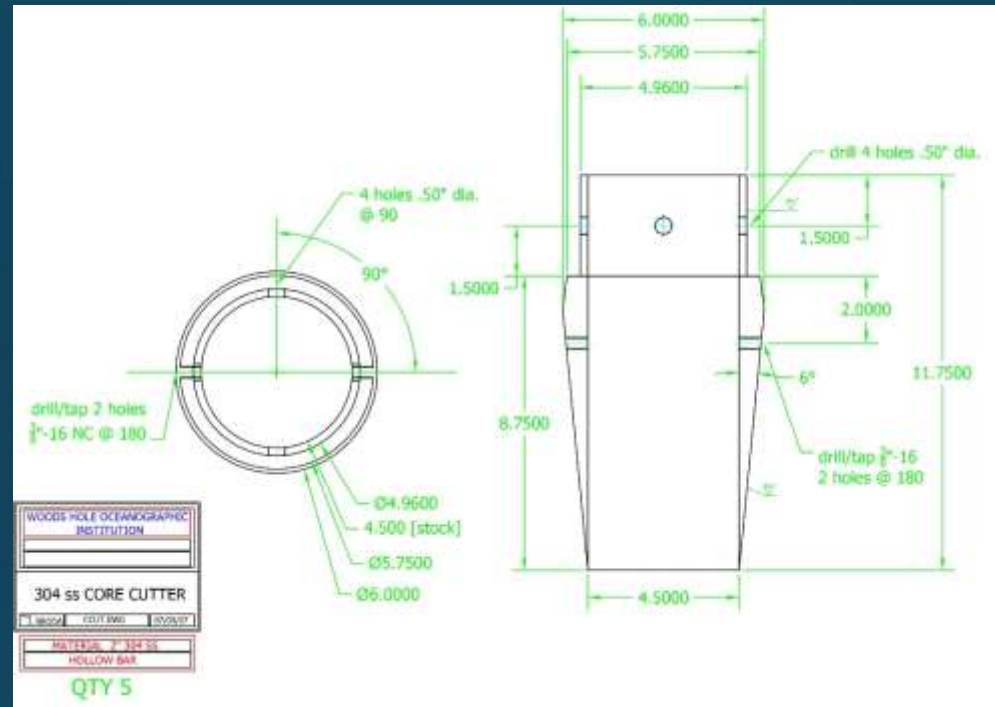
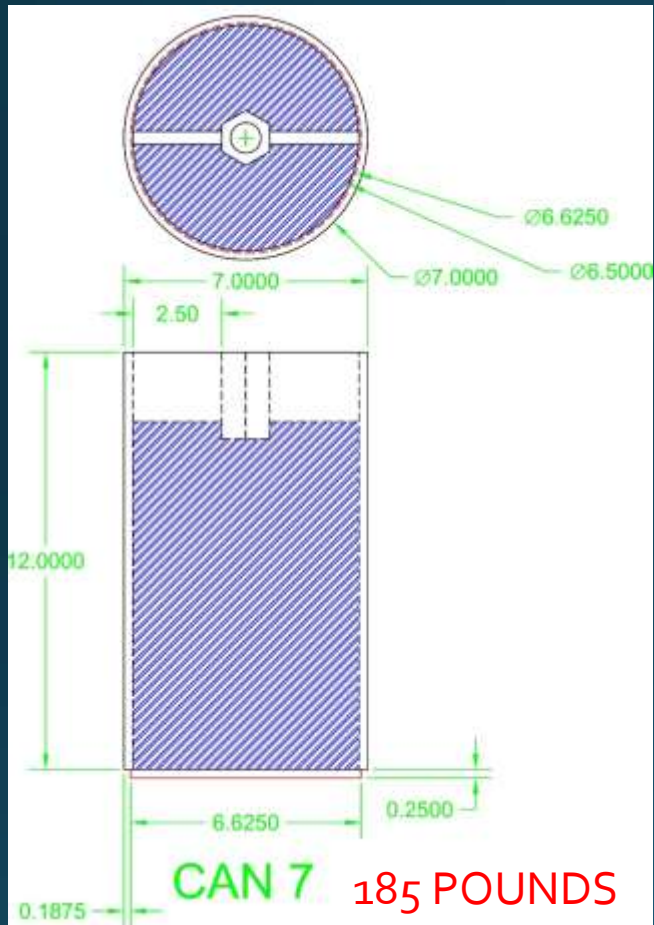
CERMET PRIMER/HARD TEFLON TOPCOAT

MacArtney MASH 4K



SWL = 6300 #





4.875 OD 4.375 ID



SAMSON
AMSTEEL BLUE

1950 METERS
5/16" DIA
ABS=13000#



