



July 13, 2005

Dr. Peter Wiebe  
Chair, UNOLS Council  
Woods Hole Oceanographic Institution  
Woods Hole, MA 02543

Dear Dr. Wiebe:

The University of Delaware is pleased to submit its preliminary application for designation as a UNOLS vessel for the R/V HUGH R. SHARP; the replacement for the R/V CAPE HENLOPEN. In doing so, the University is adhering to both the time table for construction and delivery presented to the UNOLS Council in 2000, and the time table for transition between the two vessels discussed with the National Science Foundation in 2004. I have attached both documents for your convenience.

I understand that final acceptance will not take place until after successful completion of the NSF inspection. However, since the R/V SHARP is a direct replacement for the R/V CAPE HENLOPEN, the University wants to submit its application early so that the scheduling process for 2006 can move ahead as usual; with a transition that is seamless to both the science community and the funding agencies.

Construction of the HUGH R. SHARP is nearing completion at Dakota Creek Industries in Anacortes, WA. The launch is scheduled for July 16, 2005. Dock trials will take place in August, culminating in sea trials and preliminary acoustic trials in early September. The R/V SHARP will be loaded aboard the delivery ship, M/V *Super Servant* (Dockwise Yacht Transport) on September 12, 2005, for the transit to the east coast. The University will take final acceptance of the vessel on or about October 9<sup>th</sup> in Port Everglades, Florida. The ship's crew will make the delivery leg from Florida to Delaware. Formal acoustic trials may take place enroute at the AUTECH Navy range in the Bahamas. The NSF inspection is tentatively planned for early March 2006 after cross-decking and final outfitting is completed. The vessel's latest Letter of Intent for 2006 shows operations beginning on March 28<sup>th</sup>, but this remains tentative. No science requests have been made for January or February, which meshes well with the final outfitting plan.

The vessel will depart the shipyard with the following systems completed, tested, and accepted by the University:

1. All propulsion, power system integration, dynamic positioning, and auxiliary ship's systems suitable for full operation of the vessel.
2. All pilothouse electronics including navigation and communications.
3. Stern A-frame.
4. Starboard below-decks trawl winch outfitted with 3000m of ½" diameter, 3x19 trawl wire.
5. Initial Inclining Test.

Upon arrival in Lewes, the following equipment will be cross-decked from the CAPE HENLOPEN by the ship's crew and technicians:

1. All ship's acquisition systems including Surface Mapping and Meteorological System, CTD, ADCP's, Knudsen deep water echo sounder, and Multibeam Survey System.
2. Aft deck crane (which will become the new vessel's foredeck crane).
3. Ship's small boat.
4. Any remaining galley/hotel stores and supplies.
5. Damage Control Locker.
6. Medical Locker.
7. Serviceable engineering tools and equipment.
8. Serviceable deck tools and equipment.

Ship's acquisitions systems will be brought on line in order of priority based on operational demand in 2006, and at a sufficient level to prove operational readiness at the NSF inspection. All electronics racks and cable trays/passes have been installed by the yard to facilitate rapid and simple cross-decking of acquisition systems. The ship is fitted with a retractable keel which allows rapid installation of acquisition transducers without the need for divers or hauling. As the new vessel has a forward squirt boom, the foredeck crane is considered non-essential to begin operations and may not be installed until later in the year after minor refurbishment can be completed. All other items listed above are considered minimal, and the University feels there is more than ample time to complete cross-decking in the time allotted.

The following equipment will be purchased new and installed in Lewes after delivery:

1. CTD Handling System. Under contract with Caley Ocean Systems with delivery scheduled for January 1, 2006.
2. All laboratory outfitting, including counters, fume hoods, chemical storage cabinets, refrigerators, and freezers. These components are completely modular in design. Cabinetry will be fabricated by a sub-contractor and delivered to Lewes in December.
3. Aft deck crane. Recently funded through an NSF SSSE proposal.

The following equipment is considered non-essential to begin operations in 2006 and will be installed as funding becomes available and operational demands dictate.

1. Port trawl winch outfitted with 0.680 conductor cable.
2. Starboard Quarter Scientific Load Handling Apparatus.
3. 22-foot rigid-hull science support launch.

The ship's portable Scanfish winch will fill the need for conductor cable until the port trawl winch can be installed. The port trawl winch is the University's priority for NSF equipment requests in 2006. A "crutch" that bolts to the starboard load handling apparatus foundation in conjunction with the main aft deck cane will be used until the starboard quarter handling apparatus can be designed and installed. Like the CTD handling system, the design of the starboard quarter system will be based on the "Functional Requirements" developed by the *Load Handling System Workshop*.

All other scientific support equipment is considered completely portable and changed out on a routine basis, and thus requires no effort for cross-decking. This equipment includes:

1. Portable lab vans.
2. Portable deck winches (1/4" hydro, "clean", Scanfish, and mooring winch).
3. Small portable davit.
4. Portable electric capstan.

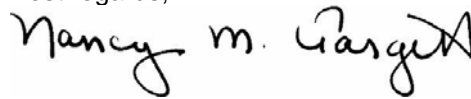
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A photograph from construction in late June is attached.

The University of Delaware will keep the UNOLS Council and the federal ship funding agencies apprised of progress with construction, delivery, final outfitting, and the results of the NSF inspection as these milestones are met. The Council should anticipate a final request for UNOLS designation in late March after the NSF Inspection has been successfully completed.

If there is any additional information which the Council needs regarding the new ship, please do not hesitate to contact me or Captain Matthew Hawkins, our Director of Marine Operations.

Best regards,

A handwritten signature in black ink that reads "Nancy M. Targett". The signature is written in a cursive, flowing style.

Nancy Targett  
Interim Dean

Attachments

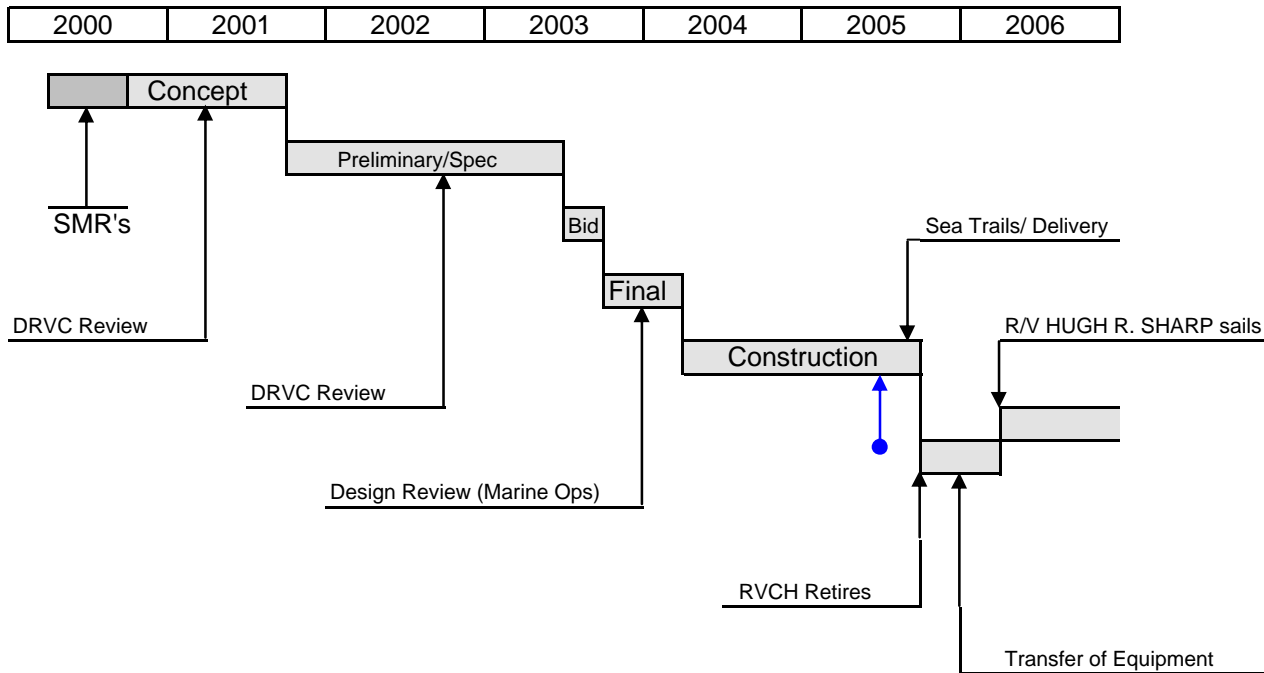
cc: NSF (Mike Reeve, Linda Goad, Dolly Dieter)  
ONR (Frank Herr, John Freitag)  
NOAA (Ralph Rogers, Leon Cammen)

## SUPPORTING INFORMATION

The University of Delaware remains a member of UNOLS in good standing, and offers the following as evidence of its ability to operate the R/V *HUGH R. SHARP* to the high standards of scientific support established by UNOLS:

- a) The University intends to operate the vessel solely for the purposes of oceanographic research and education.
- b) The University, through the College of Marine Studies, has successfully operated the R/V CAPE HENLOPEN for 30 years.
- c) From the current LOI process, the schedule appears strong for 2006 with 151 funded days and more than 50 still pending. Operations are not planned to begin until late March or early April, which coincides well with the current plan for cross-decking and final equipment installation. Projected daily rate is shown on the attached table. Amortization rates shown are preliminary and still subject to negotiation with the National Science Foundation.
- d) An NSF Inspection will be conducted in early March after installation of the CTD handling system and enough science acquisition systems to support the initial cruise requirements. Cost of the inspection will be borne by the University of Delaware.
- e) The new vessel will be fully compliant with the UNOLS Research Vessel Safety Standards.
- f) As with the R/V CAPE HENLOPEN, the R/V HUGH R. SHARP will be regularly available to all federally-funded users.
- g) As with the R/V CAPE HENLOPEN, the R/V HUGH R. SHARP will be maintained to accommodate the needs of the academic oceanographic programs.
- h) The University of Delaware is already involved in the UNOLS scheduling process for 2006, assuming the HUGH R. SHARP will replace the CAPE HENLOPEN.
- i) The University of Delaware will continue to submit Cruise Reports and Post Cruise Assessments for the HUGH R. SHARP. Post Cruise Assessments for the CAPE HENLOPEN have historically been very favorable, showing the high level of support the University of Delaware's operation gives the science community in the mid-Atlantic.
- j) The University of Delaware will continue to adhere to the cost accounting and performance standards according to UNOLS standard procedures.
- k) The University of Delaware has all of the mechanisms and infrastructure in place to submit and administer operational proposals and contracts with the federal ship-funding agencies, other academic institutions, and private organizations.
- l) A general description and summary of how the HUGH R. SHARP will enhance the mix of oceanographic facilities available to oceanographic programs is also attached.

**Design and Construction Timetable**  
**R/V CAPE HENLOPEN Replacement Vessel**  
**University of Delaware**



**Notes:** The "Design-Bid-Verify-Construct" Method Used for Discussion (Glosten Report, 1998)  
 - Good Control Over Design Process  
 - Lowers Technical Risk and Exposure to Claims at Construction

↑ Indicates Current Status

Date: 07/10/2005	
Version: 9	By: MJH

## Proposed Schedule:

- January 1, 2005 CAPE HENLOPEN operating as normal. Current Cooperative Agreement ends February 28, 2007. CY 2005 handled as “Annual Project Report” with supplement to grant OCE-0202069.
- June 2005 Submit written application for “preliminary” UNOLS membership. “Final” membership contingent upon successful NSF inspection and CAPE HENLOPEN being retired from service.
- July 2005 Generate 2006 sailing schedule for new vessel under normal scheduling process. LOI developed in May/June in preparation for July scheduling meeting.
- August 2005 Sea trials/preliminary acoustic trials, Anacortes, Washington. Periodic crew familiarization during construction and trials.
- ~Sept. 30, 2005 2005 operations proposal ends. CAPE HENLOPEN retired from service.
- October 2005 New Vessel delivered to Florida. CAPE HENLOPEN crew to deliver to Delaware. University of Delaware to cover all costs (crew, fuel, stores, etc.) for delivery. All insurance costs to be paid for by the University until science operations begin.
- Conduct formal acoustic trials while enroute (Navy range/Bahamas).
- Conduct NSF Safety inspection enroute for operations proposal submission and “Preliminary” acceptance as UNOLS vessel if necessary. Inspection costs covered by University of Delaware. Vote taken at UNOLS Annual Meeting contingent upon successful inspection. Science inspection to follow after cross-decking complete.
- Note: Both inspections may be completed together in February 2006 if possible (See below).
- November 2005 New vessel alongside in Delaware. Begin cross-decking of equipment and systems. University of Delaware to cover all costs for ship’s crew, rigging, start-up, and supplies.
- New Operations proposal submitted for 2006. New proposal to have four-year duration and end date of December 31, 2009.
- February 2006 Cross-decking complete. Shakedown cruises and NSF Science inspection completed before first cruise. Final acceptance as UNOLS Vessel at winter UNOLS Council meeting.
- March 2006 New vessel begins science operations.

## **R/V HUGH R. SHARP**

The R/V *HUGH R. SHARP* has been designed and constructed to be a more modern and capable vessel to fill the current niche currently occupied by the R/V CAPE HENLOPEN. This includes the mid-Atlantic Bight out to 200 nm, including the Delaware and Chesapeake Bays. The vessel will also be capable of occasionally working as far offshore as Bermuda, as far north as the Gulf of Maine, and as far south as Florida. The vessel will be able to work in all seasons on a 24-hour per day basis.

The R/V *SHARP* will be general-purpose in nature, serving all disciplines in oceanography. It will have solid carrying, lifting, and towing capabilities. The vessel is designed with “ultimate flexibility” in mind such that it can support a wide variety of scientific missions, both those currently envisioned and those which may develop in the future. The vessel will have excellent slow speed control and sea keeping, as well as exceptional station keeping ability. It will be highly maneuverable to work in shallow and confined waters.

A summary of vessel characteristics is attached.

The R/V *SHARP* also offers the following capabilities to the user community which is not currently available in any coastal vessel in the UNOLS fleet today:

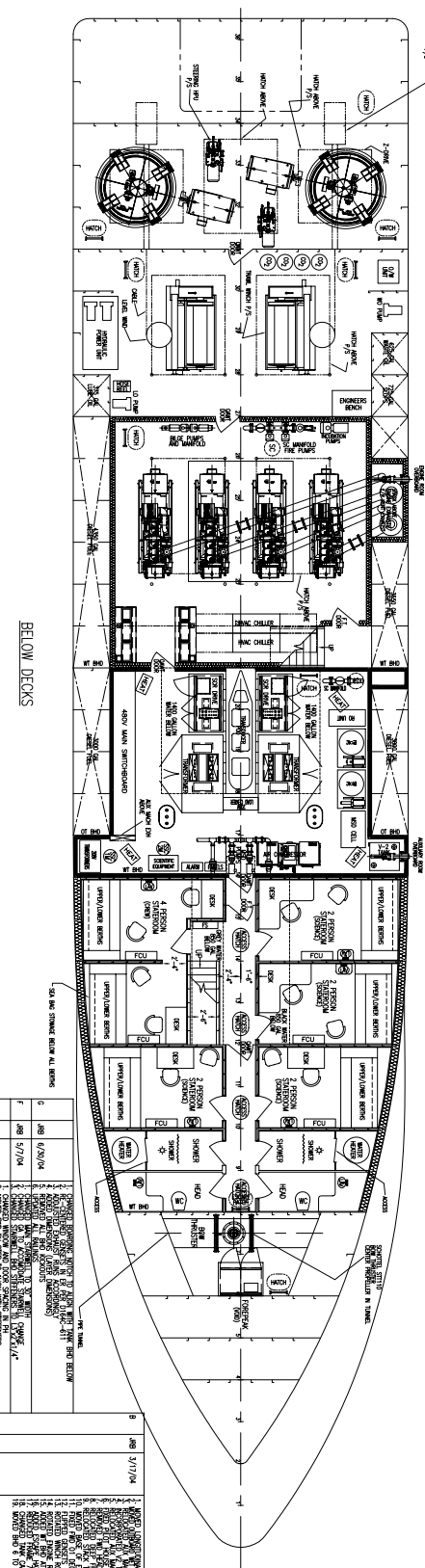
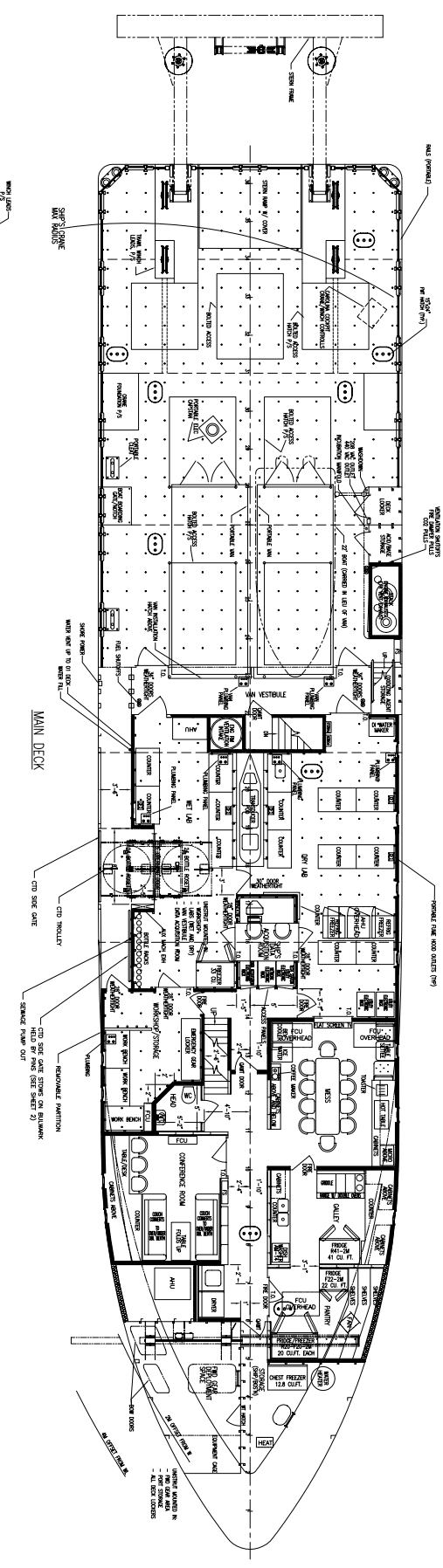
- Low underwater radiated noise signature – below ICES 209 standard at speeds up to 8 knots. This gives improved capabilities for fisheries, marine mammal, and acoustic research, as well as enhanced transducer performance and habitability.
- Diesel-electric power plant.
- Twin Z-drive propulsion and bow thruster.
- Dynamic Positioning for improved station keeping, ROV work, and instrument installation in support of Ocean Observatories.
- Dual trawl winches below decks.
- Large aft deck capable of accommodating two 20-foot vans. This gives greater flexibility in outfitting the vessel for a wide range of scientific missions, as well as a large, open deck when needed.
- Advanced over-the-side handling systems utilizing docking heads and “auto-tension” for safe and efficient package recovery, as well as motion-compensation.

**Vessel Characteristics**  
**R/V HUGH R. SHARP**  
**July 2005**

Operating Area	Mid-Atlantic/Coastal
Length Overall	146' (44.5 m)
Length at Waterline	135'
Beam	32'
Draft	9'
Freeboard (aft deck)	5'
International Tonnage (With two 20-foot vans on deck)	495
Domestic Tonnage	295
Displacement Tonnage (Fully Loaded)	598
Cruising Speed	11-12 knots
Range (Average speed 7 knots, 10% reserve)	3500 nm
Endurance (Limiting Factor: Fuel)	21 days
Propulsion Plant	Diesel-Electric
Propulsors	Twin Z-drives (5-bladed, fixed pitch)
Bow Thruster	Yes
Dynamic Positioning	Yes
US Coast Guard Inspection Status	Un-Inspected
ISM Compliant	(Under Consideration)
ABS Classed	Yes
Total Permanent Berths (2-person staterooms)	22
Routine Crew (Including technician)	7
Routine Scientific	12
with Conference Room used as berth (2-person):	14
with accommodations van (4-person):	18
Acoustic Capabilities	Below ICES limits at 8 knots
Stack Emissions	"Low"
Bollard Pull	33,000 lbs
Routine Lifting/Towing	20,000 lbs







REV.	BY	DATE	DESCRIPTION
1	JMB	2/16/04	ISSUED FOR CONSTRUCTION
2	JMB	3/23/04	REVISIONS TO ELECTRICAL SYMBOLS
3	JMB	4/29/04	REVISIONS TO MECHANICAL SYMBOLS
4	JMB	5/17/04	REVISIONS TO STRUCTURAL SYMBOLS
5	JMB	6/26/04	REVISIONS TO FINISHES AND MATERIALS
6	JMB	7/20/04	REVISIONS TO DIMENSIONS AND CLEARANCES
7	JMB	8/10/04	REVISIONS TO EQUIPMENT SCHEDULES
8	JMB	9/15/04	REVISIONS TO ROOM SCHEDULES
9	JMB	10/20/04	REVISIONS TO STAIR AND RAMP DETAILS
10	JMB	11/10/04	REVISIONS TO LIFEBOAT AND SAFETY EQUIPMENT
11	JMB	12/15/04	REVISIONS TO HULL AND DECK STRUCTURE
12	JMB	1/10/05	REVISIONS TO INTERIOR FINISHES
13	JMB	2/10/05	REVISIONS TO MECHANICAL SYSTEMS
14	JMB	3/10/05	REVISIONS TO ELECTRICAL SYSTEMS
15	JMB	4/10/05	REVISIONS TO STRUCTURAL SYSTEMS
16	JMB	5/10/05	REVISIONS TO FINISHES AND MATERIALS
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32	JMB	9/10/06	REVISIONS TO LIFEBOAT AND SAFETY EQUIPMENT
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99	JMB	4/10/12	REVISIONS TO HULL AND DECK STRUCTURE
100	JMB	5/10/12	REVISIONS TO INTERIOR FINISHES

UNIVERSITY OF DELAWARE  
 146' COASTAL RESEARCH VESSEL  
 GENERAL REARRANGEMENT  
 SHEET 1 OF 2  
 DATE 2/6/04  
 SCALE 1/4"=1'-0"  
 DWG. NO. 016-C-103  
 REV. H





**R/V HUGH R. SHARP - Rate Estimate**

Date: 7/10/2005

		Comments
<b>I. Salaries &amp; Wages:</b>		
<b>A. Ship's Crew:</b>		
1. Salaries	\$375,000	Addition of one full time crew member (Ordinary Seaman)
2. Overtime	\$0	
3. Shore Leave	\$27,000	
4. Fringe Benefits	\$150,800	
<b>Total</b>	<b>\$552,800</b>	
<b>B&amp;C Marine Operations and Facility Staff:</b>		
1. Salaries	\$165,000	No change in level of staffing.
2. Overtime	\$500	
3. Fringe Benefits	\$66,000	
<b>Total</b>	<b>\$231,500</b>	
<b>II. Repair, Maintenance &amp; Overhaul:</b>		
<b>A. Normal Main. &amp; Repair</b>		
B. Major Overhaul	\$90,000	\$450,000 estimated over 5-year cycle - detailed analysis pending.
<b>III. Other Expenses:</b>		
A. Fuel & Lube Oil	\$294,840	Average fuel consumption of 39 gal/hr (575 kW) @ \$1.75/gal
B. Food	\$85,500	Average of 12 scientists and 7 crew (35% increase) @ \$25/day/person
C. Insurance	\$35,700	Based on 2005 rates + 10%
D. Stores, Minor Equip. & Supplies	\$60,000	
<b>E. Travel</b>		
Domestic	\$15,000	Training and meetings
Foreign	\$0	
F. Shore Facilities Support	\$45,000	
G. Miscellaneous	\$25,000	Training tuition, ABS, etc.
H. Amortization	\$252,000	\$1400/day * 180 days (Estimate Only -subject to negotiations with NSF)
<b>Total</b>	<b>\$973,040</b>	
<b>Total Direct Costs</b>	<b>\$1,757,340</b>	
IV. Indirect Costs	\$35,147	2% (For maintenance on pier and basin dredging subject to negotiations with NSF)
<b>V. Total Operating Costs</b>	<b>\$1,792,487</b>	

Anticipated Average Operating Days	180
Estimated Daily Rate	<b>\$9,958</b>

*Note: All figures are shown in 2005 dollars except as indicated.*

Letter Of Intent  
R/V Cape Henlopen (HUGH R.SHARP) 2006  
 LAST UPDATED: 2005/07/08

DAYS/AGENCY/ CRUISE MAP INDEX/AREA/ DATES PURPOSE	P.I./INSTITUTION/ PROPOSAL NO.	PORTS	STATUS/ CLEARANCE
01 JAN //	Hawkins/UD/	n/a	0/Other/
15 MAR Outfit/Trials	n/a	n/a	No
Final Outfitting and Trials - R/V HUGH R. SHARP			
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21 MAR /Delaware Bay/	Hawkins/UD/	Lewes	0/PRV/F
22 MAR NSF Inspection	n/a	Lewes	No
Dates tentative			
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28 MAR NA6/Delaware Bay/	Sharp, Jon/UD/	Lewes	3/NSF/F
30 MAR Chemistry	OCE 0352280	Lewes	No
01 APR NA6/Chesapeake Bay/	Wommack, Eric/UD/	Lewes	5/NSF/F
05 APR Biology	MCB 0132070	Lewes	No
07 APR NA6/Coastal/	Bauer, Jim/VIMS/	Lewes	12/NSF/F
18 APR Chemistry	OCE 0327423	Norfolk	No
20 APR NA6/Chesapeake Bay/	Mason, Robert/UMd/	Baltimore	8/NSF/F
27 APR Chemistry	OCE 0351050	Baltimore	No
Pooled "clean" van and UD "clean" winch req'd. Isotopes.			
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01 MAY NA6/Chesapeake Bay/	Wommack, Eric/UD/	Lewes	5/NSF/F
05 MAY Biology	MCB 0132070	Lewes	No
Possbily late March - dependent on new vessel outfitting.			
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07 MAY NA6/Delaware Bay/	Sommerfield, Chri/	Lewes	2/NOAA/P
08 MAY Benthic	UD/??	Lewes	No
"spring" cruise - earlier desirable			
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28 MAY NA6/Chesapeake Bay/	Luther, George/UD/	Lewes	2/NOAA/P
29 MAY Chemistry	??	Lewes	No
Buoy tests/deployments.			
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01 JUN NA6/Long Island Sound/	Cormier, Marie-He/	Lewes	7/NSF/F
07 JUN Educational	LDEO/GEO 0503515	Lewes	No
Additional transit and mob days may be required.			
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10 JUN NA6/Chesapeake Bay/	Wommack, Eric/UD/	Lewes	5/NSF/F
14 JUN Biology	MCB 0132070	Lewes	No
16 JUN NA6/Delaware Bay/	Sharp, Jon/UD/	Lewes	3/NSF/F
18 JUN Chemistry	OCE 0352280	Lewes	No
25 JUN NA6/Delaware Bay/	Sommerfield, Chri/	Lewes	2/NOAA/P

26 JUN	Benthic "summer" cruise	UD/??	Lewes	No
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01 JUL	NA6/Coastal/	Blough, Neil/UMd/	Lewes	5/NSF/F
05 JUL	Chemistry/Optics	OCE 0425020	Lewes	No
07 JUL	NA6/Chesapeake Bay/	Wommack, Eric/UD/	Lewes	5/NSF/F
11 JUL	Biology	MCB 0132070	Lewes	No
13 JUL	NA6/Coastal/	Boyd, Tom/NRL/	Lewes	5/NAVY/P
17 JUL	Chemistry	n/a	Lewes	No
Alternate dates = August				
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19 JUL	/Chesapeake Bay/	Williams, Henry/	Baltimore	4/NSF/F
22 JUL	Biology	UMd/OCE 0445276	Baltimore	No
23 JUL	NA6/Coastal/	Lynch, Jim/WHOI/	Lewes	7/NAVY/F
29 AUG	Acoustics	??	Lewes or WH	No
SW06 Acoustics Experiment - Turgut/Goff Chirp Sonar Leg. Mult-ship experiment with ENDEAVOR, OCEANUS, and KNORR. Dates shown are from "ship_3wks_mod2.xls". Transit days may be needed at beginning depending on mobilization location and distance to site.				
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30 JUL	NA6/Coastal/	Lynch, Jim/WHOI/	??	1/NAVY/F
30 JUL	Acoustics	??	??	No
de-mob/mob between legs				
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31 JUL	NA6/Coastal/	Lynch, Jim/WHOI/	Lewes or WH	22/NAVY/F
21 AUG	Acoustics	??	Lewes	No
SW06 Acoustics Experiment - Baidey/Turgut Leg. Mult-ship experiment with ENDEAVOR, OCEANUS, and KNORR. Dates shown are from "ship_3wks_mod2.xls". De-mob and transit days back to Lewes may be needed depending on mob and work site location.				
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?? AUG	NA6/Chesapeake Bay/	Mason, Robert/UMd/	Baltimore	0/NSF/F
?? AUG	Chemistry	OCE 0351050	Baltimore	No
Pooled "clean" van and UD "clean" winch req'd. Isotopes. MOVE TO HATTERAS (8 days)				
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?? AUG	/Chesapeake Bay/	Williams, Henry/	Baltimore	0/NSF/F
?? AUG	Biology	UMd/OCE 0445276	Baltimore	No
MOVE TO HATTERAS (3 days) - combine with Mason.				
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22 AUG	NA6/Coastal/	Lynch, Jim/WHOI/	??	4/NAVY/F
25 AUG	Acoustics	??	Lewes	No
"Contingency Days" - still tentative. Dates shown are from "ship_3wks_mod2.xls". These may become required de-mob and/or transit days.				
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27 AUG	NA6/Chesapeake Bay/	Luther/UD/	Lewes	7/NSF/F
02 SEP	Chemistry	OCE 0308398	Lewes	No

05 SEP	NA6/Chesapeake Bay/	Wommack, Eric/UD/	Lewes	5/NSF/F
06 SEP	Biology	MCB 0132070	Lewes	No
08 SEP	NA6/Coastal Delaware/	Epifanio, Charles/	Lewes	5/NOAA/P
12 SEP	Biology	UD/??	Lewes	No
Scanfish Req'd				
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14 SEP	NA6/Coastal/	Blough, Neil/UMd/	Lewes	5/NSF/F
18 SEP	Chemistry/Optics	OCE 0425020	Lewes	No
20 SEP	NA6/Gulf of Maine/	Makris, Nick/MIT/	Lewes	21/NAVY/F
10 OCT	Fisheries Acoustics	??	Lewes	No
Multibeam? Fisheries X-dcr (Woody Nero). Linked with NMFS herring survey.				
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12 OCT	NA6/Coastal/	Bauer, Jim/VIMS/	Lewes	12/NSF/F
23 OCT	Chemistry	OCE 0327423	Norfolk	No
01 NOV	NA6/Chesapeake Bay/	Wommack, Eric/UD/	Lewes	5/NSF/F
05 NOV	Biology	MCB 0132070	Lewes	No
?? ???	NA6/Delaware Bay/	Badiey, Mohsen/UD/	Lewes	10/NOAA/P
?? ???	DBOS	??	Lewes	No
Delaware Bay Observing System (DBOS). (5) 2-day cruises spread throughout year.				
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?? ???	NA6/Chesapeake Bay/	Stine, Oscar/UMd/	Baltimore	12/NOAA/P
?? ???	Biology	??	Solomons	No
Six (6) 2-day cruises spread throughout the year. Oyster survey for Human pathogens.				
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?? ???	NA6//	Various/VariouS/	Lewes	15/NSF/P
?? ???		various	?	No
TRANSITS - Chesapeake Cruises. Lewes to various ports plus mob/de-mob in between cruises. Exact dates and needs to be determined.				
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Agency	Funded	Proposed	TOTAL
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NAVY	55.0	5.0	60.0
NOAA	0.0	33.0	33.0
NSF	96.0	15.0	111.0
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TOTAL	151.0	53.0	204.0