

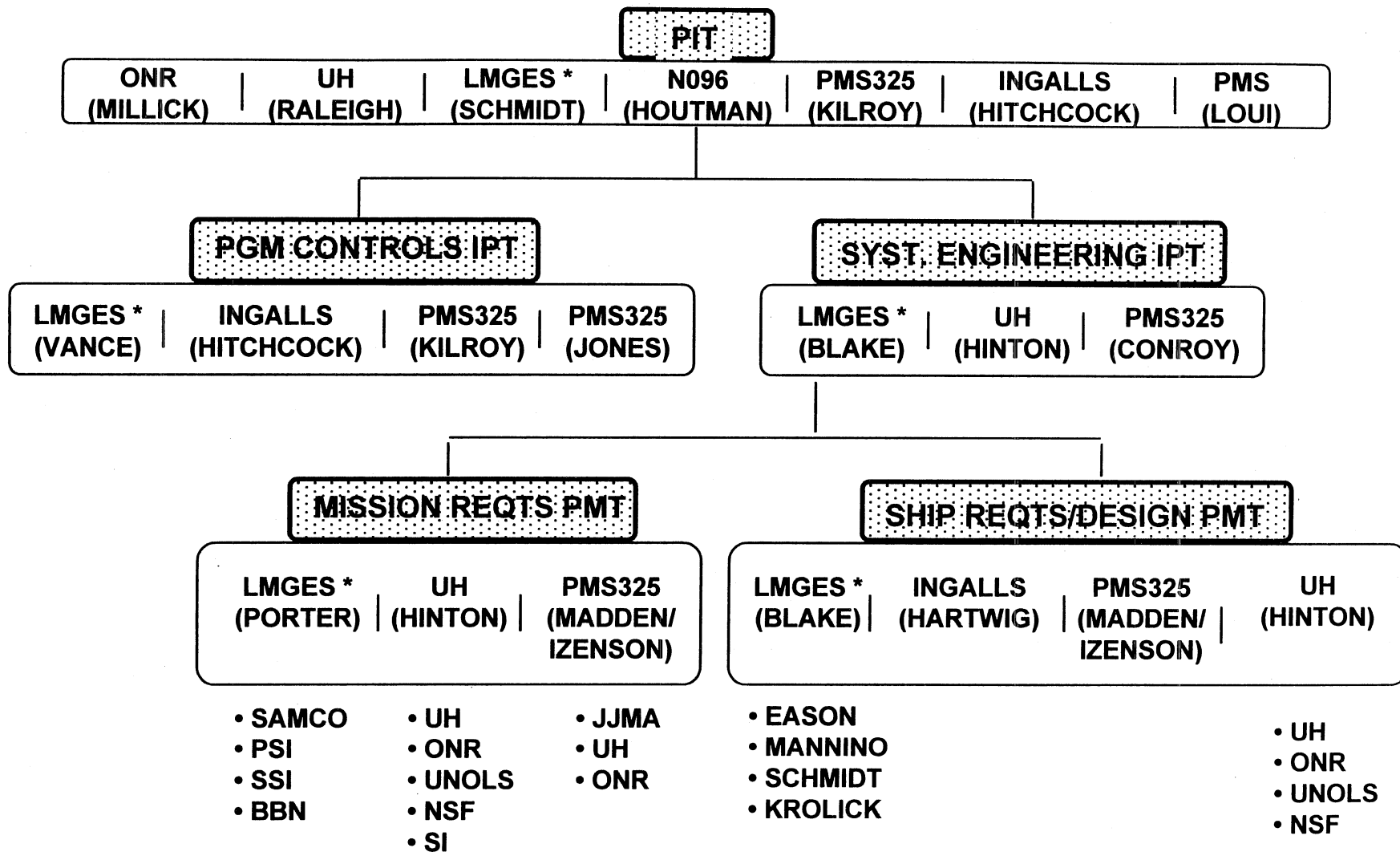
APPENDIX IX

SWATH AROR 26

PRESSENTATION TO UNOLS
STATUS AS OF 9/17/98

OUTLINE

- ORGANIZATION
- CONTRACT REQUIREMENTS
- SHIP SIZING TO MEET REQUIREMENTS
- WEIGHT REPORT SUMMARY
- NOTIONAL CONCEPT LAYOUT as of 8/18/98
- CONSTRUCTION COST
- TRADE OFF STATUS
- SCHEDULE
- EQUIPMENT LIST



OPERATIONAL CAPABILITIES

- - **OVERVIEW**

- SWATH AGOR is to be a fully-equipped, small waterplane area, twin hull (SWATH) oceanographic research ship. This document provides a brief description of the desired capabilities of the ship. The primary goal of the SWATH AGOR is to extend the limited capability of monohulls for performing oceanographic operations in high sea states. It should be emphasized that these capabilities are not firm requirements and should be treated as goals. As the project progresses, required capabilities will be adjusted if it becomes apparent that some capabilities are not affordable. The Government will work with the industry team to determine acceptable requirement values. This document is not intended to convey all the information required to complete the design of the ship.

- - **GENERAL CAPABILITIES**

- The mission of the SWATH AGOR will be to conduct general purpose oceanographic research in coastal and deep ocean areas. The ship should be capable of performing the following tasks:

- a. Sampling and data collection of surface, midwater and sea floor parameters using modern scientific instrumentation
- b. Launch, towing, and recovery of scientific packages, both tethered and autonomous, including the handling, monitoring and servicing of remotely operated vehicles (ROVs), autonomous underwater vehicles (AUVs), and boats
- c. Shipboard data processing and sample analyses in modern, well-equipped scientific laboratories
- d. Precise navigation and station keeping and track-line maneuvering to support deep sea and coastal operations
- e. Long periods of operation at low speeds.

SPECIFIC CAPABILITIES

The following specific capabilities are desired and are presented in order of priority. Although highly desired, these capabilities are not firm requirements and should be treated as goals.

- a. Performance in a Seaway: Fully operational in sea state 6 (4 to 6 meter wave height; 28 to 47 knot wind) at all headings
- b. Exterior Working Deck Area: 2,000 square feet of contiguous, exterior working deck area
- c. Station Keeping Capability: +/- 50 meters in sea state 6
- d. Science Payload: Capacity for 100 tons of temporary science equipment brought on board for specific missions and stored on deck and in storerooms.
- e. Length/Beam/Draft Limitations: Ability to reduce draft to less than 17 feet for pier access in a light load condition. Ability to transit through the Panama Canal.
- f. Laboratory Area: Total of 3,000 square feet divided among multiple labs and located adjacent to the working deck
- g. Science Staff: 25 scientists and technicians in addition to the crew required to operate the ship.
- h. Speed: 15 knots
- i. Endurance: 50 days at sea.
- j. Range: 10,000 nautical miles
- k. Scientific Gear Storage Space: 15,000 cubic feet in below deck storerooms

Item	Space ft.	Weight #	Removable	Installed	Provided	Power req.	ROM (k\$)	Location~	% used			
CTD												
Winch DESH5	8x8	15000		yes	LM	75hp		aft deck				
2nd winch	8x8	15000	yes		UoH	50hp		aft deck				
.322 em cable		2821	yes		UNOLS			aft deck				foundtion and serv. Connection
Handing sys.		15800		yes	LM	50hp		aft deck				10000m
Rosett	7h x4d	2500	yes		UoH			aft deck				Hydro Boom
.25 wire		3609	yes		UNOLS			aft deck				10000m
Sonars												
Multib. Found.	~15x20			yes	LM							Foundation/cable way/space
Multib. Sys				yes	LM							
3.5Khz	2x2			yes	LM							
12Khz	2x2			yes	LM							
ADCP	2x2			yes	LM							
Vert. Ref. Sys.	1x1			yes	LM							
Dop. Sp. Log	1x1			yes	LM							
Instri. Well	30"D			yes	LM							
Main winch												for coring/dredge/nets
DESH9/11	10x15x8h	58000		yes	LM	150hp		winch rm				9/16wire & .680 cable
9/19 wire		32900	yes		UNOLS							
.680 cable		32800	yes		UNOLS							
A-frame	20x10x22h	32000		yes	LM			aft deck				
A-frame power	3x6	2150		yes	LM	75hp		winch rm				hydro power pack
Side A-frame	12x8x12h	15000		yes	LM			aft side				
Imet tower	8x8			yes	LM			Forward deck				Foundation/services
Traction winch	~5x8	~25900		yes	LM	50HP		winch rm				replace DESH9/11
Uncont.sea W	2" serv.			yes	LM	1hp		Labs/aft deck				
Sci Fe/Freez	10x10		yes		UoH			aft deck				Power service for 8x20 iso van
Seismic sys	10x20	25000		yes	LM	2x150HP		below decks				LM provide fn/power
Tie downs				yes	LM			deck/labs				Working deck 1"&labs3/8"
Unistrut				yes	LM			Labs				2' centers
Sci wireway				yes	LM							Labs/for&aft deck/bridge&mast
SIS				yes	LM			rm's/labs/decks/br/sonar space				
SATCOM M	2x2	200		yes	LM							
P-code GPS		5	yes		UoH							
Gravimeter	3x3	300	yes		UoH							
Magnetometer	3x3	300	yes		UoH							

Mission Description

Mission Description	Low Spd Kts	Low Spd Days	Med Spd Kts	Med Spd Days	High Spd Kts	High Spd Days	Total Mission Days	Total Range NM	No. of Crew	No. of Pass	Portable Payload Required LT	Reserve Payload Available LT	Total Portable Payload LT
• HOT quarterly cruise with mooring	1	5	8	8	13	1	14	1968	16	25	17	83	100
• Bottom Observatory Service w/ ROV	0	4	6	1.3	13	6.7	12	2278	16	25	10	90	100
• Sidescan, seismics & sampling	1.5	3	8.2	21.3	13	3.7	28	5454	16	30	36	64	100
• Ocean bottom seismics	2	9	6	7	13	10	26	4560	16	25	28	72	100
• Biogeochemistry Flux Studies	0	14	8	11	13	7	32	4296	16	32	25	75	100
• Physical Oceanography	1	16	0	0	13	14	30	4752	16	24	25	75	100
• CTD, nets, moorings	1	10	10	12	13	8	30	5616	16	28	31	69	100
• Survey & Dredge	2	15	0	0	13	15	30	5400	16	25	25	75	100
• Air-sea Atmospheric Geochemistry	0	1	0	0	13	25	26	7800	16	28	10	90	100
• Trace Element Geochemistry	0	9	0	0	13	25	34	7800	16	28	31	69	100
• Marine Geophysics Survey	0	0	0	0	13	30	30	9360	16	25	24	76	100

Assumes a 100 LT portable payload for all missions per DOC. Portable payload consists of identified mission unique equipment that are not permanently built into the ship. Balance of 100 LT payload is held in reserve.

SWBS NO. A	DESCRIPTION	WEIGHT UNIT	NUMBER UNIT	WEIGHT LT	VCG FT	LCG FT
	LIGHTSHIP W/OUT MARGIN			1793.00	34.07	74.85
	MARGIN	0.10		179.30	34.07	74.85
	LIGHTSHIP WITH MARGIN			1972.30	34.07	74.85
D00	ENDURANCE - FULL LOADS					
D11	SHIP'S CREW	0.15	16	2.36	36.50	80.00
D12	SCIENTISTS	0.15	32	4.80	36.50	80.00
D29	SP. MISSION SYS & EXPENDABLES			100.00	41.13	118.00
D31	PROVISIONS	0.11	48	5.08	49.38	23.00
D32	GENERAL STORES	8.59		8.59	43.88	62.67
D41	DIESEL FUEL			383.00	12.00	70.00
D46	LUBRICATING OIL			2.68	12.00	70.00
D49	SPECIAL FUELS & LUBRICANTS			1.37	12.00	70.00
D51	SEA WATER			11.45	25.00	74.50
D52	FRESH WATER	0.28	48	13.41	36.27	62.38
D54	HYDRAULIC FLUID			1.56	30.50	57.50
D55	SANITARY TANK LIQUID			3.94	12.00	70.00
D	ENDURANCE-CONDITION 1 LOADS			538.31	19.54	78.36
	FULL LOAD, CONDITION 1			2571.62	31.03	75.49

03 Level 72.5 ABL

02 Level 64.5 ABL

01 Level 56.5 ABL

Main Deck 48.5 ABL

1st Platform 39.5 ABL

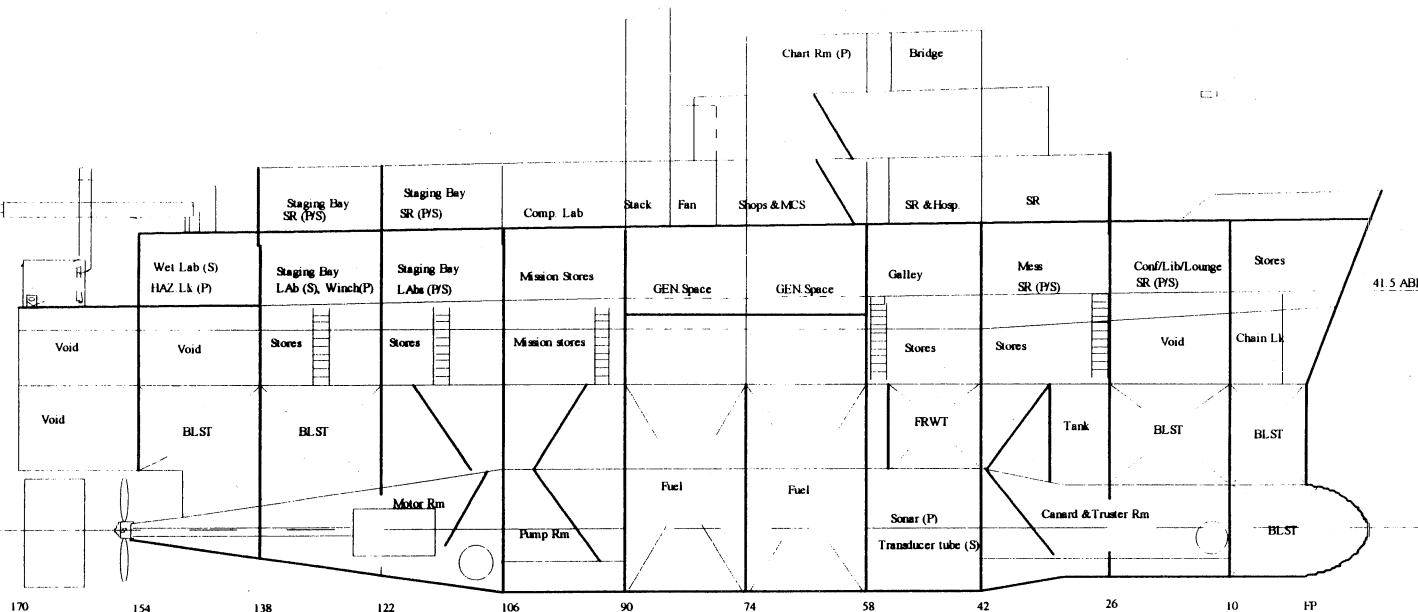
Innerbottom 36.5 ABL

2nd Platform 29.5 ABL

DWL 27.5 ABL

Normal WL 25.5 ABL

Base Line



SWATH AGOR
NOTIONAL
CONCEPT LAYOUT
DISPLACEMENT 2500 LT
18 Aug 98 Scale 1/500

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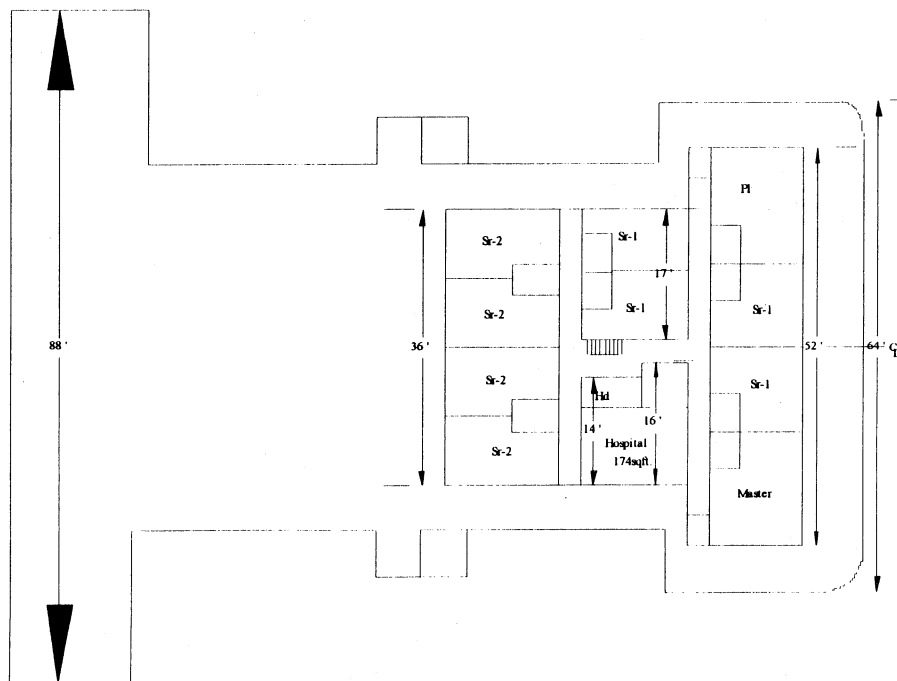
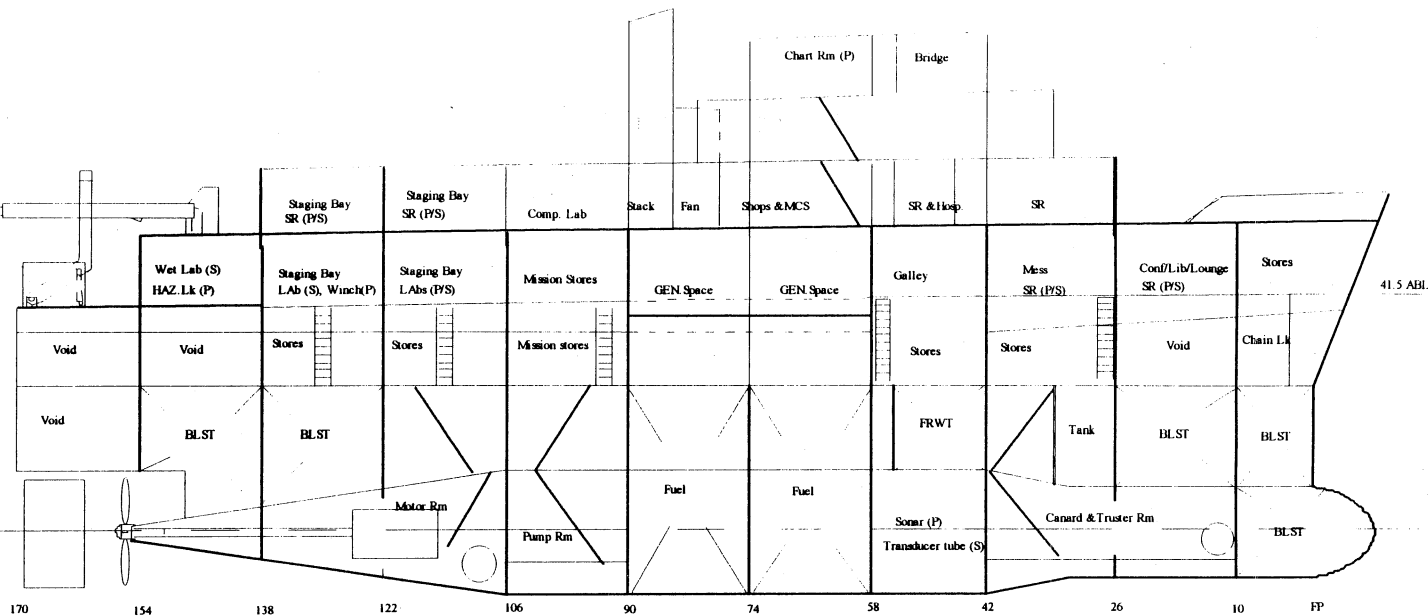
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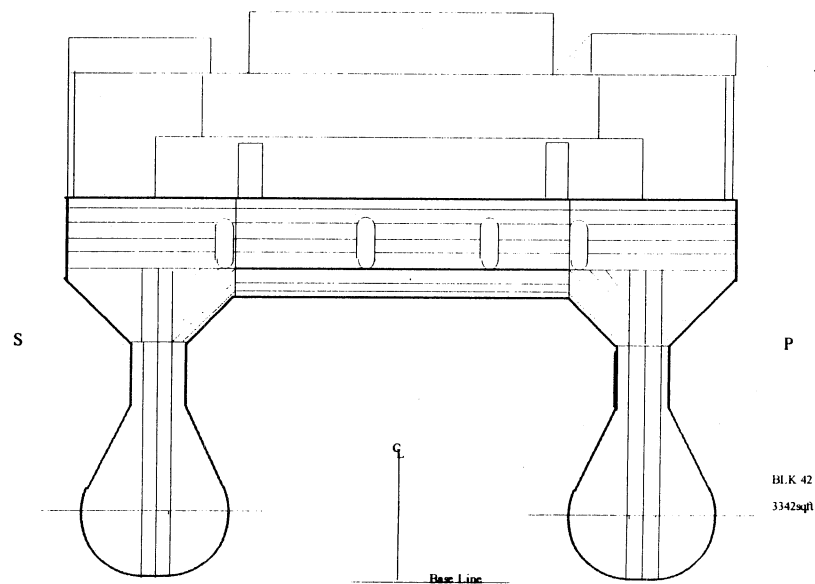
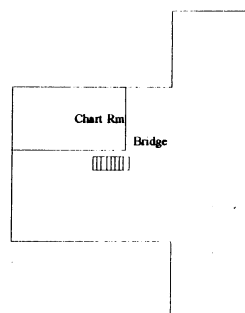
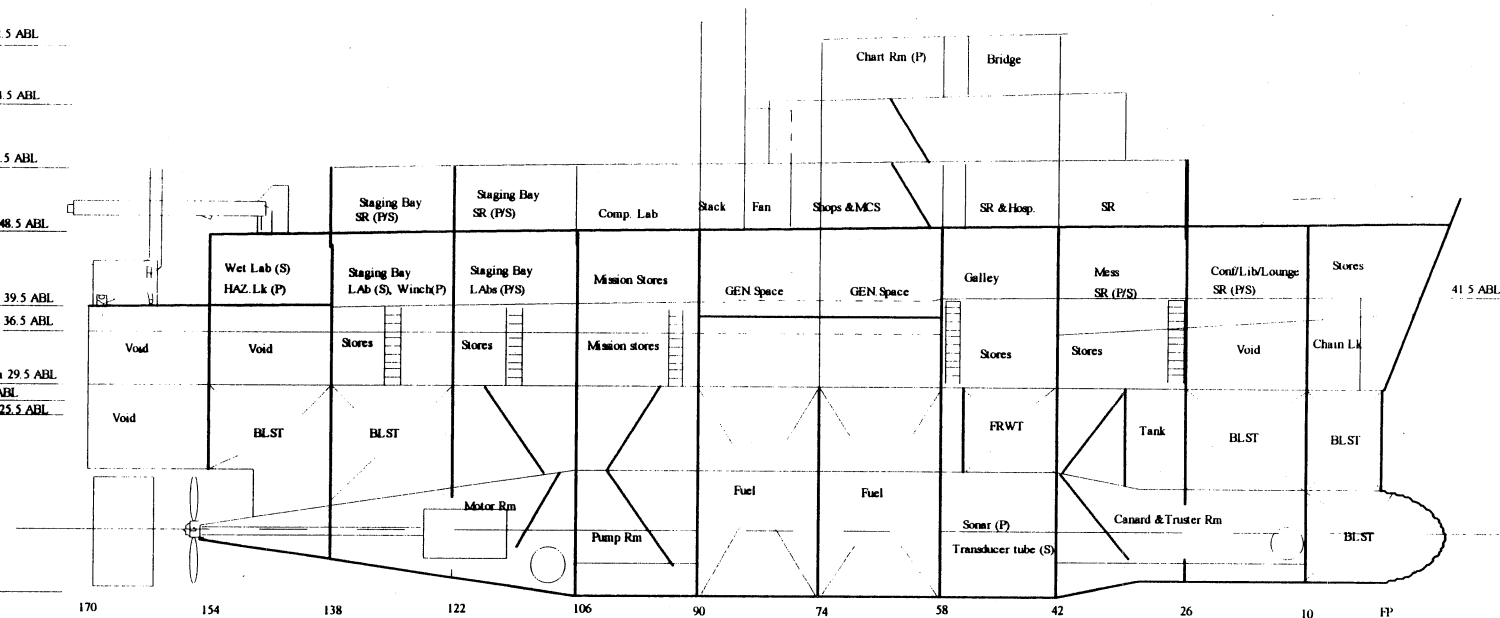
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Base Line



REQUIREMENT	AGOR24	UNOLS Minimum	SWATH 97 Desirable	Maximum	RFP Desired Capabilities "treated as GOALS"	Lockheed/Ingalls Design as of 7/10/98	KAIYO
Station Keeping	S.S. 6	S.S. 6	S.S. 7	NA	S.S.6 +/- 50m		S.S.6
Pitch		4 degrees	3 degrees	NA			
Roll		8 degrees	6 degrees	NA			
Heave		6 ft.	4 ft.	NA			
Vertical Accel.		0.4g	0.09g	NA			
Horizontal Accel.		0.2g	0.11g	NA			
Deck Space	2800	2000 sq ft			2000 sq ft	3800 sq ft	10500 sq ft
Science Payload	240LT	60LT	100LT	120LT	100LT	100LT	490LT
Draft	17 ft			17 ft	17 ft	25.5	21 ft
Beam	52			104 ft		88 ft	92 ft
Laboratory Space	4800 sq ft	2500 sq ft	3000 sq ft		3000 sq ft	3025 sq ft	630 sq ft
Science Staff	38	20	25	30	25	30-32	53
Speed Cruising	15 kts	10kts@ss6	15kts@ss6		15 kts	14 kts	13.3 kts
Endurance	60 days	40 days	50 days	50 days	50 days		100
Range	10000 nm	9000nm	10000nm	10000nm	10000nm	9360 nm	5100 nm
Science Gear	21000 cu ft	10000 cu ft	15000 cu ft		15000 cu ft	16384 cu ft	30000 cu ft
Displacement	3200LT					2370LT	3500LT
Mission Equip.							
Multibeam sys.	Yes					Yes	
3khz echosounder	Yes					Yes	
12khz echosounder	Yes					Yes	
Sea water probe	Yes					Yes	
Vertical ref. Sys.	Yes					Yes	
Instriment well	Yes					Yes	
A-frame	Yes					Yes	
a-frame power pack	Yes					Yes	
2- cranes	Yes					Yes	
CTD DESH-5	Yes					Yes	
CTD handling sys	Yes					Yes	
Traction winch	Yes					Yes	
SARCOM M	Yes					Yes	
SIS	Yes					Yes	
DP system	Yes					Yes	

NEXT MILESTONE

# TASK NAME	LEAD	START DATE	FINISH DATE	STATUS
11 Requirements review	LM	5/8/98	6/11/98	Comp.
19 Trade-off Studies		7/6/98	8/17/98	85%
20 Mission level trade-off comp.		7/13/98	7/31/98	90%
21 Range/endur. trade-off comp. LM		7/13/98	7/31/98	90%
26 Config trade-off comp	LM/ISI	7/6/98	7/31/98	80%
27 Propul. plant trade-off comp. ISI		7/20/98	8/7/98	70%
28 Elec. sys. trade-off comp. ISI		7/20/98	8/7/98	70%
30 Outfit trade-off comp.	ISI	7/20/98	8/7/98	80%
34 CAIV goal for concept desg. Est ISI		8/3/98	8/14/98	20%
36 Revised DOC	LM	8/3/98	8/14/98	TBD
37 Design Review #1	LM	8/17/98	8/17/98	75%
38 Concept design	LM/ISI	8/18/98	9/22/98	TBD
56 Design Review #2	LM/ISI	9/22/98	9/22/98	TBD
71 Refined Cost Estimate	LM	10/20/98	10/20/98	TBD
81 Phase II CAIV determined		10/20/98	10/20/98	TBD

**SWATH AGOR
PRELIMINARY**

MANUFACTURER	SYSTEM	QTY	Notes
TRIPLE G SUPPLY	IOL - ACU-206 ACOUSTIC COMMAND	*	* Qty is TBD - (IOL=Initial Outfitting List)
TRIPLE G SUPPLY	IOL - ATR-395 TRANSPONDER	*	* Qty is TBD - (IOL=Initial Outfitting List)
TRIPLE G SUPPLY	IOL - AUTOPROCESSOR PHOTO LAB	*	* Qty is TBD - (IOL=Initial Outfitting List)
TRIPLE G SUPPLY	IOL - CELLULAR PHONE	*	* Qty is TBD - (IOL=Initial Outfitting List)
TRIPLE G SUPPLY	IOL - COMPRESSOR AIR BREATH	*	* Qty is TBD - (IOL=Initial Outfitting List)
TRIPLE G SUPPLY	IOL - COPIER ZOOM W/SORTER	*	* Qty is TBD - (IOL=Initial Outfitting List)
TRIPLE G SUPPLY	IOL - REFRIGERATOR FREEZER	*	* Qty is TBD - (IOL=Initial Outfitting List)
TRIPLE G SUPPLY	IOL - REFRIGERATOR PHOTO LAB	*	* Qty is TBD - (IOL=Initial Outfitting List)
TRIPLE G SUPPLY	IOL - SPRAY OUT FIT AIRGUN PAI	*	* Qty is TBD - (IOL=Initial Outfitting List)
TRIPLE G SUPPLY	IOL - UAB-353 ACOUSTIC BEACON	*	* Qty is TBD - (IOL=Initial Outfitting List)
TRIPLE G SUPPLY	IOL - 911 PLUS DECK UNIT SYSTEM	*	* Qty is TBD - (IOL=Initial Outfitting List)
TRIPLE G SUPPLY	IOL - ACOUSTIC POSITIONING BEACON	*	* Qty is TBD - (IOL=Initial Outfitting List)
SPERRY MARINE, INC.	MK 37 GYROCOMPASS SYSTEM	2	
SPERRY MARINE	RASCAR RADAR SYSTEM	1 ship set	BOTH X-BAND AND S-BAND NAVIGATION RADARS
LIFESTREAM WATERSYSTEM	LIFESTREAM WATERMAKER	2	
AURORA / PUMP SYSTEMS	A/C CHILLED WATER PUMP	2	
AURORA / PUMP SYSTEMS	AUXILIARY SEAWATER & BILGE PUM	1	
PUMP SYSTEMS, INC.	AUXILIARY SEAWATER PUMP	1	
PUMP SYSTEMS, INC.	BILGE PUMP	2	
AURORA / PUMP SYSTEMS	BOW THRUSTER COOLING PUMP	1	
AURORA / PUMP SYSTEMS	FIRE / BALLAST / BILGE PUMP	1	
AURORA / PUMP SYSTEMS	FIRE PUMP	1	
AURORA / PUMP SYSTEMS	FUEL OIL TRANSFER PUMP	2	
AURORA / PUMP SYSTEMS	HOT WATER CIRCULATING PUMP	2	
AURORA / PUMP SYSTEMS	LUBE OIL TRANSFER PUMP	2	
AURORA / PUMP SYSTEMS	OILY WASTE TRANSFER PUMP	2	
AURORA / PUMP SYSTEMS	POTABLE WATER PRESSURE PUMP	2	
AURORA / PUMP SYSTEMS	PROPULSION MOTOR COOLING PUMP	4	May not be required if ASW sys is used
AURORA / PUMP SYSTEMS	UNCONTAMINATED SEAWATER PUMP	1	science requirement
EVERPURE	BROMINATOR or UV system	1	
ENVIROVAC INC.	ORCA II-165	1	
ENVIROVAC INC.	VCHT SYSTEM	1	
ENVIROVAC INC.	VCHT SYSTEM	1	
ENVIROVAC INC.	VCHT SYSTEM	1	
GENERAL ELECTRIC	480/600 VOLT SWITCHBOARDS	*	* Quantity is TBD
GENERAL ELECTRIC	PROPULSION & THRUSTER DRIVE	*	* Quantity is TBD
GENERAL ELECTRIC	SCR PROPULSION & THRUSTER DRIVE	C	* Quantity is TBD
MAGELLAN	D-GPS SYSTEM	1	COMMERCIAL
CATERPILLAR (PUCKETT MACH.	3406C/250KW EMERGENCY GENERATOR-Set	1	

**SWATH AGOR
PRELIMINARY**

MANUFACTURER	SYSTEM	QTY	Notes
CATERPILLAR (PUCKETT MACH.	3508B/900KW MARINE GENERATOR-Set	4	
TRIPLE G SUPPLY	LATHE CLAUSING MDL 8024	1	
LIPS THRUSTERS DRUNEN B.V.	PROPELLER, 8 FT DIA, FIXED PITCH	2	TBD
KONGSBERG-SIMRAD	EM 120 MULTIBEAM SONAR SYSTEM	1	
FRITZ-CULVER	A-FRAME TILTING CRANE, #FCDB-2-1337	1	
GENERAL ELECTRIC	SHORE POWER RECEPTICLE	1	
NAUTRONIX	ACOUSTIC POSITION INDICATOR	1	
SIMRAD	DIRECTION FINDER RADIO SET	1	
NAUTRONIX	DYNAMIC POSITIONING SYS	1	
PRECISION MARINE ELECTRONI	ODEC BATHYMETRIC/SUB-BOTTOM PR-12Khz	2	
PRECISION MARINE ELECTRONI	ODEC BATHYMETRIC/SUB-BOTTOM PR-3.5Khz	1	
OCEAN DATA EQUIPMENT	DOPPLER SONAR SPEED LOG	1	
RAYTHEON	RD-500 DEPTH RECORDER SYSTEM	1	
HERBERT S. HILLER CORP.	FIRE DETECTION SYSTEM	1	
KATO ENGINEERING	MOTOR GENERATOR SET	2	
VES, INC	HEATING SYSTEM	1	
VES, INC	REFRIGERATOR UNIT, R-22 PCKG	2	
VES, INC	AIR CONDITIONING PLNT	2	
VES, INC	REFRIGERATION UNITS/HVAC FANS	*	* Quantity is TBD
VES, INC	50 TON A/C CHILLED WATER	*	* Quantity is TBD
MARKEY MACHINERY CO.	HYDROGRAPHIC WINCH- DESH-5	1	
MARKEY MACHINERY CO.	TRACTION WINCH SYSTEM-up mto .680cable	1	
HOSE MCCANN TELEPHONE CO.	SOUND POWERED TELEPHONE	1	stations TBD
HOSE MCCANN	GENERAL ALARMS	1	* Quantity is TBD
GOLAR	GOLAR INCINERATOR, MARINE TYPE	1	
QUINCY	AIR COMPRESSOR, SHIPS SERVICE	2	
SIGMA	OILY WATER SEPERATOR	1	
LAMARCHE	BATTERY CHARGERS (A22-30-24V-A1)	1	
LAMARCHE	BATTERY CHARGERS (A41-75-24V-A1)	1	
NAVAL ELECTRONICS	ENTERTAINMENT SYSTEM-TV,VCR,AM/FM,CD	1	
SCIENTIFIC CLIMATE SYS	CLIMATE CONTROL CHAMBER	1	
MAGNAVOX	TERMINAL, CRT CONSOLE (SATCOM)	1	
MAGNAVOX	SAT NAV RADIO SET	1	A,B,M -TBD
ALASKAN CRANE	CRANE, PED-MTD, TELE	2	60' and 5K-20K #
KITCHEN AID	COMPACTOR, TRASH	1	
HOBART	CONVECTION OVEN	1	
HOBART	DISHWASHER	1	
JET SPRAY	DISPENSER, JUICE	1	
BUSBOY/TOASTMASTER	GARBAGE GRINDER	1	

**SWATH AGOR
PRELIMINARY**

MANUFACTURER	SYSTEM	QTY	Notes
HOBART	GRIDDLE	1	
HATCO	HEATER, SANITIZING SINK	1	
GROEN	KETTLE, STEAM JACKETED	1	
COSPLICH	REFRIG/FREEZER W/GLASS DOOR	1	
COSPLICH	REFRIGERATOR CABINET	1	
COSPLICH	REFRIGERATOR FREEZER	1	
MAYTAG	WASHER/DRYER, CLOTHES- Stack units	3	
TOASTMASTER	RANGE, ELEC. W/OVEN	1	
VARIOUS	HBI COMMISSARY SPARES	AR	
GROEN	HY-3E HYPER ATMOSPHERIC STEAMER	1	
GAYLORD	GAYLORD VENTILATION	1	
CRANE DEFENSE SYSTEM	CABLE OPERATED LIFT		Not planned at this time
SEACOAST ELECTRONICS, INC.	DIAL TELEPHONE SYSTEM	1	
SEACOAST ELECTRONICS	WEATHERFAX/WIND SPEED INDICATOR	1	
SEACOAST ELECTRONICS	CLOSED CIRCUIT TELEVISION	*	* Quantity is TBD
HERBERT S. HILLER	AFFF SYSTEM	TBD	
HERBERT S. HILLER	FIRE EXTINGUISHING, CO2	TBD	
ELLIOT TURBO	WHITE GILL BOW THRUSTER (BOW)	1	
(TBD)	STERN THRUSTER	TBD	
RHEEM	WATER HEATER, ELECT.	1	
SPERRY MARINE	GMDSS	1	
FRITZ CULVER	ANCHOR, WINDLASS	2	
MORGAN MARINE	CRANE PORTABLE DECK -36'	2	
CORNELL-CARR	PORT LITE	60	Approx
CYBEREX	UNINTERRUPTED POWER SUPPLY	*	* Quantity is TBD
I.E.S.	MOTOR CONTROL CENTER (AGOR 23)	1	
JET	DRILL PRESS	1	
FEIN	ELECTRIC HACK SAW	1	
ALFA-LAVAL	PURIFIER, CENTRIFUGAL F.O.	2	
IN-MAR SYSTEM	WINDOW WIPERS	*	* Quantity is TBD
QUALITY POWER PRODUCTS	NAVIGATIONAL LIGHT PANEL	1	
MCELROY MACHINE	BOOM, HYDRAULICALLY ACTUATED	1	
GEMS SENSORS	TANK LEVEL INDICATORS	16	Fuel(4), Blst(4), CHT(2), OilyW(2), +(4)
MENGE MARINE	DAVIT, BOAT	1	
MENGE MARINE	25 HP OMC/112 HP OMC OUTBOARDS	2	Approved for Rescue Boat
ZODIAC	RESCUE BOAT	1	
RD INSTRUMENTS	ACOUSTIC DOPPLER CURRENT PROFILER	1	
BUNN-O-MATIC	COFFEE MAKER	2	
DC EQUIPMENTS		*	AS REQUIRED BY CFR

**SWATH AGOR
PRELIMINARY**

MANUFACTURER	SYSTEM	QTY	Notes
LIFE RAFTS		*	AS REQUIRED BY CFR
ALDEN	ANEMOMETER	2	
HALSEY TAYLOR	DRINKING FOUNTAINS	6	
REYNOLDS	ICE MAKER #DCF-600-30	2	
LABCONCO	FUME HOOD 47" #48816	1	
LABCONCO	FUME HOOD 35" #54L51300	1	
LABCONCO	CABINATES/COUNTERTOPS	120'	
LABCONCO	LAB SINKS	6	