UNOLS FIC Meeting

October 13, 2004

UNOLS Office – Reports

FIC Action/Task List
March 2004 Meeting

Task Description	Action
Regional Class Actions:	
UNOLS Regional Class Rep - By summer 2004, UNOLS needs to recommend a community representative to be the UNOLS rep to the IPT.	Dave, Wilf, Tim, Office -ongoing-
Prioritize Regional Class SMRs	COMPLETE (July)
Form Regional Class Advisory Committee (RCAC) - Solicit volunteers for a range of disciplines.	Dave and Wilf COMPLETE
Ocean Class Phase II Study – schedule phone/web conference(s) between FIC and JJMA.	COMPLETE

FIC Action/Task List
March 2004 Meeting

KILO MOANA Actions:	
- Continue Debrief Interviews	- ONGOING
- Review table pros and cons of SWATH hull form as compared to a monohull	- Ongoing
- Obtain feedback from WESTERN FLYER and KILO MOANA Captains	
- Letter to UH with list of problems	Letter Sent
- Compile Debriefs for posting on the UNOLS website	ongoing

FIC Action/Task List
March 2004 Meeting

Task Description	Action
Form Global SMR Steering Committee – Update Global SMRs in the same format as Ocean and Regional Class. As a follow-on activity incorporate Heavy Lift considerations, and Seismic Capabilities	Committee Formed – ONGOING
Prioritize and update all SMRs: • Amend Regional and Ocean Class SMR to include ADA requirements • Carefully review the "Lessons Learned" and PCA comments. Incorporate as appropriate into the SMR documents	RC and OC Steering Committees

FIC Action/Task List
March 2004 Meeting

Task Description	Action
FOFC Fleet Plan Update - Encourage the Agencies to update the FOFC plan and provide the Working Group information.	
Update the projected retirement dates – Contact Operators for Input Should the retirement date be extended? SLEP cost for 5-year extension SLEP cost for 10-year extension	Preliminary Report Drafted - ONGOING
Update Construction dates with new projected dates	Dave and Office
Incorporate Ocean Observatory Facility needs into Plan	Dave and Office
Update ship utilization projections to include ocean observatory facility needs	- COMPLETE

FIC Action/Task List
March 2004 Meeting

Task Description	Action
Ocean Commission Report –Draft a unified Council response.	COMPLETE
FIC Membership – Nominations are needed to replace Chris Measures	ongoing
PCAR Comments - Review PCAR comments with regard to facility improvements. Ask FIC to read document and send comments – over summer.	FIC
Design and Constructions Efforts - Stay engaged in ongoing design and construction efforts (ARRV, EWING replacement, CHRV, etc.)	FIC ONGOING

UNOLS Vessel Retirement Dates and Service Life Extension Program Estimates

Update Vessel Retirement Dates

This year the UNOLS Vessel Operators were polled:

- Should vessel retirement dates be extended? And if so:
    - Service Life Extension Program (SLEP) cost estimate for 5-year extension
    - SLEP cost estimate for 10-year extension
- How do the capabilities of their current ships compare to the Ocean Class and Regional Class SMRs?

Vessel Retirement Dates and SLEP Estimates

Eleven UNOLS ships >40 m have retirement dates prior to 2020 and are potential candidates for a SLEP (excluding ALPHA HELIX and EWING):

- Most of the ships (>40m) can have their lifetimes extended 5 and possibly 10 years for an estimated cost of $1.025M-$5M per ship for a 5-year life extension.
- Extension of retirement dates for most vessels <40m is not recommended.
- The immediate focus for ships with retirement dates past 2020 is on mid-life refit planning.

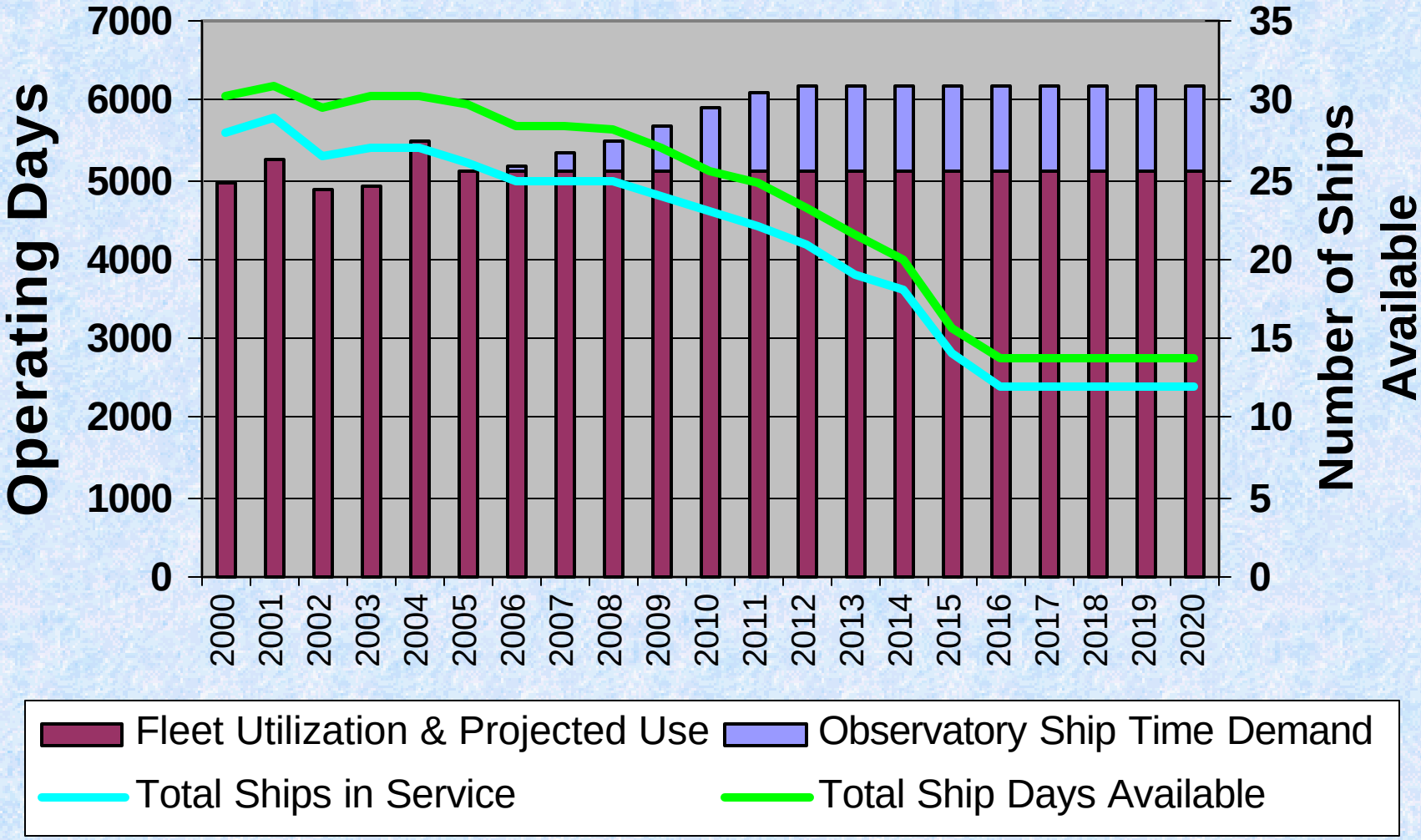
Revised Retirement Dates Preliminary Findings

- The SLEP estimates focus on maintaining the ship in an operational condition without enhancing the scientific capabilities of the platform.
  - The existing Intermediate Class vessels do not meet most of the desired Ocean Class SMRs
  - Regional Class ships fall short of the Regional Class SMRs in many areas.
- Maintaining the current UNOLS fleet vessels beyond their designed service life will significantly impede the advance of ocean science relative to that possible with new ships that meet the SMR specifications.

Ocean Observatory Facility Needs

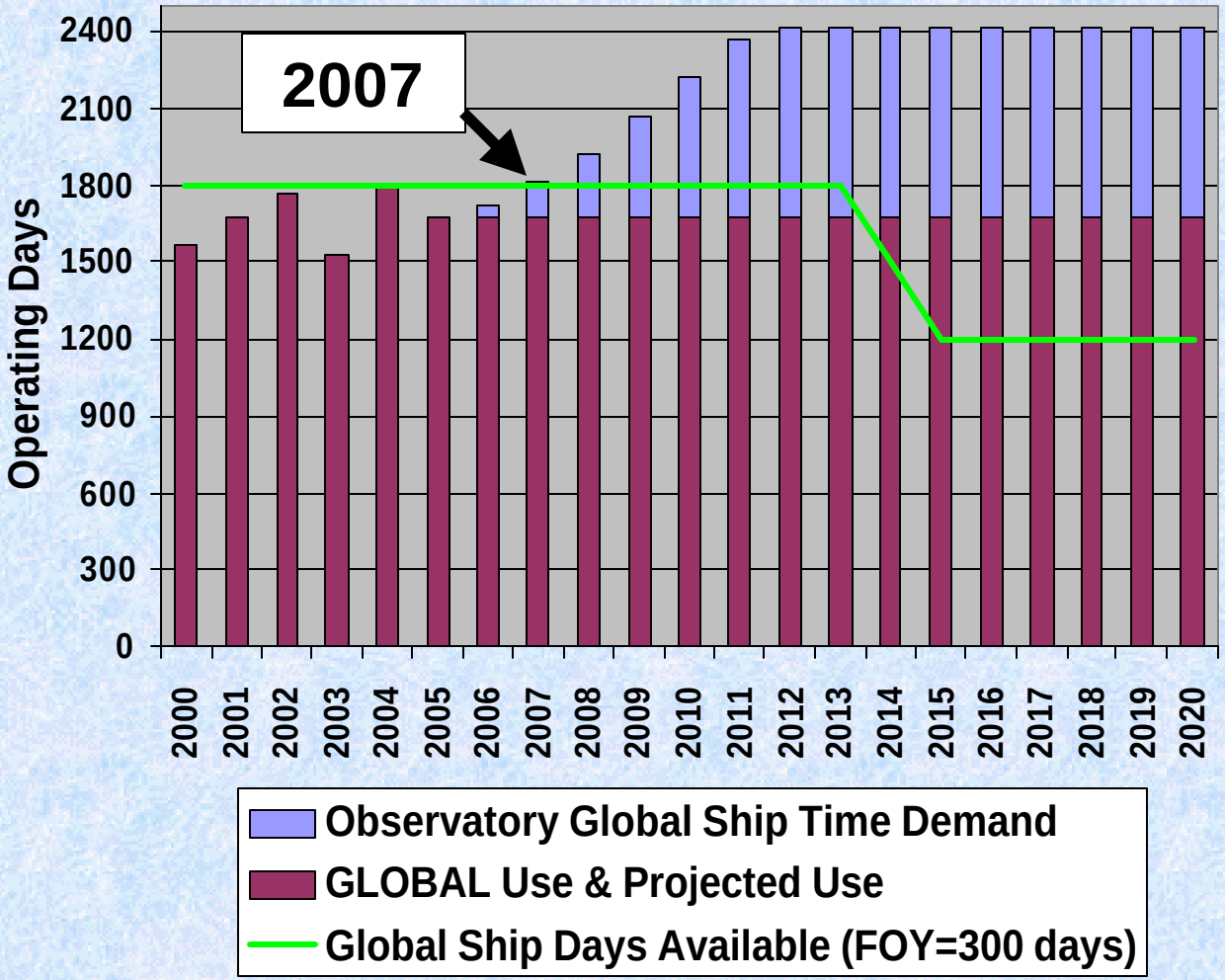
- Incorporated UNOLS working group recommendations into UNOLS Fleet utilization projections. Presented by Peter Wiebe to FOFC in April ‘04

UNOLS Fleet Utilization and Projections (2000 - 2020)

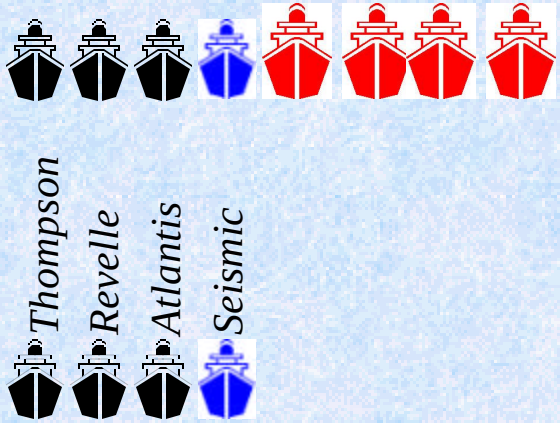


*** Only new construction with funds identified have been included in the total.**

Global Ship Utilization and Projections



Ships needed in 2020:



1 ship = 300 operating days

= existing ship

= new construction (Seismic* vessel)

= ship needed to meet demand

*** Seismic ship demand is expected to increase, this will make less time available for general purpose oceanography for this vessel.**

Ocean Observatory Projections

- The current UNOLS Fleet includes 27 ships. In 2020, 12 current and new ships will be in operation. Assuming that the new seismic vessel, ARRV, 3 NSF Regional vessels, and the CHRV are funded, six additional ships will be available for a total of 12 ships.
- With the addition of Ocean Observatory ship time (installation and O&M), demand is expected to increase ~1000 days by 2020.

Ocean Observatory Projections - continued

- In 2020, a total of 21 NEW ships will be needed to meet estimated ship time demand (includes observatory ship time):
  - 5 Global ships (includes Seismic)
  - 5 Ocean Class ships (includes ARRV)
  - 3.5 Regional Class >40m ships (includes the 3 ships to be funded by NSF)
  - 7.5 Regional and Local Ships < 40m

Update UNOLS Fleet Improvement Plan

Create Outline:

- Identify Future Science Initiatives
- Updated vessel retirement dates
- Updated Fleet utilization trends and Projections
- Ship Construction Plans and realistic timelines
- Future Fleet operating cost estimates
- Ocean observatory facility projections
- Additional…

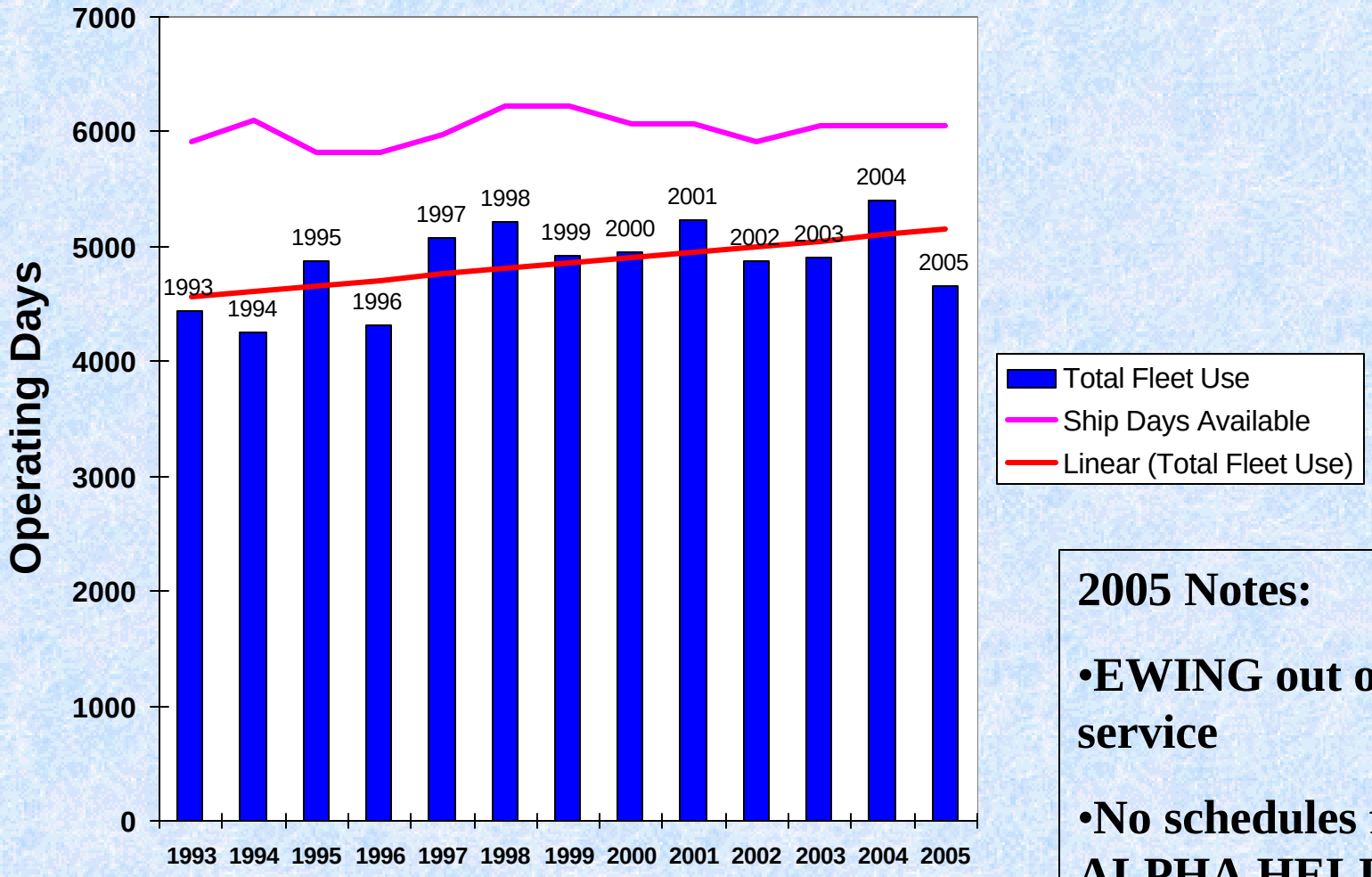
UNOLS Fleet Improvement Plan Outline

- Executive Summary / Intro
- Identify Future Science Initiatives:
  - Physical - Dave
  - Biological - Terry
  - MG&G - Niall
  - Chemical – Jim B
  - Education – Clare
  - Ocean Engineering -
  - Cross cutting initiatives (Observatories (broad)) – Jim C
- Current Fleet Composition and Utilization Trends - Office
  - Current Fleet Description
  - Updated vessel retirement dates and SLEP costs
  - Fleet Trends
    - Geographical utilization
- Future Fleet Projections – Office and others
  - UNOLS and FOFC Plan Fleet Projections -
  - Ship Construction Plans and realistic timelines
  - Addition of other facility projections (Ocean observatory, etc)
  - Other Facilities – aircraft, deep submergence facilities
  - Scheduling and operating modes
  - Shortfalls:
    - Differences between FOFC and UNOLS FIP
    - Consequences of not carrying out SLEPs
    - Tradeoffs between various scenarios - Peter
  - Extensions and expansions beyond the FOFC Plan
  - Future Fleet Composition
- Fleet Budget Projections and Requirements

FIP 2005 Timeline

- Finalize outline and assignments– 15 November
- Coordinate with FOFC - winter
- Draft text and prepare projections – 28 Feb 05
- First Draft – March Council Meeting
- Community review – April 1-30, 2005
- Second draft – Spring/Summer Council Meeting
- Circulate second draft for comment – Sept 1
- Final draft – September 30, 2005

Fleet Utilization Trends



2005 Notes:

- **EWING out of service**
- **No schedules for ALPHA HELIX or SJII**

Estimated Operating Costs

2004

class	ship	dayrate	total days	Total Cost
global	atlantis	$21,282	291	$6,193,062
global	ewing	$18,300	230	$4,209,000
global	knorr	$20,675	278	$5,747,650
global	melville	$20,338	300	$6,101,400
global	revelle	$20,652	309	$6,381,468
global	thompson	$21,586	313	$6,756,418
	2004 GLOBAL TOTAL		1721	$35,388,998

class	ship	dayrate	total days	Total Cost
ocean	endeavor	$10,979	248	$2,722,792
ocean	gyre	$11,500	93	$1,069,500
ocean	kilo moana	$18,000	309	$5,562,000
ocean	new horizon	$14,402	195	$2,808,390
ocean	oceanus	$12,214	235	$2,870,290
ocean	SJ I	$12,300	180	$2,214,000
ocean	SJ II	$12,300	231	$2,841,300
ocean	wecoma	$12,815	221	$2,832,115
	2004 OCEAN TOTAL		1712	$22,920,387

2020

FOFC 2020	Days	dayrate	Total Cost
atlantis	300	$21,282	$6,384,600
new seismic	300	$30,000	$9,000,000
			$0
			$0
revelle	300	$20,652	$6,195,600
thompson	300	$21,586	$6,475,800
	1200		$28,056,000

ship	total days	dayrate	Total Cost
NE Atlantic	275	$20,000	$5,500,000
			$0
kilo moana	275	$18,000	$4,950,000
SW Pacific	275	$20,000	$5,500,000
			$0
SE Atlantic	275	$20,000	$5,500,000
ARRV	275	$22,817	$6,274,675
NW Pacific	275	$20,000	$5,500,000
	1650		$33,224,675

Estimated Operating Costs

2004

regional	alpha helix	$10,910	129	$1,407,390					$0
regional	hatteras	$9,750	168	$1,638,000	Atlantic	200	$10,000		$2,000,000
regional	henlopen	$6,226	172	$1,070,872	CHRV	180	$8,000		$1,440,000
regional	longhorn	$5,500	75	$412,500					$0
regional	pelican	$4,665	241	$1,124,265	Gulf of Mex	200	$10,000		$2,000,000
regional	pt sur	$8,115	189	$1,533,735	Pacific	200	$10,000		$2,000,000
regional	sproul	$6,981	150	$1,047,150					$0
regional	weatherbird	$8,491	164	$1,392,524					$0
	2004 REGIONAL TOTAL		1288	$9,626,436		780			$7,440,000

class	ship	dayrate	total days	Total Cost	ship	total days	dayrate	Total Cost
local	blue heron	$4,400	40	$176,000				$0
local	clif. Barnes	$2,262	126	$285,012				$0
local	savannah	$4,600	154	$708,400	savannah	110	$4,600	$506,000
local	uracca	$3,701	152	$562,552				$0
local	walton smith	$6,801	228	$1,550,628	walton smith	110	$6,801	$748,110
	2004 LOCAL TOTAL		700	$3,282,592		220		$1,254,110
2004 TOTALS			5421	$71,218,413	2020 Totals	3850		$69,974,785

General Purpose Global Vessel SMR Mid Life Refit considerations

2006 - *THOMPSON*

FIC recommends the model used for developing the Ocean & Regional Class SMRs

2011 – *REVELLE*

2012 – *ATLANTIS*

Global Class Steering Committee

- Bruce Howe (UW), Chair – Ocean Observatories
- Tom Althouse (SIO) – Marine Superintendent
- Jim Broda (WHOI) – Coring
- Bob Embly (NOAA/PMEL) – ROVs, MG&G
- Ken Johnson (MBARI) – Chem O.
- Paul Ljunggren (LDEO) – Marine Superintendent
- Dan Schwartz (UW) – Marine Superintendent
- Niall Slowey (TAMU) – FIC Rep, MG&G
- Al Suchy (WHOI) – Marine Superintendent
- Woody Sutherland (SIO) – Marine Technician
- Randy Watts (URI) – Phys. O
- Patricia Wheeler (OSU) – Biol. O.

Global Class SMR Update

- Task Items:
  - **Review the past SMRs and other documentation to form the basis of the SMRs.**
  - **Develop mission scenarios.**
  - **Hold a Community workshop (if needed) to draft a set of requirements and desired capabilities.**
  - **Solicit input and feedback from the larger science and operator community throughout process**
  - **Produce SMR document.**
  - **As a follow-on activity incorporate Heavy Lift considerations, and Seismic Capabilities**
- **Website:**
  <http://www.unols.org/committees/fic/global/global_smr.html>

Global SMRs – Initial Efforts:

- Identify new ship developments/technology
- Identify developments in other countries, oil patch, Navy, etc., that are relevant.
- A review of basic bounding parameters/rules of thumb (size, range, speed, fuel rate, DP tradeoffs, ROV use, manning, cost/day, etc)
- User scenarios will be important to get on the table sooner rather than later
- Get the community involved!

- **Need Project Timeline**

KILO MOANA
Debrief Responses

2002 - 2004

Letter to U. Hawaii

- **CTD operations -** This includes both the number of people required to undertake such an operation and the location of where the CTD casts are taken.
- **Aft cabin noise -** concern of the noise level in the aft cabins when the winches are being used. We suggest that noise measurements be made in those cabins while the winches are being used.
- **Visibility Issues -** It is suggested that more cameras are required.

Letter to U. Hawaii

- **Drainage Problems -** We suggest that ship trim and other operational conditions be recorded during these periods.
- **Wave Slapping -** We suggest that trim measurements, sea state and other operational conditions be recorded when wave slapping is occurring.
- **ADCP availability**
- **Underway system pressure –** It is recommended that the system pressure be monitored and increased if necessary.

Letter to U. Hawaii

- **Incubation work site -** There is a need to determine where an incubation work site can be located aboard the ship and ensure that adequate high volume seawater is available at that location.
- **Holding tank capacity -** Comments have suggested that the tanks need to be pumped anywhere between 8 and 24 hours. We suggest that the drains be configured so that uncontaminated seawater after passing through the scientist's equipment, may flow directly back into the ocean rather than into the holding tanks. It is suggested that this matter be rectified as soon as possible.

Debriefs Conducted

1. Doug Capone: 22 Sep – 17 Oct 2002
2. Bob Bidigare: 23 Nov – 27 Nov 2002
3. Tom Gregory: 16 Dec – 21 Dec 2002
4. Karin Bjorkman 8 Mar – 10 Mar 2003
5. Tom Gregory 20 Mar – 24 Mar 2003
6. Christopher Kelley 1 Apr – 3 Apr 2003
7. Nancy Kachel 4/17–5/9 & 11–29/9 2003
8. Scott Stalin 20 May – 11 Jun 2003
9. Brian Popp 18 June – 5 August 2003
10. Ken Bruland 6 Aug – 8 September 2003
11. Karin Bjorkman 30 Sep – 10 Oct 2003
12. Gregory 13 Oct – 17 Oct 2003
13. Jerome Aucan 3 Nov – 7 Nov 2003
14. Christopher Kelley 15 Nov – 20 Nov 2003
15. Fernando Santiago 08 Dec – 17 Dec 2003
16. Ken Buesseler 7 Jan – 13 Jan 200
17. Kenia Whitehead 5 Mar – 14 Mar 2004
18. Fernando Martinez 6 Apr – 9 May 2004
19. Ken Buesseler 20 Jun – 10 Jul 2004

A. What were the most positive aspects of your research cruise with a SWATH compared to your previous experience on a monohull?

- It is much quieter and more stable.
- As upper deck gets loaded with gear over time, the stability is a little less than earlier but still good overall

B. What were the most negative aspects of your research cruise with a SWATH compared to your previous experience on a monohull?

- When seas are >6 ft the motion and vibrations were unusual, unpredictable and annoying.
- No easier to do classic side recovery as monohulls.
- Improvements over January cruse included deck cameras were working.
- In heavy seas and with a small aft deck, it is hard to pull close to small objects in ocean, hold position and recover them.
- One can get disoriented on main deck.

D. Were the labs adequate (location, size, accessibility) for you?

- **Computer room could use space to layout large maps**
- **Freezers, cold storage – great range of temps – clean and empty.**

E. Were the underway systems (thermosalinograph, running seawater) working adequately?

- **Working much better than in January. ADCP was now working.**

G. Were the accommodations adequate (e.g., size, location, accessibility)?

- Chief Scientist room fine. Other rooms fairly small.

H. Was the computer network system adequate?

- **Would like >3 per day email transfers**
- **There were many problems sending files >100 kb.**
- **Some monitors varied in quality.**

L. At any time, did you feel the ship was not sea-worthy at certain sea states? Were there times when you felt that you rather be on a monohull ship? A SWATH ship?

- **Prefer to be on monohull during higher winds (>30 mph) and sea states (>6 ft)**

O. Was dynamic positioning used? And was it useful?

- DP didn’t work well at slow speeds. Some difficulty maintaining dynamic positioning course and speed. One thruster had a steering problems while in DP and acted erratically as crew did nav manually.

P. Were the multibeam or acoustic Doppler systems working properly under all conditions?

- ADCP working
- Deeper might have helped lead to very clean multibeam data.

S. What advice would you give a colleague that was going to sail on a SWATH vessel such as the R/V KILO MOANA?

- **Visit ship to talk to captain and have pre-cruise meeting.**
- **Be sure to tie down equipment – don't assume stability is great when seas above 6 ft.**

KILO MOANA

- Continue debriefs in 2005?
- Summary Document
- Advertise debrief comments?

FIC Projects and Priorities for 2005

- **Regional Class:**
  - Help identify UNOLS representative(s) for the IPT teams.
  - Stay engaged in acquisition process (ongoing)
    - Provide feedback to NSF
    - Insure community input
- **Ocean Class:** Stay engaged
- **Global Class:** Update SMRs
- **ADA Guidelines** - White Paper – Terry
- **Update Fleet Improvement Plan**
- **Ocean Observatories** – Initiate discussions with ORION Office.
- **Ongoing Design and Construction Efforts** - Stay engaged in ARRV, EWING replacement planning, and CHRV.
- **KILO MOANA** – Continue debriefs (streamlined and selective)
  - Obtain feedback from Captains
  - Summary document of Debriefs

FIC Actions

- Everything on last slide
- Regional Operational Capabilities (next week reply) – FIC/RCAC
- Address SLEP/retirement date inconsistencies (by Oct 26) – Global Operators, Office, others

FIC Membership

- **David Hebert, URI (Chair) – [at-large, 9/05] PO**
- **Newell Garfield, SFSU – [Non-op, 9/06] PO**
- **Chris Measures, U. Hawaii – [at-large, 9/04] CO**
- **Niall Slowey, TAMU – [Operator, 2/05] GO**
- **Terry Whitledge, U Alaska – [Operator, 9/04] BIO/Chem**
- **Clare E. Reimers, OSU – [Operator, 1/06] Chem**
- **Ron Benner, USC – [Non-Operator, 1/06] Bio / Chem**
- **Bauer, Jim, VIMS – [Non-Operator, 9/06] Chem/Bio**
- **Marc Willis, RVTEC Rep (ex-officio)**
- **Al Suchy, RVOC Rep (ex-officio)**

FIC Membership

- **One FIC position open:**
  - **Chris Measures, U. Hawaii – [at-large, 9/04]**
  - **One nomination received:**
    - **James Cochran (LDEO)**

Figure 17. Proposed schedule for new construction.