RVTEC Meeting

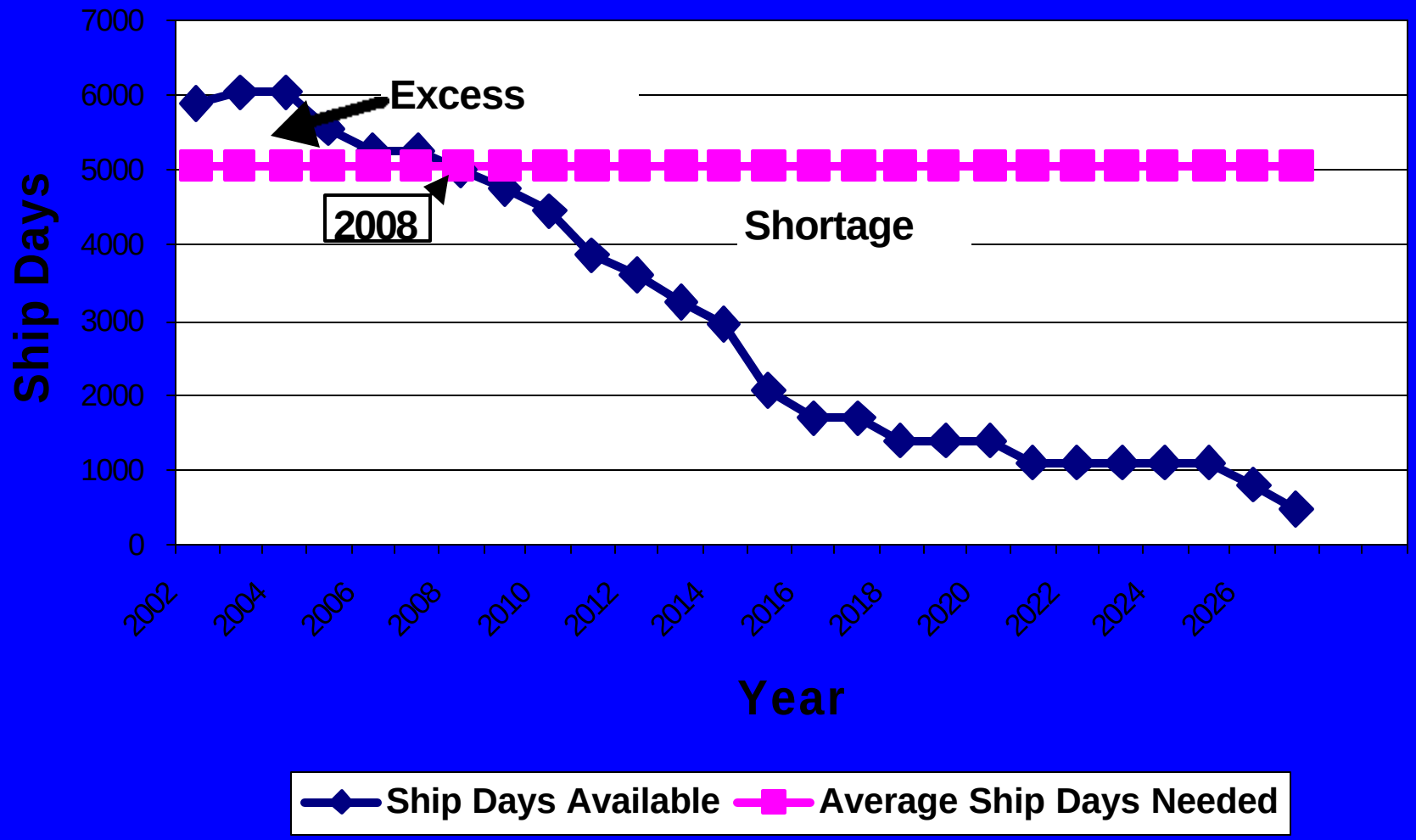
UNOLS Report

November 2003

UNOLS Top Ten Issues

- Fleet Renewal
- Observatories
- Scheduling improvements
- Quality Improvement
- Define levels of service, facilities, and instrumentation.
- MMPA/ESA Permitting
- Icebreaker renewal
- Integrated Facilities planning
- Outreach and Education
- Submergence vehicle renewal

Total Ship Days Available vs Average Ship Days Needed



Deep Submergence Science Committee Activities and Plans 2003 and 2004

- Spring DESSC Meeting (WHOI) - June 11-12, 2003
- Upgrades to Jason 2 and DSL-120 - 1st science programs successful (Fryer used Jason 2 at 6500 m)
- New ALVIN Design Study

Outreach Efforts

- Nontraditional fields (marine archeology educational efforts)
- Lectureship program in association with RIDGE2000
- **DESSC Annual Meeting to be held at the 2004 Ocean Sciences Meeting, AGU, Portland, OR - January 25, 2004**

OSB's Committee on Future Needs in Deep Submergence Science

- **Task Summary:**
  - **Assess the role of vehicles in deep submergence science.**
  - **Make recommendations regarding the mix of new facilities needed.**
  - **Discuss innovative design concepts and technological advances that should be incorporated into any new submersibles.**

OSB Committee Study on Future needs in Deep Submergence Science

- **Sponsored by NSF, NOAA, and Navy**
- **Three meetings:**
  - **May 2003 at WHOI**
  - **June 2003 in San Francisco**
  - **Third meeting (committee only)**
- **Report was released last week and is available on Web: *"Deep-Ocean Science Limited by Capabilities of Existing Submersibles; Value of Both Manned and Unmanned Vehicles Recognized"***

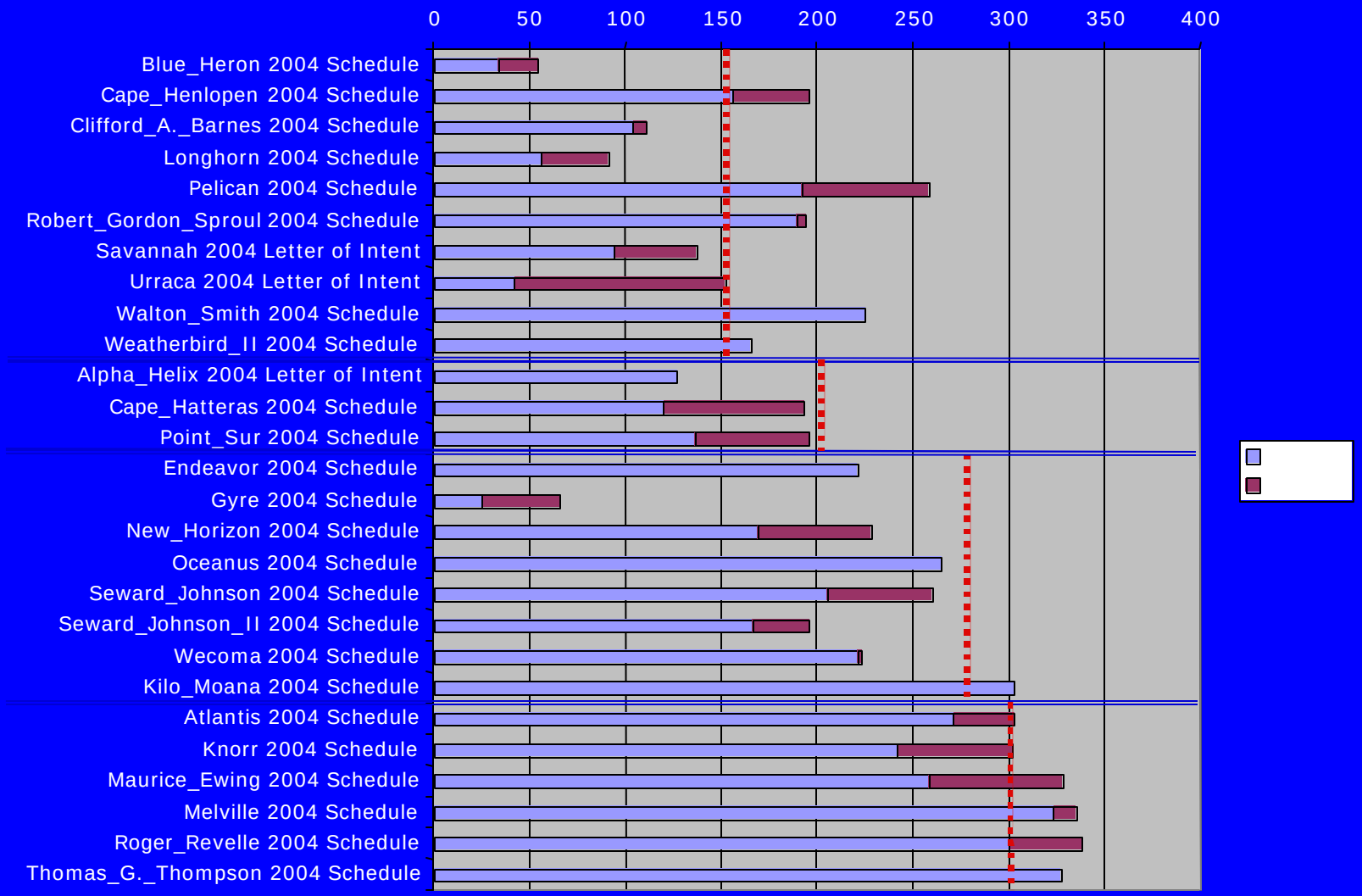
Recommendations

- A new and more capable manned vehicle
  - improved visibility
  - neutral buoyancy.
- Engineering study to assess the costs and technical risks of extending the HOV diving range to 6,500 meters.
- Consider locating the new ROV at a site other than WHOI
- Provide additional operating funds for use of submersibles from other facilities when those from the NDSF are inadequate or unavailable.
- A new, more capable unmanned deep submersible should be built by 2004 or 2005.

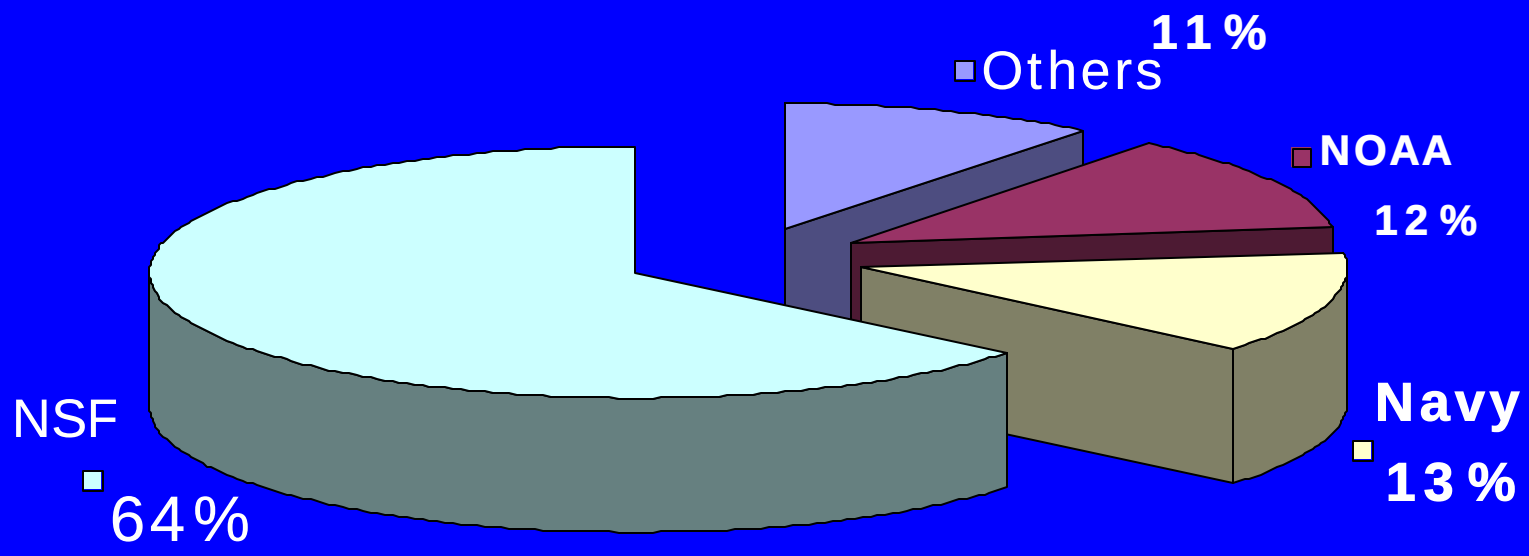
UNOLS Ship Scheduling

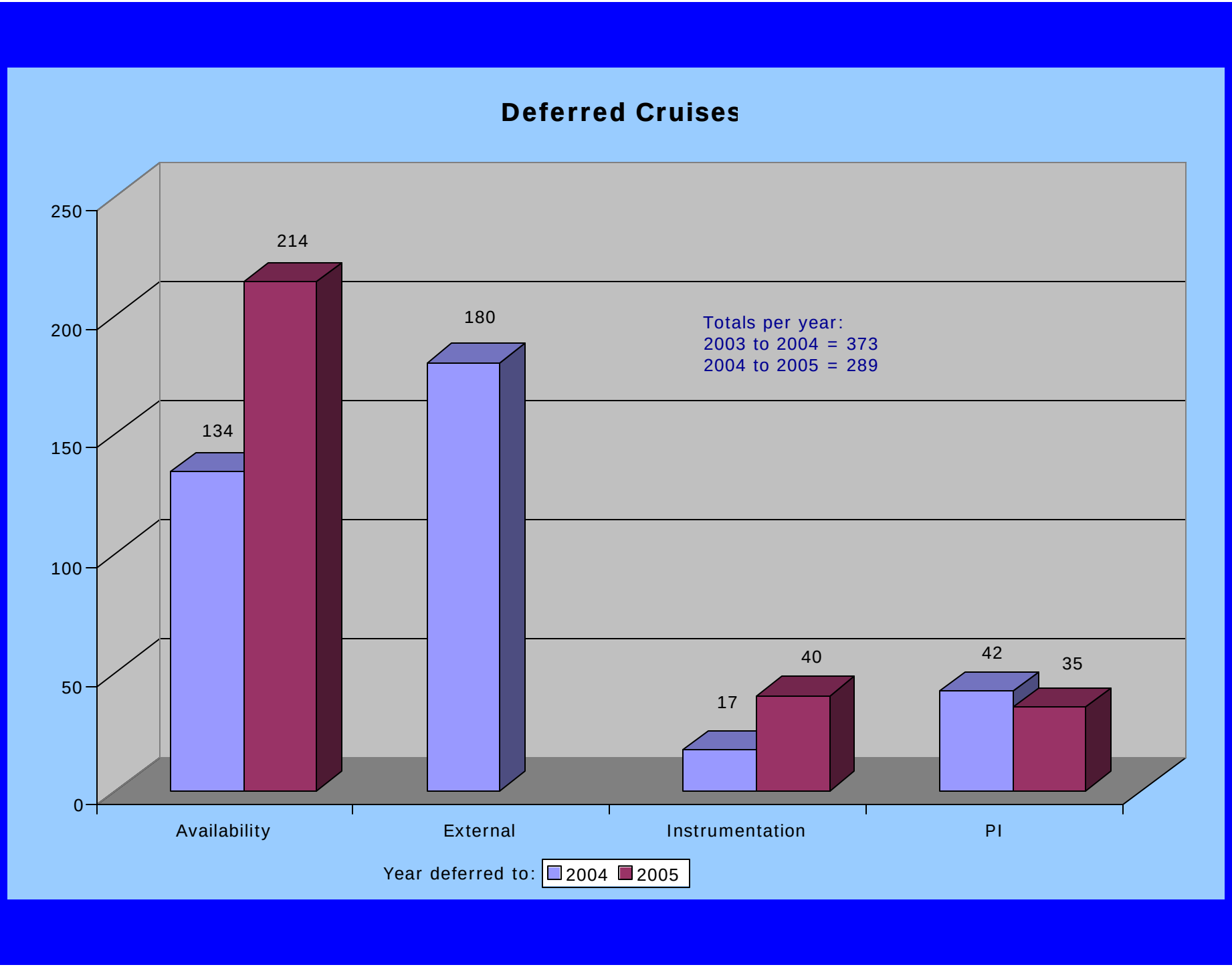
- Collaborative Web Conferencing
- New software and database
- Tougher scheduling environment
  - High demand in peak periods
  - Multi-Ship and Multi-PI projects
  - High demand for specialized facilities
  - Tight fiscal environment

2004 Schedules

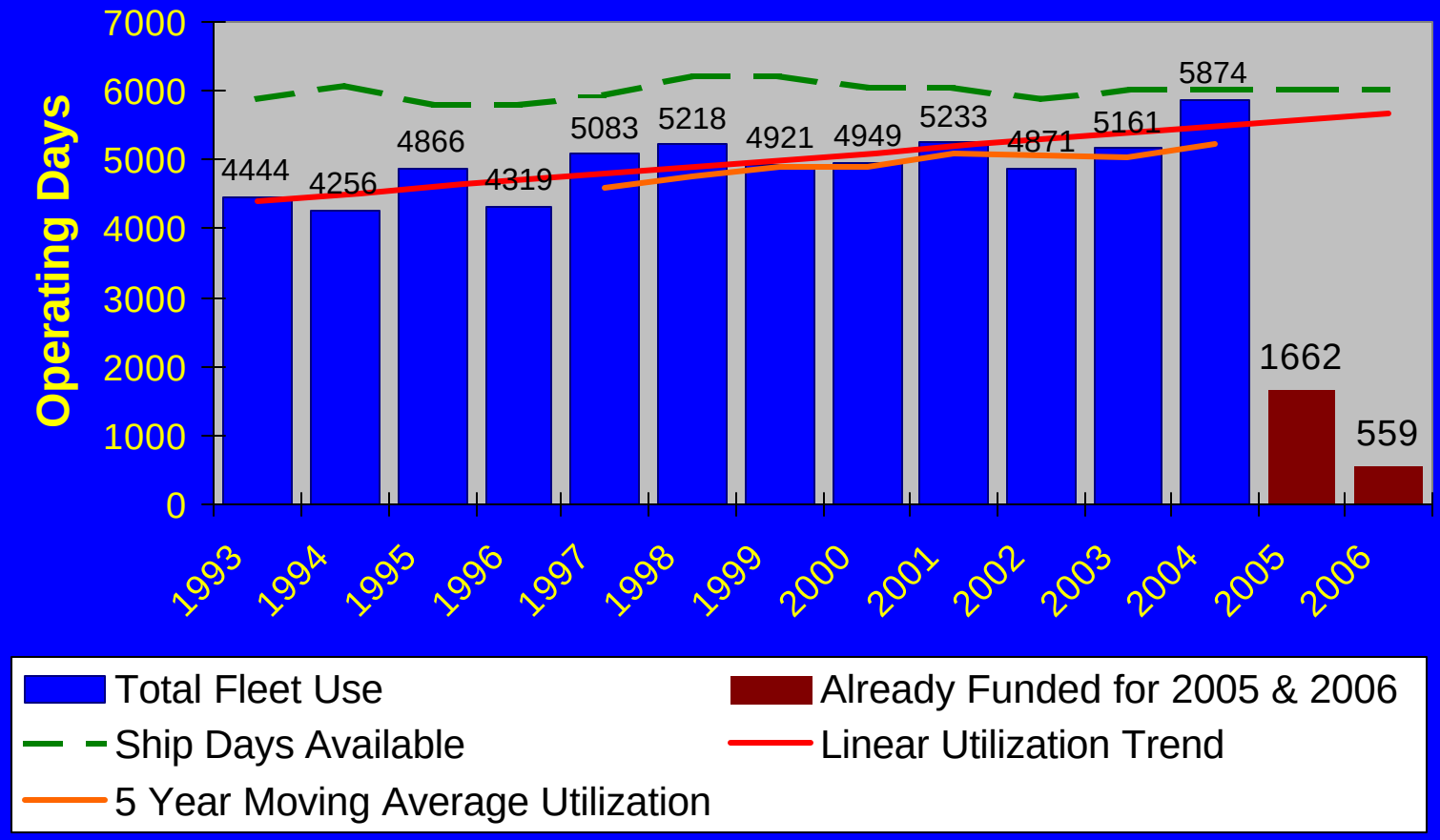


2004 Ops by agency (%)




Deferred Cruises
250
200
150
100
50
0
214
180
134
17
40
42
35
Totals per year:
2003 to 2004 = 373
2004 to 2005 = 289
Availability
External
Instrumentation
PI
Year deferred to:
2004
2005

Fleet Utilization Trends



UNOLS Scientific Committee for Oceanographic Aircraft Research (SCOAR)

SCOAR is a new UNOLS committee, established in September 2002, which seeks to promote collaboration and cooperation between research aircraft operators, funding agencies and the scientific community to improve the availability, capabilities, and quality of aircraft facilities supporting the ocean sciences.

Visit the SCOAR website at: http://www.unols.org/scoar/

First UNOLS National Oceanographic Aircraft Facility:
Center for Interdisciplinary Remotely-Piloted Aircraft Studies (CIRPAS)

Federal Aircraft Facilities and Information Brochure:
http://www.omao.noaa.gov/pdffiles/fedairbrochure.pdf

SCOAR Committee Members

Name	Institution	Email
John Bane (Chair)	University of North Carolina	bane@unc.edu
Ken Melville	Scripps Institution of Oceanography	kmelville@ucsd.edu
Charles Flagg	Brookhaven National Laboratory	flagg@bnl.gov
Daniel Riemer	University of Miami, RSMAS	driemer@rsmas.miami.edu
Bob Bluth (ex-officio)	CIRPAS, Naval Postgraduate School	rtbluth@nps.navy.mil
Haflidi Jonsson (ex-officio)	CIRPAS, Naval Postgraduate School	hjonsson@nps.navy.mil
John Seinfeld (ex-officio)	California Institute of Technology	seinfeld@caltech.edu

One-page flyer describing SCOAR mailed with federal research aircraft brochure this month

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SCOAR website

SCOAR

- **Held 2nd Meeting in Arlington, 10/14 & 15**
- **Providing input to Observatories planning groups**
- **Providing guidance to CIRPAS and funding agencies on how to make aircraft more accessible for ocean scientists.**

Looking Ahead

- **Communicate with science community about SCOAR activities and interests**
- **Interact with NCAR-OFAP and ICCAGRA**
- **Determine scheduling and funding practices for NOAF aircraft**
- **Define basic instrument suite for ocean science**
- **Consider roles for research aircraft in ocean observing initiative**

UNOLS Working Group on Ocean Observatory Facility Needs

- Formed in early 2003.
- Alan Chave appointed as Chair.
  - **Andy Bowen (WHOI) / Dana Yoerger (WHOI)**
  - **Scott Glenn (Rutgers)**
  - **Wes Hill (SIO)**
  - **Mike Kosro (OSU)**
  - **Gene Massion (MBARI)**
  - **Larry Mayer (UNH)**
  - **Daniel Schwartz (UWash)**
  - **Ken Smith (SIO)**
  - **Bill Wall (Caldwell Marine International)**
  - **Beecher Wooding (WHOI)**
  - **Peter Worcester (SIO)**

Charge to Committee

- Identify the requirements for facility support of ocean observatory systems (both ships and submergence vehicles)
- What requirements can (and cannot) be met with currently available academic assets
  - Identify modifications or facilities that should be added
  - Identify commercially available assets that could be used to meet observatory needs.
- When are the facilities needed for installation, operation, and maintenance of the observatories?

The Study Addressed:

- Deep ocean seafloor observatories Deck handling and mooring deployment/recovery needs
- ROV and AUV requirements
- Mapping requirements
- Coastal observatory requirements (including aircraft)
- Vessel characteristics, possible improvements, and recommendations for new vessel designs

Draft Report – complete on Sunday. Ready for Working Group Review

UNOLS Ship/vehicle O&M Time Requirements

NRC OOI estimates:

- Global buoy component: 20 ship-months/y (10 with ROV)
- Regional cabled observatory: 4-8 ship-months/y (with ROV)
- Coastal observatories: 6 ship-months/y

- ➢ Global estimate is appropriate for 20 mooring system
- ➢ RCO estimate of 4 months is appropriate
- ➢ Coastal estimate is probably quite low

Deep Water Ocean Observatories

- Recommendation – UNOLS develop an SMR for a class of vessels larger than the present global class that could support ocean observatory needs.
- Global Class upgrades were studied
- Heavy Lift Vessel – Acquisition/Lease options

Preliminary Recommendations:

Improvements To UNOLS Vessels:

- **Increase deck space on Large ships – add 50’ to hull at midlife refit to increase deckspace to ~5000 sq ft**
- **Double A-frame capacity and beef up associated deck and trawl gear.**
- **Add a second bow thruster to improve seakeeping.**
- **Shroud Z-drive nozzles to protect props from cables**
- **Install redundant DP systems to improve reliability during critical ops.**
- **Major safety issue--requires trained crew not UNOLS-standard science party plus resident technician**

Consider the acquisition or long term lease of a heavy lift vessel (cable repair or equivalent)

Acquisition/Lease of Heavy Lift Vessel

Applications

- Cabled observatory maintenance and modification
- Large buoy installation and maintenance
- Long coring operations

Contract Options - Long Term Contract with a major submarine cable repair company could provide support for global buoy installs and maintenance.

Coastal Observatory Vessel Requirements

- Better access vessels for observatory research
- 10 Local to Regional vessels distributed on east and west coast
- Need for coordination of multiple vessel operations
- Need for rapid response capability
- Long duration glider-type AUV will be key observation platform
- Aircraft Facility Needs

How many Midsize Vessels

First-cut at Locations

- **Gulf of Maine**
- **Middle Atlantic Bight**
- **South Atlantic Bight**
- **Eastern Gulf of Mexico**
- **Western Gulf of Mexico**
- **Southern California**
- **Northern California**
- **Oregon**
- **Washington**
- **Southern Gulf of Alaska**
- **Northern Gulf of Alaska**
- **Bearing Sea**
- **Arctic Seas**

Ocean Observatory Working Group (continued)

ROV Support Recommendations

- Routine access to ROVs will be required for all observatory operations
- 1 additional vehicle will be required when the OOI is implemented (2-3 y from now)
- 1 more vehicle will be required when OOI facilities are fully operational (5-7 y from now)
- Commercial ROVs are not suitable for most science operations but may be usable for routine maintenance tasks

MATE Report (see handout)

- MATE Technical Internship Program
  - 2003: placed 23 student interns on R/Vs, in labs and industry:
    - THOMPSON
    - ALPHA HELIX
    - NEW HORIZON
    - SAVANNAH
    - WEATHERBIRD
    - ENDEAVOR
    - LONGHORN
    - WALTON SMITH
- ROV Competition – 2nd Annual, June 19-21, 2003 (MIT) – 30 teams