Academic Fleet

Unique Capabilities of Ships for Ocean Research

- Mobility - can operate virtually anywhere in world's oceans, including ice covered regions
- Capacity - can carry large numbers of scientists, technicians and students and equipment to sea to collect samples, conduct experiments and surveys, and observe ocean processes
- Flexibility - equipment can be brought aboard and labs can be configured to meet diverse, multidisciplinary science needs on a leg-by-leg basis
- Power & Bandwidth - virtually unlimited power and bandwidth to operate unique and specialized equipment aboard ship; increasing bandwidth for two-way communication to shore

Findings

- There is an increasing National need for access to the sea as articulated in several recent studies by the National Academies, the U. S. Commission on Ocean Policy, the Administration's Ocean Action Plan and others.
- The science and societal drivers for research and education at sea are at an all time high. To maintain our Nation's competitiveness in the Ocean Sciences we need to invest in the infrastructure necessary to support research and education field work.

Finding – Fleet Size

- By the year 2025, there will be fewer ships in the UNOLS Fleet and fewer ship days available if only the ships included in the IGWG Status Report are added.
  - In 2007, only about 4,000 days were funded. Ship capacity will fall below that level by 2016 and in 2025 only 3,270 ship days will be available.
  - We will lose fleet scheduling flexibility that allows multi-ship operations, competing demands during peak periods and expeditions to remote areas with fewer ships.
  - We will significantly reduce our capacity to support global programs that require general-purpose Global ships with only one available and close to retirement.
  - All intermediate **size** ships will be retired by 2017.
  - All but 3 of the Regional/Coastal and Local Class ships will be retired by 2017 and there are no formal plans for replacement. (we will potentially lose access to local geographic regions, class cruises accommodated, etc.)

Findings

- The current fleet faces budget constraints, escalating costs, and aging ships due to:
  - Stagnant federal budgets - flat or increases below inflation. Allocation of funds for Ocean Sciences has decreased as a percentage of federal research budget.
  - Fuel and manning costs rising faster than general inflation.
  - New costs associated with security requirements and new regulations.
  - Aging ships – higher maintenance costs, obsolete systems.
- The fleet is faced with crew & marine technician retention and hiring challenges due to increasing job instability and competition from higher paying employers.

Findings

- Alternate and Emerging Technologies will not reduce the utilization levels of ships, but instead will change the way in which they are used and in some cases they may increase demand for ships.
- Observatory science including established time series and OOI will bring new additional facility (ships and ROVs) requirements to support installation and O&M.
  - Specific geographic sites that must be serviced at regular intervals
  - The space and time requirements of ocean observatories will impart serious constraints on ship scheduling flexibility

Findings

- When the vision of the Ocean Commission is realized, there will be no room for increased demands made upon the fleet unless ocean science funding is increased as recommended. Funding is required for research and education programs, as well as the supporting infrastructure.
- Until recently, fleet capacity has been fairly well matched with the requirements for ship time. Recent budget shortfalls have resulted in some ship retirements as well as some excess capacity that will continue without an increase in science and operations funding from existing or new sources.

Finding – Trade-off

- There is a recognized trade-off between the cost effectiveness of a fully utilized fleet and the ability to respond to unscheduled events.
  - A fleet with all ships fully scheduled will be more cost effective for the scheduled programs.
  - A fully scheduled fleet will be unable to easily respond to short notice requests for support such as retrieving loose moorings, responding to detected seismic, eruption or weather related events without negative impacts on previously scheduled work.
  - A fleet that is normally fully scheduled would not have the flexibility to accommodate occasional surge demands for ship time.

Major Issues Facing the Academic Fleet Today

- Short-term: Mismatch of Fleet Funding, Demand and Capacity
- Longer-term: Aging and Replacement of the Research Fleet

Recommendations

- Implement the Fleet renewal activities that are currently underway (ARRV, 3 Regional Class ships) and planned (2 Ocean Class ships)
- To continue to meet current requirements UNOLS should encourage the timely replacement of local vessels and coastal regional vessels by institutions, state governments and regional partnerships.

Recommendations

- If budget projections remain at the current low level, retirement of some of the ships that will soon reach the end of their projected service life should be considered.
  - Ship retirement decisions vs lay-ups should be made based on multi-year projections of shiptime demand.
  - Strategies for retaining experienced technical support groups and crew should be considered.
  - With delayed timelines for delivering the new ARRV and Regional ships into the fleet, some ships nearing retirement should have their service life extended to meet science initiatives. Ships extended beyond retirement dates must be maintained at an adequate level to ensure safe and reliable operations.

Recommendations

- To realize the vision of the Ocean Commission the UNOLS fleet must increase beyond the current projected levels (IWG-F Status Report).
  - This will not only require increased funding for support of ocean science research and education but also for facility construction, maintenance and operation.

Recommendations

- A minimum of one and preferably two new general-purpose Global class vessel(s) should be planned for, funded and constructed by 2022. This recommendation is predicated on:
  - Planned retirements of all but one of the existing general purpose Global class vessels by this time frame.
  - Likely design and scheduling limitations that will be associated with new Ocean class vessels for performing Global-scale expeditionary science

Recommendations

- New state-of-the-art ships with technically sophisticated equipment will require additional and advanced technical support groups.
- Planning and acquisition of new ships generally takes about 10 years, therefore it is important to begin the process now for ships that will be needed in 2017 and beyond.