

**Regional Class Concept Definition Task
Interim Status Meeting
National Science Foundation, Room 380
May 28, 2003**

Attendance:

Larry Atkinson, ODU (FIC Chair)
Annette DeSilva (UNOLS Office)
Dolly Dieter, NSF
John Freitag, ONR
Wilf Gardner, TAMU (Council and Regional Class Subcommittee Chair)
Linda Goad, NSF
Matt Hawkins, UDel (Regional Class Subcommittee)
Dave Hebert, URI (FIC and Ocean Class Subcommittee Chair)
Capt. Bob Houtman, ONR
Pete Kilroy, NAVSEA
Mike Reeve, NSF
Dan Rolland, JJMA
Holly Smith, NSF
Jason Thomas, JJMA
Elizabeth White, NOAA
Peter Wiebe, WHOI (UNOLS Chair Elect)

On May 28, 2003 at 1030 a meeting was held at the National Science Foundation to review the status of the JJMA Phase II Study on Regional Class Concept Development. The individuals listed above attended the meeting. Mike Reeve opened the meeting and indicated that the effort was approximately one half complete.

Dan Rolland (JJMA) continued by presenting a series of viewgraphs providing a status report of the effort to date. His presentation can be downloaded at

<http://archive.unols.org/committees/fic/smr/regional/phase2_status_052803.pdf>.

Dan presented an overview of the task:

Acquisition Process -

- a. Analyze alternative acquisition approaches

Refinement of Concept Design -

- b. Refine Concept Design Within Cost Cap

Tonnage Analysis -

- c. Analyze tonnage of concept designs and regulatory impacts

Technology Investigation -

- d. Investigate innovative technologies to reduce manning, life cycle cost

Ship Specification Development -

- e. Develop specification and other design documentation to support next phase

Two concept designs were developed by JJMA and analyzed:

- Minimum (threshold) ship that meets the minimum SMRs
- Desired (objective) ship that meets the desired SMRs

They will try to determine the impact of capability on ship size. Additionally, they will try to determine where the \$25M cost cap falls.

Dan presented a table showing the concept variants versus the Regional Class SMRs. The desired SMR ship design met all desired SMRs. The minimum ship variant can meet the minimum SMR value with the exception of storage space. The ship profiles were presented. Both designs have the science parties in double staterooms with the exception of the chief scientist, who has a single. Both designs indicate a crew of ten. Both designs call for the same propulsion system and both have double bottom tanks.

Dan reviewed the seakeeping table of operabilities. The operating areas for the Gulf of Maine and the Pacific Northwest were analyzed. It was predicted that a monohull that meets the desired SMR ship design could meet the seakeeping criteria spectrum for both short and long crested seas. The on-station speed considered was 0-2 knots and the transit speed was directly from the SMRs. Dan suggested that in future SMR documents "deck wetness" be added as a parameter.

Dan showed a chart of percent time operability versus wave height for a monohull. It was commented that it would be interesting to see this same chart for a SWATH design.

The seakeeping speed polar diagrams were presented. In summary, the models briefly predict that:

- At SS4 all speeds and directions are met with roll stabilization tanks for both the desired and minimum SMR designs.
- At SS4 without roll stabilization tanks some roll lobes appear for the minimum SMR ship and with the desired ship in long crested seas.
- At SS5 with roll stabilization tanks the designs exceed the motion criteria during head seas transit.
- At SS6 with roll stabilization tank there will be some operability in beam seas with the desired SMR ship design
- At SS5 without anti roll tanks in short crested seas both designs exceed motion criteria. With the addition of anti-roll tanks there is a big improvement, but motion criteria is exceeded in head seas.
- At SS5 without anti roll tanks in long crested seas both designs (mostly) exceed motion criteria. With the addition of anti-roll tanks there is some operability in beam and following seas for the desired SMR ship.

Next, motion comparison charts of the SWATH and monohull design were presented. On station as well as transit conditions were evaluated. At SS4 the SWATH roll and pitch were better, but not to a large degree. Similar results were seen at SS5 and SS6, but in both cases the SWATH pitch amplitude is higher with a beam sea while on station.

The program costs for the desired and minimum SMR ships were presented. The estimated lead ship costs are:

- Desired ship = \$28M
- Minimum ship = \$25M

The desired ship is within the budget cap and does not require design trade-off decisions. Also, reducing to the minimum SMR ship achieves relatively minor savings at the expense of significantly reducing capability. JJMA also indicates that there can be economy with a multiple ship contact (non recurring costs). They also state that an Integrated Product Team (IPT) design-to-cost approach could reduce risk and cost.

A variety of additional charts and slides were presented and included:

- Cost versus displacement
- Propulsion system

- Speed power and fuel consumption

Dan presented the various acquisition strategies that are being considered:

- Conventional Approach
 - Develop Concept, Preliminary, and Contract Design
 - Then Solicit Construction Bids
- IPT with 1 Team Approach (Similar to AGOR 26)
- IPT with 2 Team Approach

They will develop a schedule, cost, and pros/cons for each approach. The goals of a successful acquisition program are to:

- Satisfy NSF Requirements For Oversight and Milestone Decisions
- Remain Below Cost Ceiling
- Maximize Mission Capability
 - Maximize Funds Applied Directly To Ship
- Achieve Early and Effective Community Input
 - Ensure Resulting Ship Meets Needs
 - Minimize Costly Change Orders

The draft timelines for each of the acquisition strategies was presented. The conventional approach is estimated to take 3-3.5 years and the IPT approach is estimated at approximately two years.

There was discussion on the pros and cons of the various acquisition strategies and the respective timelines. The need for opportunities for community input was emphasized. There was also the question on what would happen during the IPT approach if the design was completed long before the funding became available. Mike Reeve commented that it would be interesting to see the associated costs for each of the processes. Pete Kilroy commented that the cost of the acquisition process should be carefully considered because it subtracts from the total construction dollars available.

NSF has not decided which approach they will take. They will consider the recommendations for this JJMA study.

JJMA performed a tonnage analysis for a design that could be <300 Domestic tons. They did a quick look at the arrangements. There are issues that remain to be resolved. To stay below 300 Domestic tons some SMRs cannot be met. There would need to be some berthing changes. The ship length is estimated at 132 LWL, which is shorter than the desired SMR length. The ship would still be over the International tonnage limit. A table showing the US tonnage calculations for concept variants was presented.

JJMA will conduct a technology investigation to:

- Identify ship systems where life cycle costs are high and some improvement would be welcome
- Identify technologies that have potential for improving
- Perform feasibility analysis to determine if further consideration is warranted.

Dan provided the status and description of the ship specification development effort:

- Initial Efforts Underway to Identify Suitable Format and Scope for Specification
- Dependent on Acquisition Approach
 - Conventional Approach Usually Requires Detailed Specification or Circular of Requirements

Streamlined Approaches Usually Require Abbreviated Documentation - P-Spec, Desired Operational Capabilities

- Likely Approach Will Draw From Previous AGOR Experiences
 - Modify Based on Lessons Learned and Unique Aspects of Regional AGOR Acquisition

Lastly, Dan reviewed the work remaining on the Phase II effort.

- Further refinement of concept designs
 - Incorporate Comments
 - Further Development of Mission Systems
- Technology Investigation
- Acquisition Strategy Analysis
- Specification Development

They expect to complete the effort during the summer.

The meeting adjourned at 1200.