

25 September 2006

Dear Colleagues:

Since the ORION Design and Implementation Workshop in March 2006, the ORION Program Office and members of the ORION advisory committees have worked on refining the Ocean Observatory Initiative (OOI) Conceptual Network Design (CND) through an iterative process, as revised cost estimates of the proposed infrastructure have been developed. This information formed the basis of a Conceptual Design Review (CDR) of the OOI, which was successfully completed in August 2006. The NSF's Large Facilities Office requires several reviews of its large programs as one of the steps in moving towards the construction and implementation phase. For the OOI CDR a panel of 20 experts from the science, engineering, and education communities was convened to review the scientific merit and goals of the OOI, the technical feasibility and readiness of the CND, the proposed budget, schedule and milestones, the management plan, education and outreach plans, and a preliminary estimate of an operations budget. The panel noted that the OOI will transform the way oceanographic research will be carried out in the coming decades and concluded that the conceptual network design is credible and provides a good starting point for the next step in the development of the OOI.

One outcome of preparing for the CDR was obtaining more accurate estimates of operations and maintenance (O&M) costs. The current projected annual O&M costs for the ORION Program used by NSF in their budget planning was obtained from the National Academy of Sciences report, *Enabling Ocean Research in the 21st Century: Implementation of a Network of Ocean Observatories*, which represented the best estimate of O&M costs in 2003 when the report was published. ORION's recently revised O&M estimates are higher than the 2003 value, as a result of improved information on the type and location of infrastructure, along with inflation in the intervening years. As many of you are aware fuel costs for ships, in particular, have dramatically increased in the past two years, as well as the enhanced role of ships resulting from demand for offshore exploration, drilling, and production. Based on anticipated inflation in the coming years, these O&M costs will likely be substantially higher by 2013 when the OOI is completed. The ORION community is very sensitive to the need to limit O&M and life cycle costs in order to protect the core science funds within the current NSF budget constraints. As a result, the ORION Office and advisory committee members will be re-evaluating and descoping the existing network design in the coming months to ensure that the OOI funds are spent wisely, that we meet the budget targets given to us by NSF, and that the goals of the MREFC account are met, namely that the facilities provide new and transformative technologies that will enable major advances in understanding ocean processes.

The Observatory Steering Committee (OSC) met September 13-15, 2006 and endorsed the following high priority boundary conditions to guide the process of re-evaluating the observatory network design with respect to O&M costs: (1) the design must include new

Lamont-Doherty
Earth Observatory of
Columbia University

Florida State University

Monterey Bay Aquarium
Research Institute

Oregon State University

Pennsylvania State
University

Rutgers University

Stanford University

Texas A&M University

University of California,
Santa Cruz

University of California,
San Diego,
Scripps Institution
of Oceanography

University of Florida

University of Hawaii

University of Miami

University of Michigan

University of Nebraska,
Lincoln

University of Rhode Island

University of South Florida

University of Texas, Austin

University of Washington

Woods Hole
Oceanographic Institution

and transformative technology for both the physical elements of the OOI and its associated cyberinfrastructure (interactive, near real-time connectivity), (2) the multidisciplinary science questions used to design the network must be those that require this new technology in order to make major advances in understanding, while recognizing that the network also must support investigations of science questions that we are unable to anticipate at this time, (3) the design must retain all three physical observatory components (coastal, regional, global), (4) the design must maintain an appropriate balance between high-risk elements and lower-risk elements which have a high probability of success, (5) the design must maintain an appropriate balance of fixed and mobile assets to avoid spatial or temporal aliasing, and (6) capital costs must be re-evaluated with respect to minimizing life-cycle costs. The Science and Technology Advisory Committee (STAC), augmented by members of the Engineering Committee, will meet in October 2006 to discuss and recommend re-baselining options for the observatory network design given the above conditions. The OSC has provided the STAC with several options to guide their discussions. With input from the STAC and the OSC, the ORION Office will develop a revised observatory network plan. This plan will be posted on the ORION website in early December for public comment. A new network plan will be completed in January 2007 in consultation with the NSF. This plan will be used as the basis for further, detailed cost estimates required for the Preliminary Design Review in fall 2007.

The OOI is a tremendous opportunity for the ocean sciences community to demonstrate the transformative nature of having a continual presence in the oceans through a network of interactive, distributed sensors. This facility will enable powerful new approaches for investigating complex processes and foster technological developments for several decades to come. In the next year, we will strive to ensure that the OOI provides unique capabilities at the frontiers of ocean and Earth system science research to promote discovery, innovation, and learning.

Sincerely,

Kendra Daly
Director, ORION Program

Bob Detrick
Chair, ORION Observatory Steering Committee