NOAA Ocean Exploration Program Review
Science Advisory Board Charge to Reviewers

I. Purpose and Background

This document provides: the scope of review, including evaluation criteria; proposed schedule; and reporting for the external review of the National Oceanic and Atmospheric Administration Ocean Exploration Program.

The NOAA Ocean Exploration Advisory Working Group (OEAWG) is a standing working group under the NOAA Science Advisory Board (SAB). It provides advice and recommendations to NOAA on ocean exploration priorities, opportunities, and challenges. The OEAWG Terms of Reference describe the working group's responsibility to conduct periodic Ocean Exploration Program reviews to assess the relevance of the Program to NOAA and NOAA strategic plan goals, the quality of the Program's work, and its performance.

A special expert Review Team will conduct the first ever formal, independent review of the Ocean Exploration Program. It will operate under the auspices of, and report to, the SAB. This review is a unique opportunity to consider the Program as it has evolved over the past ten years and to position it for the future.

Accordingly, the reviewers will consider past performance, but more importantly, advise NOAA on the future of the Ocean Exploration Program and recommend steps to strengthen the Program and its leadership of the U.S. ocean exploration enterprise over the next decade.

The Review Team will present the final report with findings and recommendations to the Science Advisory Board, which will then consider those recommendations when advising NOAA and other interested or involved federal agencies on the future of the NOAA Ocean Exploration Program.

II. Scope of Review

The 2000 Report of the President's Panel for Ocean Exploration, "Discovering Earth's Final Frontier: A U.S. Strategy for Ocean Exploration," provided strategic recommendations for a national program in ocean exploration. In 2009, Public Law 111-11, Title XII (Oceans), Subtitle A (Ocean Exploration), Part I (Exploration) authorized a NOAA Ocean Exploration Program. Reviewers will evaluate the Program and its activities prior to PL 111-11, consider how the Program responded to the new law, and advise NOAA on how the Program can reach the potential for national leadership in ocean exploration as the law and the 2000 President's Panel Report envisioned.

Reviewers will evaluate the NOAA Ocean Exploration Program in each of its program themes:

- Baseline information and characterization products that describe new areas and phenomena and their integration into national databases;
- Technology development and innovation;
- Catalyzing research;
- Information management and product development; and,
- Education and outreach.

The three general categories for evaluation are *Relevance*, *Performance*, and *Quality*, and are described below. In each of these categories, reviewers should assess progress toward the goal of conducting preeminent ocean exploration. A fourth category, *Guidance for the Future*, allows reviewers to contribute ideas and recommendations to position the Ocean Exploration Program for the years ahead.

Proposed indicators of preeminence for assessing *Relevance*, *Performance*, and *Quality* organized by theme, follow. Evaluation criteria may be found in the Appendix.

General

- Ocean exploration results that have influenced natural and cultural resource management decisions and/or steered follow-on research investments or observational programs;
- Contributions of data and expertise to national and international databases, programs, and state-of-science assessments;
- Ocean exploration results that have influenced new or modified existing policies
- Joint Program Agreements, Cooperative Research and Development Agreements, and other activities with academia, institutions, non-governmental organizations, and industry;
- Collaborations with sister agencies (e.g., U.S. Geological Survey, National Science Foundation, State, Navy, and within NOAA; with national and international research groups; and with reimbursable support from non-NOAA sponsors;
- International partnerships;
- Activities that advance larger U.S. domestic and international priorities; and,
- Exploration products, information, and services transitioned to and used by stakeholders (e.g., hypotheses generation for dissertation or peer-reviewed research proposals, ocean-related education programs).

Information and Characterization

- Contributions of data and expertise to national and international databases, programs, and state-of-science assessments; and,
- Number of scientists and their graduate research assistants and students participating in telepresence-enabled expeditions.

Technology

- New ocean exploration technologies developed and deployed;
- Number of new Exploration Command Centers established or new ways of participating in telepresence-enabled expeditions; and,
- Technologies transferred to operations/application (e.g. observing systems, information technologies).

Catalyzing Research

- Bibliometric presentation of the Program's refereed publications per year; citations for refereed publications; and,
- Ocean Exploration Program results that have stimulated follow-on research, and new domestic and international partnerships to promote ocean exploration and research.

Education and Outreach

- "Gray literature" publications, articles in popular media such as monthly or weekly periodicals, and new media presence;
- Number of educators and students exposed to the Ocean Exploration education program;
- Number of on-line reviewers and participants in the Ocean Exploration outreach programs; and,
- Accessibility of information from the Ocean Exploration and Research web site and other sources where the Ocean Exploration program hosts information.

IV. Review Categories

Reviewers are asked to consider these indicators of preeminence in the context of four categories:

Relevance - Assess the degree to which the Ocean Exploration Program is relevant to NOAA's mission and is of value to the nation.

Performance - Assess how ocean exploration planning is conducted. Specifically, assess the Program's overall effectiveness and efficiency of prioritizing and then conducting ocean exploration activities, to meet NOAA strategic plan objectives and the needs of the nation, given the resources provided.

Quality - Evaluate the quality of ocean exploration program investments in capabilities and in the value of results, including an assessment of progress toward meeting the goal of conducting preeminent ocean exploration.

Guidance for the Future – Make recommendations to the SAB about the future of the Ocean Exploration Program and suggest actions to maximize the Program's value to NOAA and the nation. Reviewers should give consideration to how the Program advances U.S. government domestic and international priorities, aligns with NOAA's strategic plan, the level of financial and resource support is receives, how the Program engages tactical and strategic external partnerships, and how it adopts new exploration and communication technologies, among others.

III. Proposed Schedule

An on-site review will be conducted over a two-day period on May 7-8, 2012 in Silver Spring, Maryland. Planning teleconferences with the Director and his team will be scheduled in advance of the on-site review. The goal of the teleconferences is to discuss the Charge with you, as a reviewer, as well as the scope of the review, themes, evaluation criteria, and supporting information. These calls are also an opportunity for you to identify any additional information needs. The Program will provide all relevant information the Review Team requests on a Review website.

IV. Operations and Reporting

The Review Team will operate under the SAB's Federal Advisory Committee Act guidelines. The review team will prepare a report the NOAA Science Advisory Board that includes findings and recommendations for action. The Review Team will submit its report through the SAB Ocean Exploration Advisory Working Group Liaison with sixty days of its meeting. The SAB will consider the Review Team report in a public meeting before forwarding the report, including recommendations, to NOAA for action.

Appendix
Evaluation Criteria

A. Relevance - Assess the degree to which the Ocean Exploration Program is relevant to NOAA's mission and is of value to the nation.

Criteria for evaluating *Relevance*:

- The NOAA Ocean Exploration Program has led development of a compelling interagency vision for the future of ocean exploration, and roadmaps to ensure it is of strategic value to the nation, especially as portrayed in:
    - Public Law 111-11, which authorizes NOAA's ocean exploration program and designates NOAA as the lead coordinating agency for the nation's ocean exploration enterprise; and,
    - The 2000 Report of the President's Panel for Ocean Exploration: Discovering Earth's Final Frontier: A U.S. Strategy for Ocean Exploration.
- The program supports a balanced portfolio of expeditions and projects with regard to geographic areas and poorly understood phenomena.
- The program supports a balanced portfolio of expeditions and projects that:
    - map and describe the geological/geophysical, physical, biological, chemical, and archaeological characteristics of the ocean;
    - map and describe deep-sea natural and cultural resources;
    - survey and describe ocean phenomena, dynamics, and interactions at new scales; and
    - develop new sensors and systems to increase the pace and efficiency of ocean exploration.
- The program provides information critical to NOAA's missions, strategic and implementation plans, and provides value by identifying new issues, challenges, and opportunities that advance NOAA's mission, maintaining its position as the cutting edge lead ocean agency.

B. Performance - Assess how ocean exploration planning is conducted. Specifically, assess the Program's overall effectiveness and efficiency of prioritizing and then conducting ocean exploration activities, given the resources provided, to meet NOAA strategic plan objectives and the needs of the nation.

Criteria for evaluating *Performance*

- The allocation of resources for capital capabilities, headquarters overhead, extramural activities and expedition operational costs
- Enabling intra and inter-national partnerships and involving national stakeholders (e.g., regional institutions, media, graduate students, educators, other agencies, etc.).

- The NOAA Ocean Exploration Program has clear goals, objectives, and strategies reflected in appropriate strategic and implementation plans (e.g., strategic plan, annual operating plans), a process for evaluating and prioritizing activities and a process to evaluate results.
- The Program budgets effectively and appropriately for capital investments, headquarters overhead, extramural activities, and expedition operational costs.
- The Program has a clear and effective process to identify geographic or phenomena investigation priorities. It is making good progress in addressing those priorities.
- The Program responds quickly to new opportunities to advance the National Ocean Exploration agenda.
- The Program aggressively seeks and develops domestic and international partnerships that add value and impact to its activities; and,
- The Program is well organized and continuously strives to improve results and impact.
- The Program is administratively efficient. It completes its established objectives, milestones, and products efficiently; strives to increase efficiency and collaboration; and is effective and efficient in delivering ocean exploration products and outputs to applications, operations or users.
- The Program develops and applies expedition and project results to help NOAA meet existing mission requirements, as well as to catalyze new NOAA and national endeavors.

C. Quality - Evaluate the quality of ocean exploration program investments in capabilities and in the value of results generated, including an assessment of progress toward meeting the goal of conducting preeminent ocean exploration as defined in PL 111-11 and key reports and studies, such as the 2000 President's Panel Report.

Criteria for evaluating *Quality*:

- The program engages, supports, and collaborates with scientists, engineers, technicians, and educators, who are effective ocean explorers as evidenced by:
    - the quality of their methods, results, and products,
    - their ability to engage in interdisciplinary and collaborative science; and,
    - they are leaders in their respective fields.
- The program and the scientists, engineers, technicians, and educators it supports generate products that conform to or exceed national and international standards.
- The program engages stakeholders in new and innovative ways through ensuring results are disseminated widely and made easily accessible, and by developing synthesized products and materials to engage the general public and to educate future explorers and scientists.

- The program develops products and engages in processes and activities that meet NOAA mission and national priorities,
- Program results catalyze additional ocean exploration expeditions, catalyze follow-on research, and reinforce partnerships that meet Program, NOAA, and national priorities.

D. Guidance for the Future – Make recommendations to the SAB about the future of the Ocean Exploration Program including actions to maximize the Program's value to NOAA and the nation. In the context of PL 111-1 and relevant reports and studies, reviewers should give consideration to how the Program should advance U.S. government domestic and international priorities, better align with NOAA's strategic plan, solidify appropriate financial and resource support, promote tactical and strategic external partnerships, and adopt new exploration and communication technologies, among other considerations.