



R R A P

Ocean Research & Resources Advisory Panel
A United States Federal Advisory Committee

Ocean Research and Resources Advisory Panel

4-5 August 2008
NorthWest Research Associates
4118 148th Avenue NE
Redmond, WA 98052

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August 4-5, 2008

Conference Call-in: 888-387-8686
Pass code: 9296024#

Agenda

Monday, 4 August

8:30-9:00 Assemble/Breakfast

9:00 Call to Order (*Linwood Vincent, DFO*)

9:00-9:30 Introduction (*Schubel, Chair*)

- Welcome, Introductions
- Review of agenda
- Review of 15-16 April 2008 ORRAP meeting minutes
- Review of 15-16 April 2008 ORRAP meeting actions

9:30-2:30 State of the Ocean Energy Industry (*Betzer*)

9:30-12:15 – Presentations from the community

- Charles York (Oregon State University)
- Uday Mathur (Pacific Gas & Electric)

10:15-10:30 – Break

Presentations, continued

- Stephanie Thornton (Oregon Wave Energy Trust)
- Craig Collar (Snohomish Public Utility District)
- Justin Klure (Pacific Energy Ventures LLC)
- Michael O'Connell (Stoel Rives LLP)
- Scott Lindsay (SML Consulting on behalf of the Ocean Renewable Energy Coalition)

12:15-1:00 – Working Lunch

12:15-2:30 – Ocean Energy Industry, continued

- Group discussion and decision on action items

2:30-2:45 – Break

2:45-3:15 Interagency Working Group on Ocean Education (*M. Kaplan*)

- Update on interagency coordination of ocean education efforts
- Role of ORRAP in reviewing NOAA's draft Education Plan

3:15-4:00 Implementing the ORPPIS
- Federal interagency update (*J. Morris*)

4:00-5:20 ORRAP Business Session

4:00-4:45 – ORRAP Ethics discussion (*Jan Gnerlich*)

ORRAP Membership Issues

- New membership – status report and procedure (*Vincent*)
- Membership gaps and niches to be filled (*Schubel / Hernandez*)
- Chair and Vice-Chair renewals (*Vincent*)

General ORRAP Discussion

- Update on OSB Activities (*Pomponi*)
 - Facilities Implementation Strategy
 - OSB core support
- Topics for future ORRAP consideration (*Schubel / Hernandez / Gaffney*)
- Scheduling of next meeting (*Schubel*)

5:20-5:30 Wrap-up Discussion / Review Action Items (*Schubel*)

Tuesday, 5 August

8:00-8:30 Breakfast

8:30-8:45 Reconvene (*Schubel*)

- Review of previous day's presentations, discussions and action items

8:45-9:45 Joint SIMOR-JSOST Transition Statement (*J. Morris*)

- ORRAP feedback and discussion on common messages

9:45-12:15 Administration Transition Strategy (*Schubel / Hernandez / Gaffney*)

- Development of a transition strategy document
- Top science, education and governance priorities for the next Administration

10:30-10:45 – *Break*

12:15-2:00 Working Lunch

Integrated Ocean Observing System (IOOS)

- Jim Simpson (Boeing Company)
- Jan Newton (University of Washington)
- John Delaney (University of Washington)

2:00-2:30 ORRAP Sub-panels – Issues for attention and action

- **Ocean Observing** (*McCammon / Gaffney*)
 - Report and recommendations from first meeting
- **Industry** (*Betzer*)
 - Selection of new Chair
- **Education** (*Reutter*)

2:30-2:45 Public Comment Period (*Vincent*)

2:45 Adjourn

Ocean Research and Resources Advisory Panel

National Oceanographic Partnership Program

Consortium for Ocean Leadership
1201 New York Avenue NW, 4th floor
Washington, DC

15-16 April 2008

Minutes

15 April

Introduction

L. Vincent called the meeting to order at 0900 and introductions were made around the room. J. Schubel welcomed all attendees to the meeting, called for ORRAP members to keep in mind ways in which the ORRAP can advise the federal government on the topics of this meeting. He added a discussion of the Integrated Ocean Observing System (IOOS) program office to the meeting agenda. The minutes of the 6-7 December 2007 ORRAP meeting were approved without changes. The group reviewed the 6-7 December action items, all of which had been acted upon. Sarah Cooksey from the state of Delaware Coastal Programs pointed out that Delaware began its own version of the Thank You Ocean Campaign. More information can be found at www.TYDB.org. L. Vincent mentioned that ORRAP members are required to complete ethics training, which should take place before the end of 2008. One option is for the Office of Naval Research personnel to brief the ORRAP on ethics at the next meeting.

Follow-up on: “Envisioning the Future of Coastal Management”

D. Hernandez introduced the topic, which is a follow-up to presentations and discussion held at the December 2007 ORRAP meeting. She said that the Coastal Zone Management Act (CZMA) is intended to inspire collaboration between the National Oceanic and Atmospheric Administration (NOAA) and the coastal states. The objectives of this day’s discussion were to update the ORRAP on CZMA reauthorization progress and explore ORRAP’s role in partnering in these efforts.

R. Cantral presented on CZMA status. He said that a series of CZMA-related workshops with the community resulted in a set of shared cornerstones and principles for the Act. He asked the ORRAP to consider how the CZM Initiative conducted jointly by NOAA and the Coastal States Organization (CSO) could better partner with states and local communities and build capacity on the local level. He also asked how better to bring science to bear on management. He noted that the Initiative aims to establish a national coastal planning boundary because there is a great deal of inconsistency in states’ definitions. It also aims to use the CZMA to improve state-federal partnerships by establishing a uniform set of goals and priorities. He posed the question of how to

incorporate the right elements into a national coastal management program such that it receives funding from the Congress and its information is useful to both managers (suppliers of information) as well as decision-making stakeholders (elected officials).

P. Kelly pointed out that states have responded differently to the U.S. Commission on Ocean Policy report's recommendation for ecosystem-based management and wondered how state, regional, and national ecosystem-wide interests would be balanced. P. Gaffney inquired as to whether the CZMA reauthorization efforts were entirely dependent on new funding. R. Cantral replied in the negative, noting that there can be some budget rearranging but adding that new funding is still very important.

K. Fletcher presented on key principles for revitalizing CZM in the U.S. She noted that involving and educating coastal communities is very important to the reinvigoration of CZM and the reauthorization of the CZMA. She said that the ORRAP could have a significant impact on the development of performance measures for evaluating the impact of regional coordination along the nation's coasts. She asked the ORRAP to suggest representatives to sit on a coalition whose goals are to raise awareness of coastal management and to push the reauthorization of the CZMA. L. Robinson reinforced the importance of investing in educating members of the public who make important decisions on use and stewardship of the coasts and also elect policy makers. K. Fletcher agreed but noted the funding challenge of bringing data and other useful information to end users.

P. Kelly noted that the oil and gas industry will be providing a good deal of funding to coastal states and that our community must encourage some of it to be diverted toward good uses for the community. He encouraged CSO to consider this opportunity in its long-range planning. S. Cooksey added that – at least in Delaware – budgetary dollars will be spent on communities that have demonstrated a desire to work with state coastal management programs.

D. Hernandez guided the discussion toward ways in which ORRAP could assist in the process. J. Schubel urged everyone to keep in mind the ORRAP's cross-agency mandate, which requires the ORRAP to advise agencies besides just NOAA. He said that the principles laid out in the ORRAP's Research to Applications Task Force (RATF) report could be used to examine the CSO-NOAA Initiative. D. Hernandez added that there is overlap between the Initiative and the coastal hazards Near-Term Priority (NTP) of the Ocean Research Priorities Plan (ORPP) produced by the Joint Subcommittee on Ocean Science and Technology (JSOST). Both efforts have momentum, are receiving widespread attention, and are multi-agency in nature. Members of the ORRAP contributed other ideas for case studies that could be used to test the RATF report's principles, including the Sea Grant program, IOOS Regional Associations (RAs), and the Virginia and Maryland coastal zone programs, which operate within multi-agency and ecosystem-based management frameworks. B. Cowen added that alternative energy development will hinge somewhat on the future of the CZMA, so it is wise to consider the energy industry as partners and a source of funding in the future.

M. McCammon raised the issue of performance metrics and said that program outcomes (not outputs) and benefits to society are difficult to quantify. J. Reutter said that it would be valuable to evaluate existing collaborations for their effectiveness of agency partnerships and reward structures. He added that there is much opportunity to form productive partnerships with tangible benefits but that agencies are not doing this well. J. Schubel suggested forming a working group to examine case studies of programs that have been successful in this area. Members Hernandez, Smith, Wayland, and McCammon volunteered to form the working group.

State of the Ocean Energy Industry

P. Betzer moderated a session focused on the state of the ocean energy industry (power generated by wind, wave, current and tidal energy). The ORRAP heard presentations by representatives from various energy initiatives and federal/state/county regulatory agencies. Speakers shared their perspectives on: A) the current state of the ocean energy industry, B) opportunities and challenges (technological and logistical) their organizations face, and C) ways the ORRAP can provide the best possible guidance in its recommendations to the agency heads of the Interagency Committee on Ocean Science and Resource Management Integration (ICOSRMI).

Some needs that were expressed by the speakers include:

- The need for a better baseline of data. The programmatic Environmental Impact Statement (EIS) developed by the Minerals Management Service (MMS) for the CapeWind project is an initial step that can be built upon for other projects.
- The need for agencies to formally express their support for developing an ocean renewable energy portfolio.
- The need for a faster approval process once the site of the facility is selected. If renewable energy sources are to be adopted, this process must be accelerated. At the end of the process, a project needs to be able to begin commercial operations. Presently, a project must take great risks in developing a renewable energy facility before the project even gets to a commercially viable stage.
- The need for better communication among and between federal and community participants, in particular between the Federal Energy Regulatory Commission (FERC) and MMS, and between FERC and the community.
- Among coastal states, the need for standardized resource management guidelines regarding monitoring, mitigation and restoration. Coastal states need advice to move forward on policy development.
- The need for arbitrating the conflicting uses of the ocean caused by jurisdictional ambiguities, which are becoming more complex and which presently are only addressed through the EIS and permitting processes.
- The need for a federal supply of applied research funds – akin to the supply of basic research funds – to address research questions common to states, localities and other stakeholders, across multiple sectors.

The ORRAP discussed areas in which it could provide advice and/or guidance to the federal government. It could look beyond the issue of siting facilities and toward the facilities' benefit to the nation's ocean science and management enterprise. The ORRAP

could also advise government on allocation of resources. Three national needs include a baseline environmental assessment, a higher level allocation of ocean space (e.g., defining the ideal concentration of wind turbines per unit of space), and monitoring performance to make better decisions in the future.

All presentations are available on the ORRAP page of the NOPP website (<http://www.nopp.org/Dev2Go.web?id=207773>).

Preparation for Day 2 joint session with JSOST

The group discussed the topics to be covered in the joint session with JSOST, including:

- Mechanisms for ORRAP to advise on strategic issues, including the ORPP
- Discussion of how the ORPP is being addressed via budget processes
- Obstacles to Interagency Funds Transfers
- Response to *Best Practices for Increasing the Impact of Research Investments*

D. Hernandez suggested comparing how ORRAP and JSOST establish strategic priorities. M. McCammon added that ORRAP could help lay out the priorities for the incoming Administration and help evaluate the effectiveness of the ORPP at the national, regional and local levels. B. Cowen echoed the importance of involving states and localities throughout the policy development process since it builds public support and the process fails in its absence. B. Chicoski pointed out that the JSOST considers the ORPP to be the national guide for ocean research for the coming decade; ORRAP comments might thus be most helpful in the context of modifying or strengthening the ORPP and its NTPs to meet emerging and evolving national needs.

P. Gaffney highlighted the nation's need to increase our understanding and measurement of the ocean, and thus said that the science priorities of IOOS should be stressed. J. Schubel raised the possibility of ORRAP developing a white paper to describe the interagency mechanisms needed through and beyond the change in Administration. M. Briscoe noted that the two most important bodies that ORRAP addresses (ICOSRMI and JSOST) will still exist in the new Administration, even if their names change. He thus suggested that ORRAP put together a list of items that the ICOSRMI absolutely must address through the change in Administration.

On the topic of the ORPP in the federal budget, the ORRAP agreed that the ORPP should feature prominently in the FY2010 budget.

On the topic of obstacles to the transfer of funds between agencies, the ORRAP agreed that these impediments to interagency collaboration are serious enough to bring to the attention of ICOSRMI. The group agreed that the NOPP process of sharing funds among agencies and from Industry is a great approach and considered recommending to ICOSRMI that agencies work far more closely together. R. Fisher added that a significant problem within federal agencies is the lack of transparency in the budgeting process, which limits the community's insight into priority areas and available funds. He suggested the possibility of including a comment to ICOSRMI about changing the budgeting process to resolve this problem.

In discussions of the responses to the RATF report, D. Hernandez explained that the RATF report evolved from the ORRAP's review of the ORPP. J. Schubel said that the most important follow-up for the report was to test its guiding principles via a pilot study. NOAA and the U.S. Geological Survey, sponsors of the research to support the coastal hazards NTP, have agreed to the use of this NTP as the pilot study. B. Chicoski informed the group of the extent to which the RATF report has been distributed among the community, which includes posting on the NOPP and ORRAP web pages, as well as distribution at meetings of various professional societies, at the February meeting of the coastal zone managers, and at various NOPP and Ocean Action Plan (OAP) committee meetings. L. Robinson reinforced the point that program managers constitute a very important audience for the report because they are most actively involved in integrating research with applications. B. Chicoski asked that ORRAP members inform him of other possible avenues for distribution of the report.

ORRAP Business Session

ORRAP Membership Issues

B. Chicoski presented a revised membership plan that included dates when members' terms end and the need for new members to rotate on to the ORRAP. He agreed to create a list of members' expertise so that members can analyze gaps and needs. The ORRAP currently consists of 17 members, and L. Vincent said that the Nominations Committee needs to submit two nominees to the Department of Defense so that one can be accepted, thereby rounding out the full complement of members.

P. Gaffney was nominated as second Vice-Chair of ORRAP, and all approved.

General ORRAP Discussion

D. Hernandez updated the ORRAP on activities and core funding of the Ocean Studies Board (OSB). The presentation is available on the ORRAP page of the NOPP website. She reported that, for 2008, the National Aeronautics and Space Administration doubled its funding support (to \$100,000) from the 2007 level, so the OSB budgetary picture looks better than it did at the time of the last ORRAP meeting. She said that the ORRAP can partly be credited because of its endorsement of increased support for the OSB. She covered ongoing studies with OSB involvement, as well as pending proposals and projects under development. She asked if the ORRAP would like to endorse the projects under development and recommend to the ICOSRMI that they continue, and she offered to provide the draft Statements of Task for these projects to the ORRAP.

J. Schubel opened discussion about whether ORRAP should be endorsing specific studies and recommending their continued funding to the ICOSRMI. B. Cowen added that such a recommendation would be too specific and would favor individual studies conducted by a single group. The group agreed not to make a recommendation to the ICOSRMI but, because the studies are multiagency in character and emerge from the principles of the ORPP, the ORRAP should tell the JSOST on Day 2 that it has been briefed on OSB projects and endorses their funding.

J. Reutter introduced a discussion on ORRAP's role in ocean education and suggested receiving regular updates at ORRAP meetings from the Interagency Working Group on Ocean Education (IWG-OE), especially considering the wide-ranging and multiagency character of ocean education. The group agreed.

M. Kaplan and L. Rom presented on the ongoing topic of creating the federal ocean education investment portfolio to maximize return on investment. L. Rom gave an overview on the federal ocean education investment, which is broad and diffuse among many agencies. M. Kaplan informed the ORRAP of NOAA's revisions to its Education Plan and suggested ways in which the ORRAP could be of assistance, including:

- Reviewing the Education Plan through the ORRAP Education Sub-panel and providing review comments to the IWG-OE by the next ORRAP meeting (4-5 August).
- Collaborating with the Department of Labor (DOL) through the ORRAP Industry Sub-panel. If DOL identifies ocean education as a high-growth industry, DOL will provide substantial funding to promote the ocean education workforce. M. Kaplan stressed the need to convince DOL that there are jobs waiting for people educated in the ocean sciences.

J. Reutter asked how the IWG-OE organizes its education activities across agencies and whether or not the group has been effective in doing so. M. Kaplan replied that the group has been effective but its productivity is hampered by limited resources. J. Coleman asked how the IWG-OE is addressing teacher training in federal education programs. M. Kaplan answered that there are many professional development pieces and the issue is identified as critical in NOAA's Education Plan. However, she added that coordination among groups could be improved.

J. Reutter raised a few issues, including how to give education a higher priority within agencies and how to allay fears that the Office of Management and Budget (OMB) will eliminate education money from agency budgets, which deters agencies from dedicating money to education in their budgets. J. Schubel suggested recommending to ICOSRMI that education be more heavily invested in because of its interagency value, the significant progress by the IWG-OE, and the value of ocean education to the future workforce.

Discussion shifted to the coordination and future status of ocean observations in the nation, and whether the ORRAP should address these issues. J. Schubel relayed concern within the community that Ocean.US (the federal integration office for ocean observations) is in a vulnerable position and that a strong new structure is needed. M. McCammon gave a background of Ocean.US, which was originally established through Memoranda of Agreement between nine agencies. Currently, the IOOS Program Office resides at NOAA and is funded through a line item added by OMB to the President's budget. The JSOST Interagency Working Group on Ocean Observations (IWGOO) has been overseeing Ocean.US. There is a possibility that Ocean.US activities

will be scaled back as the JSOST considers establishing a program office dedicated to supporting all of its interagency working groups.

M. McCammon said that the National Federation of Regional Associations (NFRA) relayed to the JSOST that it strongly supports the interagency coordination function of Ocean.US, and she suggested holding a joint meeting between ORRAP and its Ocean Observing Sub-panel to discuss the future of interagency coordination of ocean observing efforts. P. Gaffney noted the importance of community-wide solidarity so that NOAA is successful in coordinating IOOS and so that IOOS efforts do not cease during the change in Administration. J. Schubel suggested the ORRAP form a task force to develop recommendations on this topic. The task force would organize workshops and learn from the community to identify effective models for handling an interagency coordination function.

J. Schubel said that there is precedent for ORRAP involvement because Ocean.US was established through NOPP. He put forth ORRAP's options, which included doing nothing, crafting a statement to the ICOSRMI, or creating a task force to conduct a study. P. Gaffney recommended drafting a statement on the priority of IOOS because of its importance to the nation. He said it should be institutionalized in NOAA and bolstered by much greater interagency collaboration and greater collaboration with end users. He added that the IWGOO does not have the necessary resources and should be supported at a higher level.

Action items generated during Day 1 were reviewed.

16 April

Reconvene

L. Vincent called the meeting to order and reminded the group of the importance of the inaugural joint meeting between the ORRAP and JSOST. J. Schubel went over the presentations from Day 1 and topics to be revisited on Day 2. The group worked on language to be included in ORRAP opinions relating to the future of IOOS, offshore renewable energy, and obstacles to interagency funds transfers and partnering.

D. Hernandez revisited the issue of coastal zone management, specifically the challenge of coordinating federal agencies at the local level. One possible remedy is forming an interagency group on a local scale that mimics the role that ICOSRMI plays on a national level. She noted the importance of finding a good case study on CZM, and J. Schubel suggested monitoring the work done by the Heinz Center on resilient coastal communities. It was suggested that a representative from Heinz present to the ORRAP at its August meeting on the possibility for joining the efforts of Heinz and the CSO-NOAA Initiative.

ORRAP Sub-panels

Ocean Observing

M. McCammon gave an update on the status of the Ocean Observing Sub-panel. She said membership will be capped at 12 and will represent state and local interests in addition to national interests. Membership will span the private sector, academia and non-governmental organizations. She said that the Sub-panel will hold its inaugural meeting in June and will eventually hold a joint meeting with the ORRAP Industry Sub-panel. All ORRAP members will be invited to the Sub-panel meeting(s).

Industry

P. Betzer gave an update on the status of the Industry Sub-panel. He will reflect on the ocean energy session conducted on Day 1 and consider how to use the Sub-panel to advance the issue. J. Schubel suggested working with the individuals operating the wave center at Oregon State University in order to keep ocean energy and CZM issues at the ORRAP forefront. P. Kelly noted that MMS has a FACA committee dealing with science and policy, and he recommended that ORRAP collaborate with that committee to examine the future of ocean renewable energy. P. Betzer and B. Chicoski will look into coordination between the ORRAP and the MMS FACA committee.

P. Gaffney recommended hearing from a large systems integrator (like Boeing or Northrop Grumman) about their ocean observing activities and the challenges they face. J. Schubel will pursue acquiring a representative from Boeing to speak at the August ORRAP meeting.

Education

J. Reutter reported that he had been participating in IWG-OE meetings via conference call and identified a collaborative role for the ORRAP Education Sub-panel: helping the IWG-OE decide how ocean education should be organized within and across agencies to maximize the impact of the federal investment. He also raised the issue of involving Industry in ocean education and looked to the ORRAP for direction in these areas. He said that the ORRAP has a chance to influence the development of a new IWG-OE Implementation Plan. D. Hernandez asked if it would be valuable for the Education Sub-panel to review NOAA's Education Plan before the full ORRAP reviews it. J. Schubel noted that the Sub-panel should examine the Plan in a multiagency IWG-OE context, and J. Reutter agreed to lead a discussion on this topic at the August ORRAP meeting.

P. Gaffney initiated a discussion on the No Child Left Behind initiative and concluded that ocean examples need to be part of national teaching standards. S. Walker thought that this was best done at the state level, and J. Schubel added that it could be accomplished by influencing the textbook industry. P. Kelly pointed out that one of the primary goals of the Gulf of Mexico Alliance is ocean education, so he encouraged ORRAP and the Sub-panel to join forces with that group.

J. Schubel asked S. Walker what role ORRAP could play in advancing ocean education. S. Walker replied that ORRAP could try to elevate the visibility of ocean education on

the interagency ocean science and technology priorities memo that JSOST sends via ICOSRMI to OMB and the Office of Science and Technology Policy. She also noted that ocean education appears in the Ocean Action Plan annual update but not in its summary document, so higher visibility in both documents would help ocean education sustain its funding.

J. Davis asked about limitations to membership on the Education Sub-panel. J. Schubel encouraged all ORRAP members to get involved in Sub-panels and/or task forces.

The conversation shifted to ocean awareness, and J. Schubel called attention to the education kiosks that will be part of both the Smithsonian Ocean Hall and the Coastal Ecosystem Learning Centers. It was agreed that the Education Sub-panel should explore mechanisms to facilitate distribution of these kiosks throughout the country.

Joint ORRAP-JSOST Session

J. Schubel called the joint session to order and explained the rationale behind the session. Introductions were made around the room. R. Spinrad gave brief introductory remarks and laid out the objectives of the session, which included figuring out ways in which JSOST and ORRAP can work together and ways in which JSOST and the Subcommittee on Integrated Management of Ocean Resources (SIMOR) can collaborate. He also noted that the future of IOOS is a concern; ORRAP would like to see it continue to grow and become stronger as a program.

R. Spinrad explained that federal employees are developing transition plans to help inform the new administration and that JSOST would be discussing transition issues at their meeting immediately following the joint session.

D. Walker noted that the current ocean governance structure is a major improvement over past structures and expressed his concern that the current structure would be altered for the worse. J. Morris stated that with the increasing awareness of the role of oceans in climate change, it is a critical time to think about strategic ways to collaborate with the new administration to maintain the oceans' prominence.

J. Schubel suggested that one topic to start with was the role of ORRAP related to the ORPP. One suggestion coming out of the National Research Council (NRC) review of the ORPP was to have a regular external review process. R. Spinrad noted that ORRAP is an external body that can be used to monitor, review, and assess progress and evaluate the effectiveness of the ORPP.

D. Walker explained that JSOST is creating a priorities memo that will inform the FY2010 budget process; the concept is to create a priorities memo every year that will reflect agency priorities. He said that ORRAP advice at this level would be helpful. In future years, JSOST will also need help in refocusing on new topics such as ocean acidification. He stated that this is a good opportunity for ORRAP to advise when

change is needed. He noted that the value of these efforts is in demonstrating that priorities have been set as a community.

J. Schubel asked how the NRC responded to the suggestion that ORRAP serve as a review body for the ORPP. S. Roberts responded that NRC would like to see JSOST get more community input on the ORPP NTPs, have external review of the Interagency Priorities Memo, and have another level of oversight that would revisit the plan in a 5-10 year period.

J. Schubel asked when the FY2010 Interagency Priorities Memo will be released. D. Walker described the review process for the Interagency Priorities Memo. He stated that the memo will be released in the next few weeks and that the focus should be on FY2011 as the next arena for ORRAP's advice. R. Spinrad explained that the timing of budgets is different among the agencies and that it is important to complete the priorities memos early. He added that the ORRAP could suggest what is missing in or could be improved about the ORPP, NTPs or the direction the federal government is heading. J. Schubel asked how ORRAP can be involved early enough to participate in the crafting of the FY2011 priorities memo. He stated that there needs to be some separation so that ORRAP can be seen as an impartial outside voice.

P. Gaffney asked if a comment endorsing the FY2010 memo would be a valuable signal to those outside the Administration, such as Congress or the community, that the ORRAP (i.e., community representatives) are behind the memo.

M. McCammon noted that any new Administration will make process changes and asked if it would be helpful for ORRAP to have a discussion about modifications to the ocean governance structure. R. Spinrad noted that it would be helpful because the agencies will likely be asked about possible changes to the structure. It was noted that recommendations for changing the ocean governance process may have more weight if they come from an external body. D. Walker explained that the same legislation that created ORRAP also created the National Ocean Research Leadership Council (NORLC). NORLC and ICOSRMI have essentially merged and regardless of what happens with the Administration transition, that body will continue to meet regardless of its name.

J. Morris noted that it would be helpful to receive assessments of how the NTPs are being received and acted upon by the research community. ORRAP could also advise on how and when to bring in new NTPs.

J. Schubel noted that the ORRAP has the responsibility to respond to requests from ICOSRMI and JSOST but also the responsibility and authority to raise issues it deems necessary. He and R. Spinrad discussed the respective schedules of ORRAP and JSOST meetings and agreed that it would be beneficial for the ORRAP and JSOST co-chairs to conduct regular teleconference calls.

J. Schubel stated that ORRAP would be interested in participating in some of the big issues such as iron fertilization, ocean acidification and marine mammals. All agreed that these topics are examples of where the groups can collaborate to provide policy guidance before the science is totally firm.

J. Schubel noted that ORRAP has concerns over planned changes to Ocean.US that put the interagency coordination function of ocean observations in jeopardy. J. Morris said that JSOST would be discussing the Ocean.US issue at the JSOST meeting following the joint session. R. Spinrad noted that JSOST recognizes the value of interagency coordination, regardless of how the structure ends up. Advice from ORRAP on this topic is welcome, especially sooner rather than later. R. Spinrad also said that the JSOST meets bi-monthly and will provide ORRAP with meeting agendas; ORRAP is welcome to comment on whichever topics it chooses.

P. Kelly asked who is working on the extended continental shelf (ECS) issue and if this is a topic ORRAP should address. J. Haines noted that this is a major issue and that there is an ICOSRMI task force trying to figure out how best to receive advice on the topic. J. Eckman noted that the ORRAP has been updated on the ECS in the past and should probably receive an update at a future meeting.

R. Spinrad commented that there will always be new members rotating onto ORRAP and asked what the best method would be to inform new members about ongoing issues. D. Hernandez reiterated that sharing the JSOST agenda with ORRAP members is a way to keep both bodies informed of current activities.

J. Schubel asked if there were any ways that ORRAP and JSOST can work to apply the concepts from the ORRAP Research to Applications Task Force (RATF) report *Best Practices for Increasing the Impact of Research Investments*. D. Walker noted that ICOSRMI has cleared the formal response to this report and ORRAP will receive it shortly. JSOST found the report very useful and plans to use the NTP entitled "Forecasting the Response of Coastal Ecosystems to Persistent Forcing and Extreme Events" as a pilot study to test the report's concepts. A JSOST member noted that it is important to conduct coastal ecosystem science in a collaborative fashion and the Coastal Hazards NTP will use the report to guide the process. D. Hernandez noted that it would be helpful for ORRAP to receive a briefing on what the Coastal Hazards team has planned and the timeline for implementation.

J. Schubel opened the floor for member comments.

P. Gaffney asked when the FY2010 Interagency Priorities Memo will be available and if there was an FY2009 memo. D. Walker answered that there was no FY2009 memo and that the FY2010 memo would likely be made public in a few weeks. J. Schubel said that the ORRAP will work to finalize a response by the end of their next meeting and will work with the JSOST co-chairs on a mechanism for getting involved early in the FY2011 memo process.

J. Schubel asked about JSOST's attention to ocean education. R. Spinrad noted that JSOST has the IWG-OE to address this topic and that it has developed a solid Implementation Plan. He added that ocean education is an overarching priority of the ORPP and that we need to add more structure to its support and challenge agencies to weave it further into their portfolios. J. Reutter added that the interagency priorities memo presents a chance to add ocean education to the national agenda. J. Schubel noted that ORRAP had a discussion with IWG-OE the previous day and were impressed with the progress that is being made on education efforts. D. Walker noted that JSOST and SIMOR are in the process of creating a formal charter for IWG-OE, which would codify IWG-OE as a body of the National Science and Technology Council.

The co-chairs from both committees commented that it was a productive meeting and look forward to future communications and interactions.

ORRAP Executive Session

L. Vincent applauded the collaboration between the ORRAP and the JSOST but cautioned against making any formal recommendations to ICOSRMI that came out of non-public interaction between the two groups.

Public Comment Period

M. Briscoe reminded the ORRAP of its opportunities to provide important advice at the highest levels of government and urged the ORRAP not to get mired down in small-picture issues.

Conclusion

J. Schubel adjourned the meeting at 1210.

Meeting Attendees

ORRAP Members	Organization
Peter Betzer	University of South Florida
James Coleman	Louisiana State University
Max Coon	NorthWest Research Associates
Robert Cowen	University of Miami
Jane Davis	Walt Disney World Animal Programs
Randy Fisher	Pacific States Marine Fisheries Commission
Paul Gaffney, Vice-Chair	Monmouth University
Debra Hernandez, Vice-Chair	Hernandez and Company
Paul Kelly	Energy & Ocean Policy Consultant
Molly McCammon	Alaska Ocean Observing System / National Federation of Regional Associations
Jeffrey Reutter	Ohio State University
Larry Robinson	Florida A&M University
Jerry Schubel, Chair	Aquarium of the Pacific
Celia Smith	University of Hawaii
Kerry St. Pé	Barataria-Terrebonne National Estuary Program
Robert Wayland	Environmental Protection Agency (retired)
Invitees and others attending	
Linwood Vincent, FACA Designated Federal Official	Office of Naval Research
Jim Eckman, Alternate Designated Federal Official	Office of Naval Research
John Beadling	Office of Naval Research
Peg Brady	Council on Environmental Quality
Melbourne Briscoe	OceanGeeks, LLC
Ralph Cantral	National Oceanic and Atmospheric Administration
Elisa Chae	National Oceanic and Atmospheric Administration
Joan Cleveland	Office of Naval Research
Nancy Colleton	Institute for Global Environmental Strategies
Sue Cook	Consortium for Ocean Leadership
Sarah Cooksey	State of Delaware Coastal Programs
Dennis Duffy	CapeWind Associates

Michael Feldman	Consortium for Ocean Leadership
Kristen Fletcher	Coastal States Organization
Matt Gilligan	Savannah State University
Morgan Gopnik	The Ocean Conservancy
Hazel Groman	Environmental Protection Agency
Peter Hill	Consortium for Ocean Leadership
Mina Innes	Marine Mammal Commission
JSOST membership	http://ocean.ceq.gov/about/jsost.html
Marlene Kaplan	National Oceanic and Atmospheric Administration
Jim Kendall	Minerals Management Service
Charna Meth	Consortium for Ocean Leadership
Susan Roberts	Ocean Studies Board
Lisa Rom	National Science Foundation
Chris Sauer	Ocean Renewable Power Company
Cordel Stillman	Sonoma County Water Agency
Ian Voparil	Shell Corporation
Sharon Walker	University of Southern Mississippi, J.L. Scott Marine Education Center & Aquarium
Nina Young	Consortium for Ocean Leadership
NOPP Office	
Melissa Brodeur	Consortium for Ocean Leadership
Ben Chicoski	Consortium for Ocean Leadership
Heather Mannix	Consortium for Ocean Leadership
Cathy O’Riordan	Consortium for Ocean Leadership
Leigh Zimmermann	Consortium for Ocean Leadership

**National Oceanographic Partnership Program
Ocean Research and Resources Advisory Panel**

15-16 April 2008

Action Items

Action	Point	Due Date
Send to ORRAP the draft Statements of Task for the OSB projects under development	D. Hernandez	ASAP
Send B. Chicoski names of organizations and/or web resources that should be made aware of the RATF Report on increasing the impact of research investments	All ORRAP	ASAP
Craft and distribute to ORRAP a summary of ORRAP member expertise so members can analyze gaps	B. Chicoski	DONE
Provide ORRAP with Statement of Task regarding OSB role in developing an ocean facilities and infrastructure strategy	B. Chicoski	DONE
Craft language on ways ORRAP can help address the OSB funding shortfall for conducting studies	S. Pomponi	ASAP
Ramp up Thank You Ocean campaign nationally and load all our regional ocean education material on California's campaign website	All ORRAP	ASAP
Figure out best date for next ORRAP meeting	B. Chicoski	DONE

ORRAP Ocean Observing Sub-panel
National Oceanographic Partnership Program
Preliminary Recommendations to ORRAP
August 5, 2008

The ORRAP Ocean Observing Sub-panel met on June 17 in Washington DC to review its terms of reference and receive briefings from a number of leaders in the ocean observing community including:

- T. Malone, former director of Ocean.US, provided a briefing on the history of Ocean.US and the Integrated Ocean Observing System (IOOS).
- B. Birkemeier, current interim Director, Ocean.US and US Army Corps of Engineers scientist, presented on the current status of the Ocean.US office.
- Z. Willis, Director NOAA IOOS Program Office, presented on the activities and challenges of the NOAA IOOS Program Office.
- J. Quintrell, Executive Director, National Federation of Regional Associations (NFRA), presented on the regional component of IOOS, specifically the activities of the Regional Associations.
- S. Wilson, Chief Scientist at NOAA NESDIS, presented on the current state of NASA and NOAA coastal and ocean satellite observation systems.
- J. Morris, Director of the Division of Ocean Sciences at NSF, presented on the NSF Ocean Observatories Initiative (OOI).

Sub-panel discussion

The Sub-panel engaged in a wide ranging discussion on issues about which they could make recommendations to the government, particularly in light of the impending Administration transition, and extended that discussion to a conference call on July 7.

Preliminary Recommendations to ORRAP

1. The Sub-panel commends NOAA for standing up an IOOS Program Office and concurs that NOAA should be formally declared the lead agency in developing, acquiring and implementing a U.S. integrated ocean observing and prediction system that serves operational, research, infrastructure and data standardization roles.

A. The NOAA IOOS Program Office should be the clearly recognized national executive and lead agency to develop, acquire, implement and operate the U.S. IOOS, including establishment of the appropriate data handling, assimilation and standards protocols necessary to ensure IOOS utility to all appropriate federal and civil customers, whether they be operational, commercial or research-focused.

B. In order to achieve its mission and goals, the IOOS program should be appropriately funded, primarily in the NOAA budget, but also in other relevant agencies such as NASA, EPA, USGS, and Navy. The Sub-panel recognizes the challenges of transitioning from a system of individual earmarks, with a high of \$42.4 million to regional ocean observing systems in FY 2005, to a national sustained program, which received \$27.2

million in FY 2008, with \$20.4 going to Regional Associations. Assets are already being pulled from the water in this transition, and we are concerned that momentum will be lost. At the very minimum, IOOS funding in the Administration transition years (FY 2009 and FY 2010) should not decline below the FY 2008 numbers.

2. In the past Ocean.US has had three important functions: 1) interagency planning and coordination; 2) U.S. participation in the international development of ocean observing (GOOS, GEOS, etc.); and 3) staff support to the IWGOO. We recognize the need for a revised structure and understand that function #2 will proceed under the umbrella of the NOAA IOOS Program Office, as well as under the authorities of other agencies, such as EPA, participating in GEOS. It is not within our purview to have an opinion on the IWGOO support function. However, function #1, the interagency planning and coordination function, is critical, and at a time when resource management needs are becoming increasingly complex in light of the climate change dialogue, we are concerned that, if the government is not careful, interagency coordination could decrease instead of increase. We believe that this is a critical function for the NOAA IOOS Program Office. There is only one agency capable of developing, acquiring and then implementing this complex observing system. That agency is NOAA, yet it must leverage the talents of other agencies and ensure its output serves other agencies; these are implicit responsibilities of a national lead agency. Agencies involved in specific projects that depend on interagency coordination for their success (e.g., national wave plan, national water quality monitoring plan, HF radar plan, data management, integrated modeling, etc.) must devote the resources to ensure that these integration efforts succeed. Merely knowing what other agencies are doing does not ensure integration and coordination. Resources are required, and we strongly urge that the resources (staff and funding) necessary to do so be made available.

Specifically, we recommend that the appropriate agencies detail part- or full-time employees to the NOAA IOOS Program Office to work on interagency coordination activities as IOOS shifts from concept planning to program execution. We understand that the IWGOO is negotiating with the Consortium of Ocean Leadership to provide “secretariat” functions for the IWGOO. Some of these functions may include facilitating coordination and collaborations among the federal agencies. However, the sub-panel is concerned that these efforts may defuse the very real collaborations needed between NOAA and the other federal ocean agencies to fully realize the potential of IOOS. We maintain that it is time for all the agencies to acknowledge the unique role NOAA must assume in order to truly integrate our ocean observing assets and devote the resources necessary to work with NOAA to do so.

3. The Sub-panel was enthused by the common vision for cooperation between NOAA-IOOS and NSF-OOI expressed by the NOAA-IOOS Office Director and the NSF Division Director. We see great opportunities for the OOI to serve as an incubator of tools for the operational

IOOS, particularly in the areas of cyber-infrastructure and sensor development. We endorse this cooperation and look forward to future briefings to ensure that the described vision is translated into practice in ways that leverage the strengths of both programs.

4. The Sub-panel recognizes the value that the IOOS Regional Associations (RAs) have already brought to the national ocean observing effort and the importance of funding their efforts in the execution of U.S. IOOS. This value is realized in several ways: providing a strong connection to the users of the marine environment, including state, federal and local agencies and managers, the private sector, academics, and NGOs; using ocean observing data to develop information products and decision-making tools for users; and involving industry at the local level. The Sub-panel urges the ocean-related federal agencies to use the RAs as a mechanism for fostering interagency and industry collaborations to address coastal and ocean resources and ecosystems issues, and develop ocean information systems, at the regional level. The RAs could be especially useful in responding to issues relating to ocean energy and in developing services within NOAA and other federal agencies to mitigate and adapt to climate change impacts.

5. Other bodies such as the National Research Council and the U.S. Commission on Ocean Policy have spent significant time and resources reviewing the nation's satellite coverage of our oceans and coasts and have strongly recommended that the two principal civil satellite agencies – NOAA and NASA – develop a planned transition process that ensures continuity in satellite observing capabilities from research and technical demonstration to continuous data access by NOAA. We endorse those recommendations. The Sub-panel further recommends that NOAA meet with other Federal agencies that conduct satellite observations to determine the most appropriate sensors to acquire ocean observing data. In addition to sensor selection, such parameters as acquisition schedule, orbit selection, resolution, data transmission, data archiving, and other such variables should be evaluated. NOAA and NASA, together, should immediately develop (if they have not already) and submit to the full ORRAP panel an updated prioritized gap analysis that points out time periods wherein there is likely to be a loss of data upon which operational support and research entities depend.

6. The Sub-panel wishes to highlight the fact that comprehensive coastal and nearshore monitoring cannot occur without adequate monitoring of the watersheds and adjacent terrestrial systems and urges those agencies responsible for watershed monitoring (such as USGS, NOAA-NWS, NOAA-NOS, US DOA, USACE, and state agencies) to identify ways to address this important linkage between watershed and coastal processes and interactions.

Final thoughts

These are the Sub-panel's recommendations following our first set of briefings. We are now developing a list of other topics to review and a timeline for doing so. Some of these topics include (not in prioritized order):

- a. Further assessment of the OOI-IOOS collaboration
- b. Further assessment of ocean satellite and other remote sensing needs

- c. The relationship between the NOAA IOOS Office and the proposed NOAA National Climate Center
- d. Continued review of the interagency coordination functions formerly held by Ocean.US
- e. The potential access to and use of defense and intelligence data
- f. The role of industry in developing our ocean monitoring programs
- g. The state of water monitoring (quality, flow, and sediment transport) and mechanisms that may be available to ensure the output of water monitoring in the watershed is integrated into IOOS. We will seek briefings from EPA, NOAA/NWS and NOS, USGS and USACE.

Preliminary Statement of Task

An Ocean Infrastructure Strategy for U.S. Ocean Research in 2030

The National Research Council will assemble an expert committee to provide advice and a perspective from the worldwide ocean community on the types of U.S. ocean infrastructure that will facilitate research in 2030, including advice as to what criteria may be most appropriate for setting priorities.

The committee will identify major research questions they project will be at the forefront of ocean science in 2030 based on national and international assessments, input from the worldwide scientific community, and ongoing research planning activities. Next, the committee will define categories of infrastructure that should be included in planning for the nation's ocean research infrastructure of 2030 and that will be required to answer the major research questions of the future, taking into consideration:

- New scientific and technological developments – including adoption of capabilities and discoveries outside of the ocean sciences,
- Interdependence of various infrastructure assets and multi-purpose or multi-user assets,
- How anticipated changes in the oceans, its interactions with the atmosphere, land, sea ice, marine and terrestrial ecosystems, and humans, and commercial enterprises might affect demand for various assets and operational characteristics,
- Potential use of infrastructure assets supported by Federal, State, and Local governments and by industry to collect data for multiple goals,
- Potential for emerging technology to increase the substitutability of various infrastructure components, thus providing greater flexibility or surge capacity,
- Potential opportunities to phase out programs or facilities in order to develop capabilities in new research areas, and
- Institutional or policy barriers, if any, that may hinder the optimal use of facilities and infrastructure. This would include restrictions on the use of facilities and infrastructure by non-traditional users, including private industry, and possible ways to optimize the use of research facilities.

The report will provide advice on the criteria and processes that could be used to set priorities for the development of new ocean infrastructure or replacement of existing facilities. It will *not* recommend specific new infrastructure or facility fabrication/construction investments. In undertaking this task, the committee will consider a variety of issues, such as partnerships with other nations and industry, constraints on acquisition and operation of research platforms, and suitability of facilities for addressing a diversity of scientific endeavors. In the same context as "Charting the Course of Ocean Science in the United States for the Next Decade: An Ocean Research Priorities Plan and Implementation Strategy", this study will address societal issues. In addition, the committee will recommend ways in which the federal agencies can maximize the value of investments in ocean infrastructure. This may include practices that would facilitate the transition of facilities and infrastructure for research into operational use.

CHARTER
OCEAN RESEARCH AND RESOURCES ADVISORY PANEL

- A. Official Designation: The Committee shall be known as the Ocean Research and Resources Advisory Panel (hereafter referred to as the Panel).
- B. Objectives and Scope of Activities: The Panel, under the provisions of 10 U.S.C. § 7903, and the Federal Advisory Committee Act of 1972, as amended, shall provide independent scientific advice and recommendations to the National Ocean Research Leadership Council.
- C. Panel Membership: The Panel, under the provisions of 10 U.S.C. § 7903, shall consist of no less than 10 and no more than 18 members, representing the National Academy of Sciences, the National Academy of Engineering, the Institute of Medicine, ocean industries, State Governments, academia and others including individuals who are eminent in the fields of marine science, marine policy or related fields including ocean resource management. Panel Members appointed by the Secretary of Defense or designated representative, who are not Federal officers or employees, shall serve as Special Government Employees under the authority of 5 U.S.C. § 3109.

Panel Members, under the provisions of 10 U.S.C. § 7903, shall be appointed on an annual basis by the Secretary of Defense or designated representative, and shall serve no more than four years. The Panel Membership shall select the Chairperson and Vice-Chairpersons of the Panel for renewable one-year terms. In addition, the Secretary of Defense or designated representative may invite other distinguished Government officers to serve as non-voting observers of the Panel, and appoint consultants, with special expertise, to assist the Panel on an ad hoc basis.

- D. Panel Meetings: The Panel shall meet at the call of the Designated Federal Officer, in consultation with the Chairperson, and the minimum number of Panel meetings is one per year. The Panel shall be authorized to establish subcommittees, as necessary, to fulfill its mission, and these subcommittees shall operate under the provisions of the Federal Advisory Committee Act of 1972, as amended.
- E. Duration of the Panel: The need for this advisory function is on a continuing basis; however, it is subject to renewal every two years.
- F. Agency Support: The Department of Defense, through the Secretary of the Navy and the Office of Naval Research, shall provide support as deemed necessary for the performance of the Panel's functions, and shall ensure compliance with the requirements of 5 U.S.C. § 6.
- G. Termination Date: The Panel shall terminate upon recession 10 U.S.C. § 7903.
- H. Operating Costs: It is estimated that the operating costs, to include travel costs and contract support, for this Board is \$195,280.00. The estimated personnel cost to the Department of Defense is 0.6 full-time equivalents (FTEs).
- I. Charter Filed: December 13, 2007



Ocean Research & Resources Advisory Panel
A United States Federal Advisory Committee

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A United States Federal Advisory Committee

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ORRAP Membership Plan - August 2008

Until 2008 (current class), member start dates were nominally July of each year. The current class began in April 2008.

Number of ORRAP members in place:

Goal: Steady state of 18 members from here on

2005	2006	2007	2008	2009	2010	2011	2012	2013
12		11	10	17	18	18	18	

Debra Hernandez (Industry) Peter Betzer (Industry) Shirley Pomponi (NAS rep) (Academia) Celia Smith (Academia) Robert Cowen (Academia) ^^Ray Toll	1-yr renewal?
--	---------------

If no 2005 class 1-yr renewals, then 6 new members needed in 2008
 If all renewals, then 6 new members needed in mid-2009

^^Resigned June 2007

Jerry Schubel (NGO) James Coleman (Academia) Molly McCammon (Quasi-Government) Jeffrey Reutter (Academia) Robert Wayland (former Government) **George Lapointe	1-yr renewal?
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**Resigned November 2007

Max Coon (Industry) Larry Robinson (Academia) Jane Davis (Industry) Randy Fisher (Industry) Paul Gaffney (Academia) Paul Kelly (Industry) Kerry St. Pé (Academia)	1-yr renewal?
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Member expertise

Hernandez	civil engineering, coastal mgmt, facil & collab process
Betzer	oc'graphy, educ outreach, fed/state/local partnerships
Pomponi	NAS rep; biomed, biol oc'graphy
Smith	coral reef ecol, biol of alien species, marine algae
Cowen	fisheries ecol, reef ecol, population connectivity
Schubel	oc'graphy, coastal oc'graphy, CZM, ocean policy, public educ
Coleman	marine geol, coastal processes, wetland loss, coastal policy
McCammon	ocean obs systems, ocean policy
Reutter	aquatic ecol, Great Lakes, educ & outreach, marine labs
Wayland	environmental mgmt and policy
Coon	sea ice dynamics, air/ice/ocean interaction
Robinson	environmental chemistry
Davis	land-based aquaculture, large marine closed systems, aquarium public educ, entertainment
Fisher	fisheries mgmt, grant & contract mgmt
Gaffney	ocean survey & forecasting, S&T mgmt, ocean policy
Kelly	offshore O&G explo and development, ocean & energy policy
St. Pé	wetlands ecol, water quality, impacts of petroleum activities on wetlands

6 New Members Needed	1-yr renewal?
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5 New Members Needed	1-yr renewal?
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Nominations Committee (2 components)

- ORRAP Executive Committee: one co-chair each from JSOST and SIMOR, the ORRAP DFO, and an ORRAP member
- OSB Executive Director, one additional ORRAP member, and one rep each from OSTP and CEQ



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ORRAP Ocean Observations Sub-panel

The ORRAP voted on February 22, 2007 to establish an Ocean Observations Sub-panel. ORRAP members Molly McCammon, Ray Toll, Steve Weisberg, and Jim Coleman volunteered to serve on that panel, and McCammon agreed to serve as chair for the initial organizing period. ORRAP also voted to include U.S. GOOS Steering Committee Chair Mark Luther as a member of the new Sub-panel.

The ORRAP members of the Sub-panel met by teleconference on March 16, 2007 to draft a charge and suggest possible members for the new panel. The ORRAP discussed the proposed charge and membership at its meeting on June 27-28, 2007 and again on December 7, 2007, and adopted the following:

Ocean Observations Sub-panel Charge:

The Ocean Observations Sub-panel is convened to provide a forum for expert input to ORRAP on issues relating to interagency federal ocean observing initiatives. These include, but are not limited to

- The Integrated Ocean Observing System (IOOS), both global and U.S. coastal components, as addressed through cooperative and collaborative international, national and regional programs and initiatives;
- The U.S. Global Ocean Observing System (GOOS) and its relationship as the U.S. contribution to the Global Earth Observing System of Systems (GEOSS);
- The National Science Foundation's Ocean Observatories Initiative (OOI) and the Arctic Observing Network (AON);
- The nation's satellite ocean observation initiatives; and
- Education activities and programs related to ocean observing.

The Sub-panel shall

- Regularly review the status of current and planned federal ocean observing programs and their coordination with local, state, and regional ocean observing activities, and provide opinions and assessments to ORRAP;
- Undertake special reviews as requested by ORRAP of papers, studies, plans, and activities related to these programs and provide opinions and assessments to ORRAP; and
- Regularly report to ORRAP on activities and progress.

Specifically, in the near-term, the Sub-panel shall

- Review the relationship between IOOS and OOI;
- Review the roles and responsibilities of the IOOS Interagency Planning Office (Ocean.US) and the NOAA IOOS Program Office; and
- Review the IOOS Strategic Plan.

The Sub-panel shall consist of approximately 12 members representing a broad, diverse spectrum of the ocean user community: state agencies, academics, industry and other private sector groups, and non-governmental organizations, and including at least one representative of the National Federation of Regional Associations (NFRA) for Coastal and Ocean Observing. Representatives of federal agencies may not serve on the Sub-panel, but will be encouraged to attend Sub-panel meetings. The Sub-panel members shall serve two year terms, subject to removal. The initial membership shall include some members of the current U.S. GOOS Steering Committee. Either the chair and/or the vice-chair of the Sub-panel shall be an ORRAP member. To the extent possible, the Sub-panel shall work electronically, but may have at least one face-to-face meeting annually. The Sub-panel works at the pleasure of ORRAP and may be terminated with three months notice.



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ORRAP Industry Sub-panel Charge

The Industry Sub-panel is convened by the Ocean Research and Resources Advisory Panel (ORRAP) to facilitate a means for the U.S. industrial sector to provide their input, views and expertise in the following areas:

- 1) Achieving and sustaining an Integrated Ocean Observing System (IOOS);
- 2) Promoting lifelong ocean education;
- 3) Modernizing ocean infrastructure and enhancing technology development; and
- 4) Fostering interagency partnerships to increase and apply scientific knowledge.

Membership of the Sub-panel shall be comprised of the leadership of national organizations representing broad sectors of U.S. industry. Service on the Sub-panel is voluntary.



ORRAP EDUCATION SUB-PANEL

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ORRAP Education Sub-panel Charge

The purpose of the Education Sub-panel is to provide expert input to the Ocean Research and Resources Advisory Panel (ORRAP) on matters of both formal and informal education, strategic planning, and implementation being undertaken by federal partners in ocean research and education.

Working with other allied groups and individuals, the Sub-panel will work to enhance the coordination and implementation of ocean education efforts among academic, state, private, federal and other stakeholders.

Committee on Ocean Policy

Chair: CEQ

Interagency Committee on Ocean Science and Resource Management Integration

Co-Chairs: OSTP, CEQ

Ocean Research and Resources Advisory Panel

Ocean Obs Sub-Panel

Education Sub-Panel

Industry Sub-Panel

Global Environment Policy Coordinating Committee Subcommittee on Oceans Policy

Chair: DOS

NSTC Joint Subcommittee on Ocean Science and Technology

Co-Chairs: OSTP, NSF, NOAA

Subcommittee on Integrated Management of Ocean Resources

Co-Chairs: CEQ, NOAA, DOI, EPA

IWG on Harmful Algal Blooms, Hypoxia and Human Health

Joint IWG on Ocean Education

IWG on Ocean and Coastal Mapping

IWG on Ocean Observations

IWG on Ocean Partnerships

IWG on Facilities



Residence Inn by Marriott Bellevue/Redmond
14455 NE 29TH Place
Bellevue, WA 98007
Phone: 425-882-1222 * Fax: 425-885-9260
Email: Bellevuedos@IH-corp.com
Jamie Clay ~ Director of Sales ✓

Guest Services and Amenities:

- Complimentary breakfast daily including scrambled eggs and "make your own" Belgian waffle bar
- **Complimentary light meal served Monday –Thursday with beer, wine and soda**
- **Complimentary High Speed Internet Access**
- Complimentary Shuttle Service to local area businesses, restaurants and attractions (within 5 mile radius)
- Complimentary Grocery Shopping Service
- Complimentary Parking
- Guest Laundry and Same Day Valet Dry Cleaning Service
- On site movie rental
- On site fitness room and sport court
- Outdoor pool and spa
- Marriott Rewards including mileage credit with 18 Airline Programs

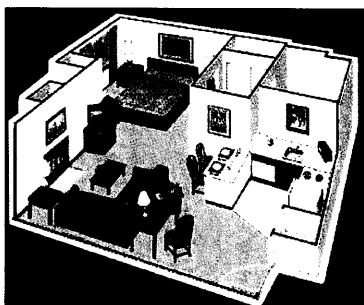
Guest Room Features:

- Over-sized suites
- Full kitchens complete with microwave, full size refrigerator, dishwasher, oven, and stove. All flatware, china, pots and pans included
- Most suites include separate living and sleeping rooms as well as fireplaces
- Bedside phone and desk phone complete with data port phones for Internet access

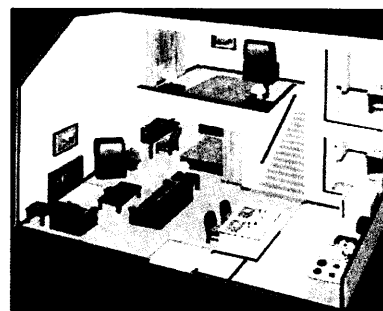
"RENOVATED ROOMS" Styles and Rates:

Rates vary by room type and length of stay.

- **Studio Suite:** Queen bed. Full kitchen w/stainless steel appliances, breakfast bar, sitting area and sleeping area in the same room
- **One Bedroom Suite:** King bed. Full kitchen w/stainless steel appliances, breakfast bar, sitting area, separate sleeping room
- **Penthouse Suite:** Two story suite, two bedrooms- Queen size bed upstairs, King downstairs, two bathrooms, full kitchen w/stainless steel appliances, breakfast counter, living room and fireplace



Studio Suite 565 square feet



Penthouse Suite 987 square feet

Directions from the Residence Inn to NorthWest Research Associates:

NorthWest Research Associates (NWRA)

4118 148th Ave, NE

Redmond, WA 98052

*****When you check in to the hotel, please notify the front desk that you wish to take the free shuttle service from the hotel to NWRA. The shuttle leaves on the hour*****

The image is a screenshot of the Google Maps interface. At the top, the Google Maps logo is visible on the left, and a search bar contains the text "NWRA, Redmond WA". To the right of the search bar is a "Search Maps" button. Below the search bar are three buttons: "Search the map", "Find businesses", and "Get directions".

On the left side, there are two tabs: "Search Results" and "My Maps". Below these, the text "Directions: By car - Public Transit - Walking" is displayed. There are two checkboxes: "Avoid highways" (unchecked) and "Get reverse directions" (a link). The "From" location is marked with a green pin 'A' and labeled "14455 NE 29th Pl, Bellevue, WA 98007". The "To" location is marked with a green pin 'B' and labeled "4118 148th Ave NE, Redmond, WA 98052".

The route is shown as a yellow line on the map. The first step is "1. Head east on NE 29th Pl toward 148th Ave NE 0.5 mi". The second step is "2. Turn left at 148th Ave NE 0.7 mi". The total distance is "1.2 mi - about 3 mins". There are links for "km" and "miles".

Below the directions, there is a disclaimer: "These directions are for planning purposes only. You may find that construction projects, traffic, weather, or other events may cause conditions to differ from the map results, and you should plan your route accordingly. You must obey all signs or notices regarding your route." Below this is the text "Map data ©2008 NAVTEQ™".

The map itself shows a grid of streets. NE 29th Pl is highlighted in blue. NE 148th Ave NE is highlighted in yellow. Other streets shown include NE 43rd Pl, NE 42nd Pl, NE 40th Pl, NE 39th St, NE 38th St, NE 37th Pl, NE 36th St, NE 35th St, NE 34th St, NE 32nd St, NE 30th Pl, NE 30th St, NE 29th Pl, NE 27th St, NE 26th Pl, NE 24th St, and NE 148th Ave NE. A park labeled "Goldsmith Neighborhood Park" is visible. A highway labeled "520" is also shown. A scale bar at the bottom left indicates 1000 feet and 200 meters.

Directions from Sea-Tac Airport to NWRA:

The Seattle Division and NWRA Headquarters is located at:

4118 148th Ave NE
Redmond, WA 98052-5164

- | | |
|--|---------|
| 1: Follow signs toward Seattle heading North | 1.6 mi |
| 2: Merge right onto WA-518 E toward I-405 Renton/Bellevue I-5. | 1.2 mi |
| 3: Take I-405 N toward Renton/Bellevue. | 14.6 mi |
| 4: Merge right onto WA-520 E via EXIT 14. | 2.5 mi |
| 5: Take the 148TH AVE N.E. NORTH exit. | 0.3 mi |
| 6: Merge onto 148TH AVE NE. | 0.9 mi |
| 7: 300' past NE 40th St. look for "A Deli-Too" sign and turn right into entrance | 0.9 mi |
| 8: Make an immediate left into the parking lot and park in front of Building G. | 0.9 mi |
| 9: End at NWRA Seattle Office - 4118 148th Ave NE Redmond, WA 98052-5164 | |

Estimated Time: 25 minutes Estimated Distance: 21.16 miles

