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CONSORTIUM FOR
Ocean Leadership

March 6, 2013

Commercial Fisheries Research Foundation
c/o Peg Petruny-Parker, Director
P.O. Box 278
Saunderstown, RI 02874

RE: Recommendations of CFRF Pioneer Array Final Report

Dear Peg,

Thank you again for your excellent report and workshop coordination and facilitation efforts for the Pioneer Array. We wanted to share with you the Consortium for Ocean Leadership's (OL's) response to those recommendations regarding micro-siting and navigational safety associated with the Pioneer Array. OL views a few of the recommendations that were offered as outside the scope of micro-siting, navigational safety, and the OOI Program and so will be addressed separately by the National Science Foundation (NSF) where indicated below

1. Fishermen and scientists recommend that the mooring configuration be rearranged by shifting the whole array to the west, then shifting the Central Site (74 fathom mooring) to the northeast, and northern most moorings (Inshore Site – 52 fathoms and Upstream Inshore Site – 52 fathoms) to the north (to 50 fathoms). In addition, the Central Offshore Site Mooring (82 fathom mooring) and Central Mooring (74 fathom mooring moved east to 73 fathoms) be placed on existing shipwrecks.

OL plans to implement this recommendation within the limitations of the laws and policies protecting submerged cultural resources. OOI will site infrastructure as near the recommended existing shipwreck locations as practicable to avoid adverse impact to those wrecks. It is OOI's deployment plan to avoid placing infrastructure directly on any known cultural resources (including shipwrecks and sunken military craft). Program documentation was prepared to reflect the adjustment from the initial mooring arrangement presented at June 2011 public meeting to the recommended arrangement proposed in Figure 9 of the CFRF Report. Note that the site plan will also be reviewed by the U.S. Army Corps of Engineers (USACE) as part of the permit application review for the Pioneer Array.

2. Fishermen requested that the exact locations (coordinates) of all mooring site centers and radius of the buffer zones circle surrounding each center, and information on the type of individual moorings and anchor locations within a mooring site be communicated to all fishermen using the study area.

OL will provide exact mooring locations of all sites through the United States Coast Guard (USCG) Local Notice to Mariners (LNM) upon deployment. The LNM will serve as the primary source of this information. Mooring locations, mooring types, site centers and buffer zone distances will also be displayed on an OOI web page and updated as appropriate. OL has explored the other mechanisms to provide this information to the fishing community as described in Recommendation 12 and feels they can also be accomplished.

3. In sites where there are to be two moorings, fishermen recommend that they be placed as close together as possible. This distance, as confirmed by scientist representatives, is ½ mile.

OL intends to accommodate this recommendation to the extent practicable within the design of the mooring installation and pending permit application review by the USACE. In cases where mooring sites may be near existing shipwrecks or hangs (or other known cultural resources), OOI will site infrastructure as near the recommended locations as practicable to avoid adverse impact to any known cultural resources (including shipwrecks and sunken military craft).

Consultation among OOI scientists and engineers, as well as experience with the OOI test moorings deployed in September 2011 indicates that the closest practical spacing is approximately twice the water depth at the deployment site. Thus, at the deepest site with paired moorings (Offshore, 250 fathoms [fm] depth) the surface mooring and profiler mooring would be separated by approximately 0.5 nautical miles (nm). At the shallowest site (Inshore, 50 fm depth) the spacing could be as little as 0.1 nm. These distances are the operational objectives and may not be achieved for a given mooring deployment due to shipboard operating constraints, environmental conditions, engineering design, or other factors.

4. In sites where moorings could be placed near shipwrecks or existing "hangs" (obstacles), fishermen recommend that they be placed as close as possible to these existing hangs.

OL intends to implement this recommendation to the extent practicable within the design of the mooring installation and pending permit application review by the USACE. As stated in Recommendation 1, the OOI will site infrastructure as near the recommended existing shipwreck or "hang" locations as practicable to avoid adverse impact to those wrecks. OOI's deployment plan is to avoid placing infrastructure *directly on* any known cultural resources (including shipwrecks and sunken military craft). The minimum mooring separation distances (as described in Recommendation 3) would also apply to the separation between moorings and shipwrecks or hangs. These are operational objectives and may not be achieved due to factors mentioned above.

5. Fishermen recommend increasing the navigational aids pertaining to each individual mooring. This would include the following:

a. In addition to buoys being equipped with marine lanterns, and passive radar reflectors, (and some having active radar transponders), fishermen suggest that all buoys have active radar transponders.

b. Raise the height of the central tubing of the Profiler Mooring buoy up at least another 10 feet (so they can be seen in 15 foot waves) with a radar reflector and pinger on the top.

Part (a) of this recommendation is being pursued by the OOI Program. OL has reviewed this recommendation and a design change to include active radar transponders on the Profiler Mooring buoys of the Pioneer Array has been approved.

Part (b) OL has reviewed this recommendation and OOI engineers concluded that increasing the tower height for the buoy is not practicable due to resulting changes in weight, balance and stability characteristics of the buoy.

6. Fishermen recommend that Pioneer Array leaders consider having fishing industry representatives involved in an advisory capacity when the science equipment is first being deployed at sea.

OL has reviewed this recommendation and concluded that fishing representatives can be invited to participate as onboard collaborative observers. Fishing representatives would be voluntary observers and not compensated for their time. Participation will be at the discretion of the Coastal and Global Scale Nodes (CGSN) project manager and the Chief Scientist for the deployment cruise, and will be dependent upon space availability. Cruise operations will remain under the purview of the ship's Master and the Chief Scientist. Note that all deployment activities are subject to maintaining our permitting compliance with governmental agencies so deployment procedures and locations must be consistent with what is described in permit and environmental compliance documentation.

7. Fishermen recommend that the planned months for replacing moorings (April and September) be reconsidered. More specifically, they suggested that scientists wait until October because hurricanes are most likely to occur before then.

OL will consider this recommendation as part of the many factors which enter into the OOI Program's selection of deployment and recovery times.

8. Fishermen recommend that a means be established for fishermen to communicate information to Pioneer Array scientists about when a mooring has moved.

OOI's direct contact information will be distributed in a variety of forms (e.g. painted on the infrastructure hull, detailed on the web site, broadcast on NOAA radio, and printed in brochures). Fishermen are encouraged to report offsite moorings promptly to OOI through any or all direct contact methods. OOI will notify the USCG of a mooring that has moved from its original position via an updated LNM.

9. Fishermen recommend that AUVs and Gliders be programmed to come within a certain distance of the surface to avoid fishing vessel bottoms and go only to a certain distance off of the bottom to avoid interactions with gillnets and lobster gear set up on the bottom.

OL intends to implement this recommendation. In order to best achieve the OOI science objectives, the desired minimum and maximum depths for autonomous underwater vehicles (AUVs) and gliders are 3 m (~10 ft) below the surface and 3 m (~10 ft) above the bottom. Note that AUVs and gliders must surface on a periodic basis to transmit and receive data. OOI scientists and operations personnel feel continued informal discussions with the fishing community, following AUV and glider deployments within the Pioneer Array region, would be useful for effective AUV and glider operations.

10. Fishermen recommend that AUVs and Gliders be programmed to follow predictable routes, and that this be done in consultation with fishing industry representatives who know the patterns of fishing activity and existing gear restrictions in the area.

OL has considered this recommendation and following predictable routes will be implemented to the extent practicable. Both AUVs and gliders will traverse standard routes that achieve the OOI science goals inside the previously published mission boxes. Gliders have only modest navigational control and do not follow programmed routes precisely. Because a fundamental objective of the Pioneer Array is to use AUVs and gliders to respond to unique or unforeseen events (i.e. oceanographic processes of interest to the scientists), standard routes will not always be followed.

11. Fishermen recommend that the exterior of mobile science equipment be modified to add features that would help avoid entanglements and increase safety. Possible features to consider include: a) rounding nose cone; b) addition of thin wire (fair lead) from the body to the rear fins; c) court nozzle or propeller shroud around the propellers on the AUVs.

Streamlining features, such as rounded nose cones in gliders and AUVs and breakaway wings in gliders, have already been incorporated into the designs. Final design of the AUV will incorporate, to the extent practicable, cost-effective options to reduce safety risks and also achieve the operational requirements.

12. Fishermen recommend that a notification be mailed to all fishing permit holders informing them of the Pioneer Array Project. In addition, fishermen recommend that scientists utilize NOAA NMFS and U.S. Coast Guard communication systems to inform fishing industry members about the Pioneer Array Project, and that information about the Pioneer Array Project be issued on the VHS weather channel, and the upcoming Fish Expo.

OL will implement direct mailing of Pioneer Array information. The OOI participated in the Commercial Marine Expo held June 2012 in New Bedford. The USCG LNM and NOAA VHF weather channel broadcasts will announce Pioneer Array mooring locations when deployment is imminent. The OOI Program will utilize other recommended methods for communicating with fishing industry members in the future, as practicable.

The OOI has already utilized the following ways of communicating with the public, including fisherman, about the Pioneer Array including public notices, public meetings, and public comment periods. The micro-siting of moorings within the identified study area for the Pioneer Array was informed through a public process during which input from the public, including representatives of marine user stakeholders, was both sought and encouraged. Representatives of marine user stakeholders include, but are not limited to:

American Alliance of Fishermen and their Communities
Atlantic Offshore Lobstermen's Association
Broadbill Fishing, Inc.
Cape Cod Commercial Hook Fishermen's Association
Colbert Seafood, Inc.
Commercial Fisheries Center of Rhode Island
Commercial Fisheries Research Foundation
Eastern New England Scallop Association
Garden State Seafood Association
Long Island Commercial Fishing Association
Manomet Seafood, Inc.
Massachusetts Fishermen's Partnership
Mataronas Lobster Company, Inc.
Mid-Atlantic Fishery Management Council (FMC)
New England FMC
Ocean State Lobster
Rhode Island Fisherman's Alliance
Rhode Island Lobstermen's Association
Rhode Island Shellfishermen's Association
Sakonnet Lobster Company
Trebloc Seafood, Inc.

13. Fishermen recommend that Pioneer Array scientists develop a brochure to be mailed to fishermen explaining what is being studied and how long the project will be in place, the type of science equipment being deployed and exact locations, and what to do to avoid interactions and what to do if they inadvertently have an interaction.

OL has implemented the recommendation to develop and broadly distribute informational brochures containing a description and location of Pioneer Array moorings. Also to be directly mailed to fishing permit holders are laminated glider/AUV interaction instruction cards. These cards will provide physical descriptions of gliders and AUVs, interactions guidance, and OOI contact information. These informational materials will be updated as necessary and mailed to new permit holders as

needed. Informational brochures and gilder/AUV cards may also be made available for distribution at outreach events or through fishing organizations.

14. Scientists recommend the creation of a special project website to display real time information.

The OOI website will display real time oceanographic data, the precise locations and operational status of all OOI moorings, and the nominal locations of deployed gliders and AUVs.

15. Fishermen recommend that a process be established for how to deal with interactions with AUVs and Gliders. They would also recommend that scientists consider establishing a reward program for fishermen reporting and returning science equipment.

OL has developed glider and AUV response procedures printed on durable laminated cards for fishermen to carry on board in case they encounter a glider or AUV (see response to Recommendation 13). The recommendation to have scientists consider establishing a reward program is outside the scope of work contained in OL's cooperative agreement for OOI. We understand that NSF will be responding to this issue under separate cover.

16. Both scientists and fishermen recommend that an ongoing means of communication between members of the fishing industry and Pioneer Array scientists be established for the duration of the project. This would follow the existing model of this workshop series with the CFRF playing a supporting role.

OL and Woods Hole Oceanographic Institution (WHOI) will continue informal communication efforts through public engagement activities and discussions with the broader fishing community throughout field operations of the Pioneer Array.

17. Both fishermen and scientists recommend that a committee or working group be formed to address the subject area of what happens when something goes wrong, and the liability issues connected with those situations.

The recommendation is outside the scope of work contained in OL's cooperative agreement for OOI and we understand that NSF will be responding to this issue under separate cover.

18. Fishermen recommend that through the work of the committee established to address liability issues, an informal dispute settlement process be established.

The recommendation is outside the scope of work contained in OL's cooperative agreement for OOI and we understand that NSF will be responding to this issue under separate cover.

19. Scientists and fishermen recommend that other workshops be organized to provide additional opportunities for scientists involved with the Pioneer Array project, fisheries scientists and managers, and members of the commercial fishing industry to discuss the data that will be collected as part of the Pioneer Array project and how it might be interfaced with fisheries science needs and priorities.

The recommendation is outside the scope of work contained in OL's cooperative agreement for OOI and we understand that NSF will be responding to this issue under separate cover.

Again, thanks to you and the workshop participants for the thoughtful recommendations. We look forward to the possibility of future interactions between the CFRF, past workshop participants, the broader commercial fishing industry representatives, WHOI and the OOI program. We hope you and the workshop participants continue to visit the OOI website on a regular basis and that you notice implementation of many of your workshop recommendation(s) there and in other aspects of the program's Pioneer array approach in the coming months.

Sincerely,

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