Draft Meeting Summary

Opening Remarks:

- Welcome – P. Parker, CFRF Facilitator
- Round of Introductions
- List of participants in attendance:
  - Al Plueddemann, Senior Scientist, Woods Hole Oceanographic Institution (WHOI)
  - Norbert Stamps, commercial fisherman, fished in the area since 1980
  - David Spencer, offshore commercial lobsterman, Spencer Fish & Lobster, Inc.
  - Fred Mattera, offshore commercial trawler, based in Pt. Judith
  - Donald Fox, commercial fisherman, owns three boats, based in Pt. Judith
  - Bonnie Spinazzola, Executive Director, Atlantic Offshore Lobstermen’s Association
  - Bonnie Brady, Executive Director, Long Island Commercial Fishing Association
  - Kevin MacGuire, commercial fishermen and restaurant owner, based in eastern Long Island
  - Glen Gawarkiewicz, Senior Scientist, Woods Hole Oceanographic Institution
  - Dan Farnham, commercial fisherman (long liner), based in Montauk, NY
  - Oscar Schofield, Professor, Bio-Optical Oceanography-Rutgers University
  - Wendell Brown, Professor, University of Massachusetts, Dartmouth, SMAST

- Introduction of new participants not at first workshop –
  Oscar Schofield, Professor, Bio-Optical Oceanography
  Rutgers University
  Institute of Marine and Coastal Sciences

  Wendell Brown, Professor
  University of Massachusetts, Dartmouth
  School for Marine Science and Technology

- Review of planned agenda
- Group will take time to go back over the background information regarding the Pioneer Array project and the fishing activity in the area filling in more details
- Group will move into discussing the siting concerns and possible options, integrating into this the subjects of safety concerns and potential gear conflicts
- Review of premises workshops based on and general goals of workshop series
  - Workshop series are based on the premises that:
    - The Pioneer Array project will proceed and be implemented in the general area where it is now sited, and consequently discussions will focus on what issues need to be addressed and how to address them.
    - Participation in these workshops will not be considered as a means of precluding fishing industry participants from opposing this project but they should come to the workshops recognizing that this is not the setting to pursue that activity.

- Background Information

**1. General overview of Pioneer Array Project** – Additional information from WHOI scientists – Group began the discussion with the question of why is the Pioneer Array project where it is. What are the scientific reasons for placing it here? The group also reviewed the mooring details.

**What the scientists are interested in measuring and the oceanographic processes they are studying:**

- Scientists are interested in studying and understanding better the dynamics associated with the cold water boundary (shelf break front or “break”) on the Continental Shelf.
- They want to be able to re-construct the horizontal temperature gradients over the slope from surface to bottom.
- Right now they are only able to get a snapshot of temperature, salinity, nutrient levels from ship research – they would like to measure these parameters over time to gain a better understanding of the system and eventually be able to model it (predict changes)
- They want to be able to model the structure of properties like temperature, salinity and nutrients and the exchange, or flux, of properties from the shelf to the slope or the slope to the shelf. This will enable them to better track the upwelling of high nutrient water, and understand better the movements of nutrients over the shelf area.
- This area exhibits big velocity shears and density differences – they are interested in the fluid dynamics at play and tying this to the processes underlying the productivity of the area.
- They see what they think is a persistent upwelling cell (that stretches from the bottom of the ocean to the surface) in this area of the shelf – they would like to know more about what is driving it.
- The jet streams and fronts move long distances across the shelf in a short time period in this area – very dynamic – so the scientists need a wide enough span to be able to monitor this and see this movement completely. For example, one question is whether there is more phytoplankton out by these breaks or right in the heart of the frontal zone? Jet is not very wide but occurs over huge cross shelf span. Need
something wide enough that can catch this jet that is moving over 20-30 miles but be able to resolve details, how sharp the gradient is.

The features and characteristics the scientists were looking for when choosing a site:
- Need a long enough stretch without canyons to see the basic dynamics at play
- Cannot have the nutrient influence of big river inputs, nearby to complicate the processes being studied (e.g. Hudson River, Delaware Estuary, Chesapeake Bay)
- Need to be some distance from the Gulf Stream so this is not a dominant factor
- Need to study an area not dominated by tides
- Bathymetry needs to be such that there are not strong curves in the area

Bottom line: Scientists are trying to study the frontal processes in isolation. This understanding will provide a basic foundation for a model – then other factors (tide, river, etc.) can be added. Model will enable them to predict ocean dynamics (similar to studying weather frontal systems). How does the physics drive the biological variability? Discovered through observations.

Why they proposed studying this area:
- Scientists are interested in being able to model these processes for prediction purposes – and to simply better understand how energy moves through the ocean system
- This type of modeling is tied to better understanding biological variability and cycles in production. It is the basis for food web dynamics.
- Understanding these types of smaller scale impacts may lead to a better understanding of larger scale impacts due to things such as climate change, changes in rainfall, etc.
- Mud patch is one of the factors in the micrositing, but might not be the highest priority. Interest in mud patch is 70 fathoms or less.

Major Questions/Discussion Points:
- How can a model like this work anywhere else? What is the value of building this model for this particular location? Response: It will be used as a base model – if we can get this basic model in place, it can be added to with complicating factors existing in other places. A model such as this could also help with questions such as why is the mud patch out there? What geological and physical dynamics are at play?
- Scientists also noted that this Pioneer Array project is as much about building the infrastructure (surface moorings, profilers, gliders, AUVs) to measure these things as it is about the data that will be generated. People will use the data coming from this project in different disciplines such as meteorology, biology, geology and sediment transport.
- Is it necessary to have the moorings in a linear line? Response: it is easiest to have them that way in order to measure gradients but there is some room to reconfigure them. Need broader input from the science community. Scientists need to have them close enough so there is some relation to each other in order to measure over
the shelf area. There is a degree of flexibility. The C-shaped array can be shifted East West, along the isobaths. Sites need to be close enough to be related to each other.

General point made: It might prove to be very useful having fishermen involved in the actual deployment of the scientific gear. This would utilize fishermen at sea expertise and knowledge of this area of the ocean, assure that the moorings are being placed where they are intended to be placed, and help foster better communication and working relationships between scientists and fishermen.

2. General overview of fishing activities in the planned study area – Additional information from Industry Representatives -

Industry representatives submitted the following document summarizing this activity:

PIONEER ARRAY

An analysis of the Fishing activity impacted inside the designated macro site. Broken down by fishery, gear type, number of vessels, average number of crew / vessel, timeframe, depth and targeted fish species.

**TRAWLERS:**
- Bottom trawl: 60-80 vessels, avg. crew 4, year round
  - 30F – 250F
- Mixed species: Squid (loligo, ilex), silver hake, red hake, butterfish, tilefish, scup, Black sea bass, summer flounder, jon dory, mackerel, monkfish

**Monkfish:** Directed fishery

**LOBSTERING:**
- Lobster pots: 19 vessels, avg. crew 4, year round
  - Offshore: 50F – 200F
- Lobsters, Crabs
  - Inshore: lobster pots, 20 vessels, avg. crew 2.5, year round
    - 30F – 50F

**Lobsters, Crabs**

**RED CRABBING:**
- Crab pots: 4 vessels, avg. crew 5, year round
  - 250F – 400F
- Red Crabs
**LONGLINERS:** 30-50 miles longline  4 vessels  avg. crew 4  year round

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<th>Bottom</th>
<th>50F – 150F</th>
<th>7 vessels</th>
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<td>Pelagic</td>
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<td>30 vessels</td>
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<td>150F – 1500F</td>
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**GILLNETTERS:** 6-10 miles Gillnets  30 – 40 vessels  avg. crew 4  Dec. – May

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<td>Gillnets</td>
<td>15 – 20 vessels</td>
<td>avg. crew 4</td>
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<td>30F – 60F</td>
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**ROD & REEL**  Rod & Reel  80 – 100 vessels  avg. crew 6  June – Oct.

|                | 40F – 250F |                |                |              |            |
|----------------|------------|----------------|----------------|              |            |
| Swordfish, Tuna, Sharks, Marlin, Mahi Mahi |

**TOTAL VESSELS**  334

**TOTAL CREW**  1225

Major Questions/discussion points:

- Gillnetters are not represented in this group but fishermen at the table are reaching out to them to gather their input. The major concern is that their gear may be vulnerable to the moving parts of the Pioneer Array project. Information on how far off the bottom, and where and when the gillnets are deployed needs to be relayed for consideration.

- General discussion on siting, potential gear conflicts, and safety concerns
  - Concern was raised about conflicts with trawlers in rough high seas. If a trawl gets hung up on a mooring, and the wind and sea conditions are rough, there is the danger of the fishing vessel capsizing.
  - The groups focused on possible scenarios for re-arranging or shifting the moorings and instrumentation within the yellow box configuration. Emphasis was placed on trying to locate moorings on or near existing obstacles such as shipwrecks, and on increasing the spacing between moorings so fishing vessels have more of an ability to maneuver.
• After discussing a couple of options, the group ended the workshop focused on the arrangement attached to this meeting summary.
• More discussion will follow about this arrangement at the next workshop – fishermen agreed to double check the bearings of shipwrecks and scientists will review the suggested arrangement to consider science impacts.
• Avoidance of shipping lanes, submarine cable routes, mud spot area as much as possible, and existing fishing patterns and arrangements are also being considered in the new option.
• Scientists are very much open to making changes to minimize conflicts. Exploring snags and wrecks is plausible. Scientists asked if there is a benefit to having a mooring arrangement at 50 fathom instead of 52 fathom. Fishing industry representatives indicated that the 50 fathom arrangement would minimize gear interactions.

• Communication between scientists and fishermen
The group began to discuss this topic and some of the major points made included:
• There needs to be a way to communicate the navigational information about this scientific equipment to the fishing industry so they can insert it into their onboard computers. Working with and through existing fishermen associations should be pursued.
• Creation of a special website to display real time information could be a communication tool.
• Mailing to all permit holders notifying them of this project needs to be pursued – the point was made that most of the fishing community does not even know about this project yet. Fishermen come from as far away as Maine and North Carolina to fish in these waters – they will need to be informed.
• Working with NMFS and the Coast Guard on communication tasks could also be an option.
• Some fishermen rely on port plotters to give them navigational information via a CD they can upload into their onboard computers.

• Summary of major points made – P. Parker
Some major observations at this point included the following:
• In terms of safety issues, the largest concern centers on the potential interactions between trawlers and the Pioneer Array moorings. The configuration of these moorings, and their visibility at sea are paramount to addressing these safety concerns.
• Siting issues center on how much flexibility there is in terms of rearranging the moorings, and how far they can be moved.
• The groups’ focus appears then to be on the configuration and siting of the moorings within the “yellow box” of the Pioneer Array project area and less on moving the whole project area.
“Within a few miles of existing locations and maintaining a reasonable means of measuring gradient changes over the shelf area being studied seems to be within the range of what can be accommodated by the science needs.

Allowing enough area for trawlers to be able to move in between moorings as they trawl through this area is critical, and this needs to take into consideration existing bottom hangs and other fishing vessels operating in the same area at the same time, along with bad weather conditions and prevailing winds and tides.

It may be easier for lobster gear to be deployed around moorings but some bottom types (e.g. mud patch) are prime lobster habitat and fishing grounds – this needs to be considered.

Longliners also operate in the area. They will have to be acutely aware of these moorings as another obstacle to avoid.

Gillnetters are not represented in this group but they are being notified and their input is being sought. They may be more vulnerable to the moving parts of the Pioneer Array equipment – gliders and AUVs. [Their nets may be set to within 6 feet of the bottom in some areas.]

The group appears to be moving towards an understanding that the science reasons for locating the Pioneer Array project in this particular area are sound but the fishing activity in this area is very high – much higher and with a much higher economic value than was portrayed in the EA for this project. The potential for safety hazards and gear conflicts are very high, and the danger of closing this area to fishing if things go wrong is very much on the minds of fishing industry representatives.

Scientists are coming to realize that there is a history in this area already of trying to work out gear conflicts among different fishing sectors, with resultant regulations in place. This project will need to recognize and fit into those arrangements as much as possible.

Communication between scientists and fishermen is critical. How to develop this and maintain this throughout the project will require careful thought and coordination.

After the group works through possible siting changes, and other measures to reduce the danger of safety hazards and gear conflicts, there will be a need to plan for how to handle situations when things go wrong.

Discussion on agenda for next workshop

Major topics group agreed should be discussed:

- **Guard buoys** – the group wants to spend more time discussing the moored buoy part of the Pioneer Array scientific apparatus, particularly the topic of guard buoys.

- **Mobile science equipment – gliders and AUVs** – What are the operational details connected to this part of the project? What are the potential conflicts and safety concerns in relation to fishing activities?

- **Communication between scientists and fishing community** – How is this to be accomplished throughout the project? What are going to be the most effective avenues?

- **Return to proposed rearrangement option put on the table last workshop** – fishermen agreed to check on the bearings of wrecks to make sure these were correct and scientists were to think
about it further in terms of how the new proposed configuration will be able to accomplish science goals (there may need to be a little more discussion on this).

The group at this point is moving towards a discussion on what to do when something does go wrong out there. This discussion will encompass any ideas on a suggested process to handle certain scenarios that might happen. It also includes discussion on the subjects of liability and mitigation.

“Home work” items (preparation for next workshop) included:

- Double checking the bearings of wrecks discussed
- Providing more information about the conditions under which profiler moorings are intended to be submerged
- More information on the plan for guard buoys
- Sketch of the new configuration discussed – what apparatus will be at these new locations
- Communication options – website communication and other means of notification were discussed – How will this be set up? What information needs to be relayed?
- Further input from the gillnetters in the area – How far off the bottom do they set their nets?

- Scheduling of next meeting – The third workshop was originally scheduled for Nov. 30, 2011 but A. Pleuddemann will be at sea during that time. The group agreed to seek another time to meet in Nov. This will be worked on by CFRF staff by e-mail – a date will be chosen that works for the most number of people.

- Adjourn- Meeting adjourned at 4:35 PM.
Proposed Moored Array Positioning:
Proposed Modified Arrangement Discussed:

(see attached Modified Arrangement 10-26-11.pdf)