Meeting Summary:

Offshore Wind and Maritime Industry Knowledge Exchange

Agency and Industry Coordination

Thursday, July 22, 2021; 12:30 – 3:00 p.m. ET

I. Introduction

This summary captures the second of three Bureau of Ocean Energy Management (BOEM) Offshore Wind and Maritime Industry Knowledge Exchange sessions, held virtually on July 22, 2021. The information contained within is intended to serve as an important reference to support coordination and future planning decisions related to offshore wind, agency, and maritime industry coordination and needs. Over 120 participants joined the knowledge exchange session, including representatives from federal and state agencies, the maritime and offshore wind industry, academia, and more.

This document summarizes discussion highlights and input shared throughout the session. It is not intended to be a detailed transcript. A recording of the session and speaker presentations are available to the public on BOEM's project webpage. The session agenda is available as Appendix A.

BOEM Offshore Wind and Maritime Industry Knowledge Exchange Objectives:

- Share updates on offshore wind and maritime activities that occurred since BOEM's 2018 Offshore Wind and Maritime Industry Knowledge Exchange.
- Share how past recommendations and approaches were incorporated in offshore wind and maritime transportation co-existence.
- Discuss measures to minimize risk to safety and disruptions to maritime transportation operations while supporting the development of domestic renewable energy.

II. Discussion Highlights

A. Opening Remarks

Jason Gershowitz, Kearns & West Facilitator, opened the meeting by welcoming participants, providing an overview of the agenda framework and ground rules, and introducing BOEM's Program Manager, Jim Bennett.

Mr. Bennett opened by thanking participants for their attendance and explained BOEM's responsibility to ensure renewable energy development is environmentally and economically sound. He emphasized BOEM's commitment to the current administration's goals of advancing offshore wind energy, including 30 gigawatts of energy by 2030 and thousands of good-paying jobs.

He continued by reviewing the Knowledge Exchange agenda topics, including, lighting, and marking, search and rescue, and navigational tools. Jim added that BOEM places great significance on coordination with the Coast Guard and other stakeholders. He added that the Knowledge Exchange is an opportunity for participants and BOEM to learn more and ask questions.

B. Lighting and Marking

Angel McCoy, BOEM Meteorologist, shared a presentation on the BOEM Lighting and Marking Guidelines. She opened her presentation with a brief history of the guidelines development, starting with the January 2015 workshop on existing BOEM, FAA, USCG, and International Association of Marine Aids to Navigation and Lighthouse Authorities (IALA) guidelines and federal agency working groups. Guideline recommendations from the workshop and initial working groups, included:

- Consistency with partner agencies,
- Consider aspects of construction and temporary structures,
- Include lighting, color, markings, and consistent numbers,
- And review existing European guidelines.

Following these recommendations, BOEM funded the Development of Guidance for Lighting of Offshore Wind Turbines Beyond 12 Nautical Miles Study, available now, on the BOEM website. She continued, adding that the in addition to the 2019 workshop and working groups, the draft guidelines were informed by extensive stakeholder and public input.

Angel then reviewed the contents of the final guidelines document. The introduction of the document states the intent of the guidelines, which is to make recommendations for lighting and marking design for wind energy facilities and supporting structures, to assist lessees in addressing safety and environmental protection, and outline the information to be included in Site Assessment Plans, Construction and Operation Plans, and General Activities Plan. The guidelines also acknowledge the regulatory authority of BOEM, USCG, and the FAA and make recommendations for aviation and navigation safety and environmental considerations. Under resources, the guidelines document links to additional resources, including the USCG Aids to Navigational Manual, USCG Navigation and Vessel Inspection Circular No. 01-19, FAA Advisory Circular (AC) 70/7460-1L, Advisory Circular (AC 150/5345-43J, FAA Engineering Brief No. 98, and the IALA.

Angel concluded her presentation by covering the impacts of the new guidelines. She pointed out that BOEM had previously received comments expressing concern over conflicting information on jurisdictional authority, and she continued that the guidelines address gaps in regulatory uncertainty and ease review processes for federal agency partners and developers.

During the presentation, one participant inquired via chat where stakeholders can find more information about BOEM's Lighting and Marking Guidelines. Angel shared that participants could visit www.boem.gov/guidance and click the renewable energy tab to learn more.

Matthew Stuck, Chief Aids to Navigation and Domestic Icebreaking Programs, for District 1, USCG, gave a presentation on key marking parameters, and the Coast Guard's process and expectations. Matthew

opened by noting the objective of Coast Guard to convert potentially hazardous structures and use them as an opportunity to enhance and organize safe navigation. He reviewed synchronized lighting and marking of structures supporting renewable energy development, including:

- Significant peripheral structures (SPS) – marking the corners of wind energy areas,
- Intermediate position structures (IPS) – located in between SPSs,
- And internal structures.

The more critical or hazardous a structure is, the brighter and faster it will energize. Matthew continued reviewing automated information systems (AIS). He noted that AIS beacons aid navigation virtually and that private aids to navigations can use these to mark special areas, like SPS. Every SPS also has a sound signal, also known as a foghorn. These sound signals aren't necessarily integrated with one another, but they are radio activated by mariners and are important for tight navigation within an area. He concluded by emphasizing the importance of consistent labeling nomenclature and predictable grid patterns and noted that this was developed from stakeholder input and close coordination with harbor safety committees.

Matthew then presented a sample map of the nine wind energy areas in the northeast. As you proceed seaward, identification markers, letters and numbers, increase. The intent is to create a safe and predictable system to help facilitate inbound and outbound traffic through these areas.

Matthew continued his presentation and reviewed timelines and recommendations for the Structure and Marking Plan, private AToN permits, and PATON permits. He noted the most critical to marking is the Structure and Marking Plan, which is to be submitted 120 days in advance of construction and that private AToN permit applications are due 30 days from operation, matching the Structure and Marking Plan. He also provided the PATON application website, www.usharbomaster.com. Matthew concluded his presentation by emphasizing that the Coast Guard will continue to ask for input on the process from mariners, developers, and other stakeholders.

Throughout the presentation, participants asked questions and shared comments via the chat and Q&A functions, including:

- ***Marking Across USCG Districts:*** *One participant asked if the same marking structure would be used in other USCG Districts. Matthew responded that marking structure is intended to be consistent across U.S. Coast Guard Districts but lead time could differ and there may be site specific variation.*
- ***Marking During Phased Construction:*** *One participant inquired how marking will be handled for phased project construction. Matthew responded that the intention is that PATON permits cascade in phases. He added that it is important that new and or hazardous structures that pose risk are marked quickly.*
- ***Marking with Neighboring Projects:*** *One participant inquired about how developers will mark projects that have a shared boarder but don't share the same grid pattern or axis. Matthew responded that as wind energy areas are built out, their periphery will change, and that when the purpose of structure changes, the Coast Guard expects developers to modify the lighting, AIS, and sound signals. Angel added that it is important for developers to collaborate with neighboring facilities to ensure lighting is in sync.*

- ***WTG Marking Locations:*** *One participant shared that USCG guidance speaks to marking WTGs both above and below the service platform whereas BOEM guidance mentions marking only above the service platform and inquired if there is a general preference for the marking location on WTGs. Matthew responded that marking below the platform is beneficial and effective for mariners navigating closer to the tower or service platforms.*

C. Search and Rescue Panel

Jason Gershowitz introduced the following panelists and facilitated brief introductions:

- Commander Jesse Diaz, District 1 Incident Management Branch, USCG
- Lieutenant Commander Ashley Dufrense, Search and Rescue Policy Division, USCG
- Edward LeBlanc, Marine Affairs Manager for Northeast Projects, Orsted

Jason then moderated a facilitated discussion, sharing prompt questions and weaving in participant inquiries throughout. Throughout the session, the panelists shared remarks about the *themes* noted below, including:

Discussion about challenges and solutions for the search component of search and rescue (SAR):

- **Commander Jesse Diaz** – responded that the Coast Guard has tools in place to help with search. He noted the Rescue 21 System and direction-finding equipment, which can be leveraged throughout wind energy areas to enhance Coast Guard's search ability.
- **Lieutenant Commander Ashley Dufrense** – emphasized the importance of the search planning process. She added that the SAR Optimal Planning System (SAROPS) helps estimate where a vessel or mariner in distress is located and where it will be located, considering currents and wind, when the Coast Guard arrives on scene. She concluded that the Coast Guard is committed to working with leasing agencies to improve this process. For example, sharing wind turbine position in SAROPS.
- **Edward LeBlanc** – responded that it is the focus of Orsted and other developers to reduce the search component of SAR, through a comprehensive mitigation package. Some of those efforts include AIS on towers and Orsted's Navigation Enhancement Program, subsidizing vessels that frequent their wind farms. Orsted also offers a simulator program to validate possible scenarios, including rescue scenarios.
- ***Research & Development****: One participant inquired if the USCG Research and Development Center would look at SAROPS implications in and around wind farms. Lieutenant Commander Dufrense responded that Coast Guard's Oceanographer and SAROPS specialist is working with academia and the Research and Development Center to explore SAROPS implications.*

Discussion about challenges and solutions for the rescue component of search and rescue:

- **Edward LeBlanc** – responded that the biggest challenge of developers is to compliment and not complicate Coastguard rescue efforts. He added that it is important to facilitate communication. For example, placing as asset on scene, stopping wind turbine blades to assist with a helicopter rescue, and working with the Coast Guard to develop a Common Emergency Response Plan.

- **Lieutenant Commander Ashley Dufrense** – added that the mission and policy of the Coast Guard is to assist a vessel or mariner in distress and that training is an important component, in addition to, transparency with leasing agencies and specific districts with different operating parameters.
- **Commander Jesse Diaz** – emphasized his appreciation of Orsted's commitment to cooperation and highlighted that preparedness and practice is key. He also encouraged developers to get know their local Coast Guard Sector.
- **Sharing Meteorological Data:** *One participant inquired if offshore wind facility managers would allow their meteorological data to be made available for SAROPS models. Edward responded that Orsted shares data with NOAA, and that developers with projects in the Massachusetts area are receiving brief to develop a NOAA ports sensor system in the area applied to the Offshore Wind area south of Martha's Vineyard. Lieutenant Commander Dufrense added that this is something the Coast Guard is continuing to research. Another participant noted that other developers are sharing their meteorological ocean buoy data with NOAA's Integrated Ocean Observing System, and independent regions, like MARACOOS and NERACOOS. Commander Diaz added that this data exchange will help predict where search objects will be.*

Discussion about potential implications of radar related to navigation safety:

- **Commander Jesse Diaz** – responded that there is a need to continue to study implications as radar technologies advance. He continued that it may dimmish the Coast Guard's ability to see search objects, but that there is a benefit in relying on the navigator's eye as a tool.
- **Ed LeBlanc** – added that there are reports that the pulse compression radar technology is highly effective and that Orsted is committed to post construction radar assessments to determine the impacts of towers on radar and then recommend appropriate mitigations, if needed.

Discussion about the opportunity to learn from others, including partners in Europe:

- **Edward LeBlanc** – responded that Orsted is largest global developer and is in close coordination with their colleagues in Europe regarding SAR issues and tactics. He emphasized that there are important lessons learned that can be applied in the US.
- **Commander Jesse Diaz** – added that SAR allies in the UK provide a great model of cooperating relationships between agencies and how information is shared. He echoed the importance of taking their lessons learned to lessons applied.
- **Lieutenant Commander Ashley Dufrense** – noted that the UK is only a fraction of what the Coast Guard covers, but that the interchange of information in the UK is considered.

Discussion about Emergency Response Plans:

- **Commander Jesse Diaz** – emphasized the importance of transparency between the Coast Guard and developers to facilitate emergency response processes and the opportunity to evolve working relationships to preparedness and sharing best practices across regions.
- **Edward LeBlanc** – responded that the key success factor is attitude and that it is in the interest of developers to compliment the Coast Guard's SAR efforts. He added that co-located projects could use a single Emergency Response Plan.

Discussion about training exercises and preparedness:

- **Commander Jesse Diaz** – responded that the marine and environmental response partnerships could be applied to offshore wind energy. He continued that the Coast Guard wants to make sure that plans are being adequately worked and that real-life exercises are important to refresh response perspective.
- **Lieutenant Commander Ashley Dufrense** – added that the Coast Guard is continually trying to improve efficiency of SAR planners, exploring case studies, and where they need to improve training. She emphasized the importance of local partnerships, area familiarizations, and interagency trainings like inspection of a vessel.
- **Edward LeBlanc** – echoed that there is a need to exercise and train plans and the importance of partnership. He noted that Orsted has trained with the Coast Guard at their Block Island Wind Farm.

Closing remarks and takeaways:

- **Commander Jesse Diaz** – reiterated Coast Guard's goal of hitting search and rescue "hard and fast." He emphasized the importance of lessons learned and applied and recommended that developers meet with responders prior to an incident to learn about each other's equipment and capabilities.
- **Lieutenant Commander Ashley Dufrense** – echoed the Coast Guard mission and responded that interagency partnerships and fluid information is key to facilitating mission success and ensuring the safety of mariners in leasing areas.
- **Edward LeBlanc** – reiterated that developers want to be good partners. He emphasized a focus on mitigations to eliminate the search and the commitment to be a good partner in the rescue component of search and rescue.

D. Navigational Tools and Implementation

Arianna Baker, Navigational Analyst for BOEM's Office of Renewable Energy Programs, shared a presentation on the BOEM sponsored study with *The National Academies of Sciences, Engineering, Medicine* on Wind Turbine Generator Impacts to Marine Vessel Radar.

Arianna reviewed the list of committee members, noting It is a committee-based study. She then covered the statement of task. The study will use a combination of literature review, informative, and practical to determine impacts to marine vessel radar within and near offshore facilities and identify solutions. To preserve marine vessel radar and its use as a navigational aid, the study will also include mitigation strategies like upgrading radar technology and training vessel operators to adjust for concerns in wind energy areas. Arianna concluded by noting that the information presented is available on *The National Academies* website and provided the contact information for the study Director, Lexa Skrivanek.

Captain E.J. Van Den Ameele, Chief of the NOAA Marine Chart Division, gave a presentation on NOAAs Electronic Navigation Charts (ENC). He opened his presentation by noting that his division, 80 – 90 cartographers, are responsible for receiving and analyzing information and updating ENCs. ENCs support surface navigation with use of a type of approved Electronic Chart Display Information System (ECDIS)

and adhere to the International Hydrographic Organization (IHO) data standards. They also have predefined features and attributes with standard validation checks before they are shared with the public. The Captain then reviewed components of wind farms in ENCs, including:

- Foundational structure for wind turbine,
- Wind turbine/blades,
- Submarine power cables servicing the wind farm,
- And USCG Aids to Navigation coincident with wind turbine.

Captain Dan Van Ameele continued discussing charting caution areas noting significant underwater obstructions or dangers to navigation while active construction is underway. He then shared examples of current ENCs of Coastal Virginia Offshore Wind and the Block Island Wind Farm, pointing out the symbology of turbines, lights, buoys, and underwater cables.

He also reviewed NOAAs charting policy on wind farms, the offshore production area, and landmark objects, both from the Nautical Chart Manuel Volume 3. He listed required encoded information, including blade diameter and blade vertical clearance. The Captain emphasized that NOAA is exploring options for processing this information in a timelier manner to ensure ENCs are up to date versus a reactionary process. Currently, NOAA receives information from the USCG Local Notice to Mariners (LNM) and the Marine Safety Information Bulletin, that are applied to charts. The preferred practice would be advanced notice with monitoring of construction permits of wind turbines and submerged cables. The Captain shared open questions that NOAA are exploring, including:

- Who permits construction of the actual wind turbine?
- Are turbines permitted individually or in groups?
- Are the limits of the offshore production area authorized through a Federal Register announcement?
- Will there be fairways authorized for transit through an offshore production area?
- Will there be any Federally authorized restricted areas associated with wind farms/offshore wind production areas?
- Do wind farm construction details fall under “Critical Energy Infrastructure Information? A form of controlled unclassified information?
- Will blade clearance be uniform throughout the offshore production area or variable?

Captain Van Den Ameele concluded his presentation by providing the appropriate contacts for source receipt and encouraging attendees to submit information in the interest of aiding navigation and protecting offshore wind structures.

<u>During and following the session, participants asked questions and shared comments through the chat and Q&A functions, including:</u>

- ***Charting Symbols:*** *One participant asked via the chat if there is a different symbol in the charts for an electrical support platform. Caption Van Den Ameele responded that there are different symbology for offshore platforms, including turbines and support structures.*
- ***Lighting and Wildlife:*** *One participant inquired if there a concern that lights will attract bait fish/ birds/bats to wind turbines increasing collisions. Arianna responded that the Renewable Energy Program has a team of subject matter experts and engage closely with the National Parks*

Service, Fish and Wildlife Service, and National Fisheries Service. This has allowed BOEM to incorporate environmental recommendations into lighting and marking guidelines to reduce impacts to birds/bats/ fish. For example, aircraft detection lighting system, a radar within a facility that detects approaching aircrafts, and temporarily lights the area until the aircraft leaves the facility.

- ***Marine Spatial Planning:*** *One participant shared a comment about how BOEM engages with Coast Guard regarding planning, historical data, and considering ship operators. Arianna responded that the final Knowledge Exchange on August 19, will cover some of those topics and focus on marine spatial planning and risk assessment.*
- ***Mooring Buoys:*** *One participant asked if there has been any discussion about the installation and use of mooring buoys by support vessels within the lease areas. Arianna responded that BOEM is open to considering technologies with more solidified details of construction and added that there are a variety of technologies that support vessels. For example, some vessels use dynamic positioning.*

E. Wrap up and Next Steps

Jason Gershowitz gave a brief summary of the Knowledge Exchange and shared a link to the Offshore Wind and Maritime Industry Knowledge Exchange webpage and an evaluation of the event format. He then invited attendees to join the upcoming August 19 Knowledge Exchange covering Marine Spatial Planning for the Maritime Sector.

Darryl Francois with BOEM then concluded the session by thanking attendees and panelists for their participation in the event. He emphasized BOEM's interest in stakeholder feedback on the Knowledge Exchange format and other initiatives, noting the Vineyard Wind Project and upcoming environmental studies.

III. Appendix

A. Public Agenda