OCS-A 0501 MASS USA

VINEYARD WIND

Modified Noise Attenuation Proposal

October 31, 2024

Vineyard Wind is notifying you of an unexpected equipment malfunction with the hydro-sound damper (HSD) that arose yesterday after the installation of the monopile at AR-36 and to request your concurrence on our proposed plan for proceeding with installation. Concurrence is requested expeditiously to allow pile driving to proceed on Saturday while there is a weather window favorable for installation. It is critical for the Project to proceed as there is little to no buffer in the schedule left to ensure monopile installation will be completed prior to December 31, 2024. As shown below, the sound field verification results for AR-36 and other factors demonstrate that the measured distance to the isopleths of concern will not be exceeded with the use of the double big bubble curtain (DBBC) without HSD.

HSD Malfunction

During deployment of the HSD, 8 of the 14 cables and associated winches necessary to hoist the HSD and ballast box from around the pile broke or malfunctioned. While the HSD was functional during installation of AR-36, after piling was complete it was not possible to lift the HSD to the vessel Orion without jeopardizing the safety of the vessel and endangering the crew. For safety reasons, the HSD was disconnected from the vessel. The HSD net is still in place around the monopile, and the ballast block is lying atop the scour protection at the base of the pile. It is not feasible to retrieve the HSD in a timely manner or without damaging it further and precluding it from future use. It would take a minimum of 6 months to obtain a replacement HSD, which would prevent completion of the Project under the current Incidental Harassment Authorization (IHA) given vessel availability and would stop the project altogether and have a significant impact on the Project's commitment to deliver green energy to the State of Massachusetts.

Proposal for Continuing Installation

Compliance with the IHA's inclusion of HSD as an attenuation device is impossible to achieve due to the risks of damage to the vessel and crew that arose when retrieving the HSD from AR-36. Vineyard Wind therefore proposes to install the next pile at AP-37 with a DBBC and conducting thorough sound field verification (SFV) to confirm that the Level A and B distances are within the expected distances. We are confident that the measured distance to the isopleths of concern will not be exceeded for the following reasons:

- The thorough SFV results measured during installation of AR-36 show that Vineyard Wind achieved Level A and Level B ranges distances measuring significantly below the expected ranges, with Level A for low frequency cetaceans measuring 1,640 meters and Level B for marine mammals measuring 3,330 meters. The results demonstrate the

significant improvements Vineyard Wind and its contractor DEME have employed from the experience gained during the installation campaign in 2023. The complete results are presented in the tables below.

Table 1. Modeled and measured distances to the NMFS physiological thresholds for impact driving of AR-36. Expected ranges are the permitted 10-decibles (dB) attenuation ranges for a WTG-Monopile

Group	PK Threshold (dB re µPa)	SEL Threshold (dB re µPa²s)	Modeled Distance (m)	*Measured Distance (m)
LFC	219	183	3,191	1,640
MFC	230	185	43	10
HFC	202	155	71	60
PPW	218	185	153	90
TUW	232	204	161	160
AS	206	187	6,894	3,660

*Measured distances much less than 750 m have been extrapolated from fits to data acquired at distances from 750 m to 10,000 m. Therefore, confidence is low for reported measured distances much smaller than 750 m.

Table 2. Modeled and measured distances to the NMFS behavioral thresholds for impact driving of AR-36 as a WTG-Monopile

Group	SPL Threshold (dB re µPa²)	Modeled Distance (m)	Measured Distance (m)
MM	160	5,720	3,330
TUW	175	1,400	330
AS	150	12,200	15,370

- As recognized in the published technical report (Bellman, et al., 2020), a DBBC and a DBBC with HSD perform similarly. *See* graph below. It is thus reasonable to assume that the HSD did not contribute significantly to the results achieved at AR-36. Vineyard Wind intends to submit tomorrow a technical Memo from Jasco further explaining why HSD is not necessary to achieve the expected distances.

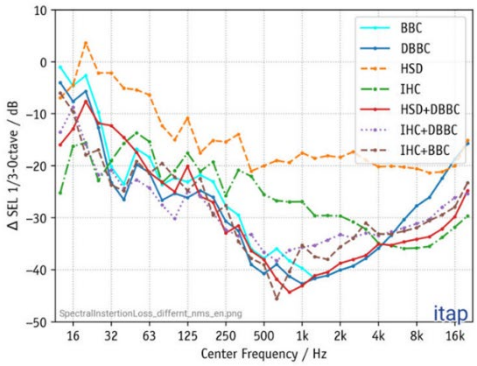

Figure 32: *Resulting noise reduction (transition loss) of the applied Noise Abatement Systems – IHC-Noise Mitigation Screen (NMS8000), Hydro Sound Damper (HSD) and optimized single/double Big Bubble Curtain (BBC/DBBC), averaged over all applications within the German EEZ of the North Sea. Note: The presentation of the insertion loss differs from the specification of the DIN SPEC 45653 to that extent, that not the difference from reference- and test measurement, but from test- and reference measurement is displayed. Negative values thus mark a high noise reduction.*

- Vineyard Wind employed higher quality air compressors for the DBBC than were used in 2023. The DBBC compressors employed during installation of AR-36 delivered an air flow rate of 0.6 m3 / (min*m), above the required air flow rate of 0.5 m3 / (min*m), thereby enhancing the effectiveness of the DBBC, as demonstrated by the SFV results.

Permit Compliance

The IHA references the use of HSD because Vineyard Wind proposed using it for installation of the remaining 15 piles to be consistent with its use during the 2023 installation campaign. As the first commercial scale project to proceed to construction, HSD was proposed in 2019 as an additional conservative noise abatement measure to achieve up to a 12 dB reduction of sound. Experience now shows that HSD is not necessary to achieve sound reduction targets of 6 to 10 dB. Indeed, NMFS has permitted several projects requiring only a DBBC to achieve a 10 dB reduction in sound, including New England Wind which is immediately adjacent to Vineyard Wind and has the same soil profiles.

While the IHA makes express reference to use of the HSD, it also includes an exemption for compliance with prescribed mitigation measures where they are not practicable due to risks to vessels and human life. The use of the HSD is no longer practicable on the remaining 14 piles

due to the risks to both the vessel and human life encountered while attempting to retrieve it from AR-36. There is therefore a sound basis for continuing installation without the HSD in full compliance with the IHA.

With respect to the Biological Opinion, its discussion of the use of HSD is in relation to it being proposed under the IHA. There is not an express term and condition that requires the use of HSD. Rather, it requires that BOEM, through its enforceable conditions of COP approval require Vineyard Wind to comply with the measures in the final IHA and similarly, for NMFS OPR to ensure compliance with the IHA mitigation measures. The safety exemption provided for in the IHA must therefore equally apply under the Biological Opinion.

Finally, we note that while the IHA is viewed as prescriptive, it contemplates "additional, modified and/or alternative noise attenuation measure(s)" may be needed during installation. *See* IHA 5.xxi.c. While the provision is within the context of not achieving expected distances through SFV, it demonstrates that the IHA is also performance based under certain situations. Consistent with that provision, Vineyard Wind's request here is performance-based.

Conclusion

For the reasons discussed above, Vineyard Wind requests concurrence on its plan to proceed with installing AP-37 with the use of the DBBC and demonstrating through thorough SFV that it can achieve the expected distances to the Level A and Level B thresholds. If the thresholds are not achieved on AP-37, Vineyard Wind will consult further with the agencies on potential additional mitigation measures.

This request is reasonable to allow completion of the project, because otherwise it will not be possible to do so. It is also compliant with the terms of IHA and Biological Opinion given the need for the request arose for health and safety reasons.

As noted, we have a weather window for installation starting Saturday and would appreciate your prompt response to this request. As we have discussed, our goal is to avoid to the extent feasible installation of piles in December when there is higher likelihood of occurrence of the North Atlantic right whales in the Project area. Delays associated with this request will jeopardize that goal and will have an extreme adverse impact on the success of the Project.

References

Bellmann, Dr. Michael A., et al. "Underwater Noise during Percussive Pile Driving: Influencing Factors on Pile-Driving Noise and Technical Possibilities to Comply with Noise Mitigation Values." Tethys, PNNL, tethys.pnnl.gov/sites/default/files/publications/Bellmann-et-al-2020.pdf.