



## DEPARTMENT OF COMMERCE

### National Oceanic and Atmospheric Administration

**RTID 0648-XB203**

#### **Takes of Marine Mammals Incidental to Specified Activities; Taking Marine Mammals Incidental to Site Characterization Surveys off the Coast of Massachusetts and Rhode Island**

**AGENCY:** National Marine Fisheries Service (NMFS), National Oceanic and Atmospheric Administration (NOAA), Commerce.

**ACTION:** Notice; issuance of an incidental harassment authorization.

**SUMMARY:** In accordance with the regulations implementing the Marine Mammal Protection Act (MMPA) as amended, notification is hereby given that NMFS has issued an incidental harassment authorization (IHA) to Mayflower Wind Energy LLC (Mayflower) to incidentally harass, by Level B harassment only, marine mammals during site characterization surveys off the coast of Massachusetts and Rhode Island in the area of the Commercial Lease of Submerged Lands for Renewable Energy Development on the Outer Continental Shelf (OCS-A 0521) and along a potential submarine cable route to landfall at Falmouth, Massachusetts and Narragansett Bay.

**DATES:** This authorization is effective from July 1, 2021 through June 30, 2022.

**FOR FURTHER INFORMATION CONTACT:** Robert Pauline, Office of Protected Resources, NMFS, (301) 427-8401. Electronic copies of the application and supporting documents, as well as a list of the references cited in this document, may be obtained online at: <https://www.fisheries.noaa.gov/permit/incidental-take-authorizations-under-marine-mammal-protection-act>. In case of problems accessing these documents, please call the contact listed above.

**SUPPLEMENTARY INFORMATION:**

## **Background**

The MMPA prohibits the “take” of marine mammals, with certain exceptions. Sections 101(a)(5)(A) and (D) of the MMPA (16 U.S.C. 1361 *et seq.*) direct the Secretary of Commerce (as delegated to NMFS) to allow, upon request, the incidental, but not intentional, taking of small numbers of marine mammals by U.S. citizens who engage in a specified activity (other than commercial fishing) within a specified geographical region if certain findings are made and either regulations are issued or, if the taking is limited to harassment, a notice of a proposed incidental take authorization may be provided to the public for review.

Authorization for incidental takings shall be granted if NMFS finds that the taking will have a negligible impact on the species or stock(s) and will not have an unmitigable adverse impact on the availability of the species or stock(s) for taking for subsistence uses (where relevant). Further, NMFS must prescribe the permissible methods of taking and other “means of effecting the least practicable adverse impact” on the affected species or stocks and their habitat, paying particular attention to rookeries, mating grounds, and areas of similar significance, and on the availability of the species or stocks for taking for certain subsistence uses (referred to in shorthand as “mitigation”); and requirements pertaining to the mitigation, monitoring and reporting of the takings are set forth.

## **Summary of Request**

On October 23, 2020, NMFS received a request from Mayflower for an IHA to take marine mammals incidental to site characterization surveys in the area of the Commercial Lease of Submerged Lands for Renewable Energy Development on the Outer Continental Shelf (OCS-A 0521; Lease Area) and a submarine export cable route connecting the Lease Area to landfall in Falmouth, Massachusetts. A revised application was received on December 15, 2020. NMFS deemed that request to be adequate and complete on February 1, 2021. A notice of a proposed IHA was published in the **Federal Register** on March 1, 2021 (85 FR 11930). After publication of the proposed IHA Mayflower determined that they needed to add an additional export cable

route corridor to their survey plan. Mayflower originally had proposed two separate but parallel export cable routes that would run north from the Lease Area between Martha's Vineyard and Nantucket islands through Nantucket Sound to a landfall location in Falmouth, MA. As part of the modification, Mayflower plans to eliminate the easternmost export cable corridor route between Martha's Vineyard and Nantucket and replace it with an export cable corridor route that runs south of Martha's Vineyard through Narragansett Bay to an unspecified landfall location in the Bay. The westernmost export cable route corridor to Falmouth, MA remains unchanged from the initial proposed IHA. Therefore, a final IHA was not issued and Mayflower submitted a modified application on April 19, 2021. NMFS published a notice of a modified proposed IHA on May 20, 2021 (86 FR 27393). Mayflower's request was for take of a small number of 14 species of marine mammals by Level B harassment only. Neither Mayflower nor NMFS expects serious injury or mortality to result from this activity and, therefore, an IHA is appropriate.

NMFS previously issued an IHA to Mayflower for similar work (85 FR 45578; July 29, 2020) in the same Lease Area and along the same submarine cable route connected to Falmouth, MA that is effective from July 23, 2020 through July 22, 2021. However, the survey activity conducted under that IHA concluded on October 23, 2020. Mayflower submitted a marine mammal monitoring report and complied with all the requirements (*e.g.*, mitigation, monitoring, and reporting) of the previous IHA. Information regarding their monitoring results may be found in the **Estimated Take** section.

### **Description of the Specified Activity**

Mayflower plans to conduct marine site characterization surveys, including high-resolution geophysical (HRG) and geotechnical surveys, in the area of Commercial Lease of Submerged Lands for Renewable Energy Development on the Outer Continental Shelf #OCS-A 0521 (Lease Area) and along potential submarine cable routes to landfall at Falmouth, Massachusetts and Narragansett Bay.

The objective of the activities is to acquire high resolution geophysical (HRG) and geotechnical data on the bathymetry, seafloor morphology, subsurface geology, environmental/biological sites, seafloor obstructions, soil conditions, and locations of any man-made, historical or archaeological resources within Lease Area OCS-A 0521 which is located approximately 20 nautical miles (38 kilometers (km)) south-southwest of Nantucket, Massachusetts covering approximately 515 km<sup>2</sup> and along the two planned export cable route corridors described above.

The total duration of HRG survey activities would be approximately 471 survey days with a total trackline distance of 14,350 kilometers (km). Each day that a survey vessel is operating counts as a single survey day. This schedule is based on 24-hour operations in the offshore, deep-water portion of the Lease Area, and 12-hour operations in shallow-water and nearshore areas of the export cable routes. Some shallow-water HRG activities will occur only during daylight hours. Mayflower would begin survey activities in July 2021 and conclude operations by December 31, 2021. The IHA is effective for 1 year from the date of issuance.

Underwater sound resulting from Mayflower’s planned activities, specifically certain acoustic sources planned for use during its HRG surveys, has the potential to result in incidental take of marine mammals in the form of behavioral harassment.

The HRG survey activities planned by Mayflower are described in detail in the notice of modified proposed IHA (86 FR 27393; May 20, 2021). Since that time, no changes have been made to the planned HRG survey activities. Therefore, a detailed description is not provided here. Please refer to that **Federal Register** notice for the description of the specific activity. Mitigation, monitoring, and reporting measures are described in detail later in this document (please see **Mitigation** and **Monitoring and Reporting** below). The HRG equipment planned for use is shown in Table 1.

**Table 1–Summary of HRG Survey Equipment Planned for Use that Could Result in Take of Marine Mammals**

Specific HRG Equipment	Operating Frequency	Source Level (dB)	Beamwidth (degrees)	Typical Pulse Duration (ms)	Pulse Repetition rate
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	Range (kHz)	rms)			(Hz)
Sparker					
Geomarine Geo-Spark 400 tip 800 J system	0.01 - 1.9	203	180	3.4	2
Applied Acoustics Dura-Spark UHD 400 tips, up to 800 J	0.01 - 1.9	203	180	3.4	2
Boomer					
Applied Acoustics S-Boom Triple Plate	0.01 – 5	205	61	0.6	3
Applied Acoustics S-Boom	0.01 – 5	195	98	0.9	3
Sub-bottom Profiler					
Edgetech 3100 with SB-2-16S towfish	2 - 16	179	51	9.1	10
Edgetech DW-106	1 - 6	176	66	14.4	10
Teledyne Benthos Chirp III – towfish	2 - 7	199	82	5.8	10
Knudson Pinger SBP	15	180	71	4	2

## Comments and Responses

A notice of NMFS's modified proposal to issue an IHA to Mayflower was published in the **Federal Register** on May 20, 2021 (86 FR 27393). That notice described, in detail, Mayflower's activity, the marine mammal species that may be affected by the activity, and the anticipated effects on marine mammals. During the 30-day comment period, NMFS received comments from a group of environmental non-governmental organizations (ENGOS) including the Natural Resources Defense Council, Conservation Law Foundation, National Wildlife Federation, Defenders of Wildlife, Southern Environmental Law Center, Surfrider Foundation, Mass Audubon, Friends of the Earth, International Fund for Animal Welfare, NY4WHALES, WDC Whale and Dolphin Conservation, Marine Mammal Alliance Nantucket and Gotham Whale.

*Comment 1:* The ENGOS stressed that NMFS must ensure undisturbed access to foraging habitat to adequately protect North Atlantic right whales since North Atlantic right whales

employs a “high-drag” foraging strategy that enables them to selectively target high-density prey patches, but is energetically expensive.

*Response:* NMFS stated in the modified proposed IHA, that part of the Project Area coincides directly with year-round “core” North Atlantic right whale foraging habitat (Oleson *et al.* 2020) south of Martha's Vineyard and Nantucket islands where both visual and acoustic detections of North Atlantic right whales indicate a nearly year-round presence (Oleson *et al.*, 2020). NMFS notes that prey for North Atlantic right whales are mobile and broadly distributed throughout the project area; therefore, North Atlantic right whales are expected to be able to resume foraging once they have moved away from any areas with disturbing levels of underwater noise. There is ample foraging habitat adjacent to the Project Area that is not ensounded by HRG sources. For example, in the fall of 2019 and 2020, North Atlantic right whales were particularly attracted to Nantucket Shoals, located to the east of the Project Area. Furthermore, the spatial acoustic footprint of the survey is very small relative to the spatial extent of the available foraging habitat. Finally, we have established a 500-m shutdown zone for North Atlantic right whales, which is more than three times as large as the greatest Level B harassment isopleth calculated for the specified activities for this IHA.

*Comment 2:* The ENGO's noted that harbor porpoises are particularly sensitive to noise, and, therefore, impacts to this species must be minimized and mitigated to the full extent practicable during offshore wind siting and development activities.

*Response:* Harbor porpoises are classified as high-frequency cetaceans (NMFS 2018) and are the hearing group with the lowest PTS onset thresholds, with maximum susceptibility to frequencies between 20 and 40 kHz (susceptibility decreases with outside this frequency range). However, the largest modeled distance to the Level A harassment threshold of for HF cetaceans was 57 m. Furthermore, this is a conservative assessment given that the model used to determine PTS isopleths treats all devices as impulsive and results in significant overestimates for non-impulsive devices, since PTS onset thresholds are lower for impulsive sources compare to non-

impulsive sources. Level A harassment would also be more likely to occur at close approach to the sound source or as a result of longer duration exposure to the sound source, and mitigation measures—including a 100 m exclusion zone (EZ) for harbor porpoises—are expected to minimize the potential for close approach or longer duration exposure to active HRG sources. In addition, harbor porpoises are known to be behaviorally sensitive species, in that they respond to comparatively lower received levels and are known to avoid vessels and other sound sources and, therefore, harbor porpoises would also be expected to avoid a sound source prior to that source reaching a level that would result in injury (Level A harassment). Therefore, NMFS has determined that take of harbor porpoises or any other animal by Level A harassment is unlikely to occur and has not authorized any such takes. Any takes by Level B harassment are anticipated to be limited to brief startling reactions and/or temporary avoidance of the Project Area. Further, appropriate mitigation measures have been included to ensure the least practicable adverse impact on harbor porpoises and other marine mammal species.

*Comment 3:* The ENGOs recommended that NMFS incorporate additional data sources into calculations of marine mammal density and take and that NMFS must ensure all available data are used to ensure that any potential shifts in North Atlantic right whale habitat usage are reflected in estimations of marine mammal density and take. The ENGOs asserted in general that the density models used by NMFS do not fully reflect the abundance, distribution, and density of marine mammals for the U.S. East Coast and therefore result in an underestimate of take.

*Response:* Habitat-based density models produced by the Duke University Marine Geospatial Ecology Lab (MGEL) (Roberts *et al.* 2016, 2017, 2018, 2020) represent the best available scientific information concerning marine mammal occurrence within the U.S. Atlantic Ocean. Density models were originally developed for all cetacean taxa in the U.S. Atlantic (Roberts *et al.*, 2016); more information, including the model results and supplementary information for each of those models, is available at <https://seamap.env.duke.edu/models/Duke/EC/>. These models provided key improvements over

previously available information, by incorporating additional aerial and shipboard survey data from NMFS and from other organizations collected over the period 1992-2014, incorporating 60 percent more shipboard and 500 percent more aerial survey hours than did previously available models; controlling for the influence of sea state, group size, availability bias, and perception bias on the probability of making a sighting; and modeling density from an expanded set of 8 physiographic and 16 dynamic oceanographic and biological covariates. In subsequent years, certain models have been updated on the basis of additional data as well as methodological improvements. In addition, a new density model for seals was produced as part of the 2017-18 round of model updates.

Of particular note, Roberts *et al.* (2020) further updated density model results for North Atlantic right whales by incorporating additional sighting data and implementing three major changes: increasing spatial resolution, generating monthly estimates on three time periods of survey data, and dividing the study area into 5 discrete regions. This most recent update—model version nine for North Atlantic right whales—was undertaken with the following objectives (Roberts *et al.*, 2020):

- To account for recent changes to right whale distributions, the model should be based on survey data that extend through 2018, or later if possible. In addition to updates from existing collaborators, data should be solicited from two survey programs not used in prior model versions including aerial surveys of the Massachusetts and Rhode Island Wind Energy Areas led by New England Aquarium (Kraus *et al.*, 2016), spanning 2011-2015 and 2017-2018 and recent surveys of New York waters, either traditional aerial surveys initiated by the New York State Department of Environmental Conservation in 2017, or digital aerial surveys initiated by the New York State Energy Research and Development Authority in 2016, or both.
- To reflect a view in the right whale research community that spatiotemporal patterns in right whale density changed around the time the species entered a decline in approximately 2010, consider basing the new model only on recent years, including contrasting



“before” and “after” models that might illustrate shifts in density, as well as a model spanning both periods, and specifically consider which model would best represent right whale density in the near future.

- To facilitate better application of the model to near-shore management questions, extend the spatial extent of the model farther in-shore, particularly north of New York.
- Increase the resolution of the model beyond 10 kilometers (km), if possible.

All of these objectives were met in developing the most recent update to the North Atlantic right whale density model.

As noted above, NMFS has determined that the Roberts *et al.* suite of density models represent the best available scientific information. However, NMFS acknowledges that there may be additional data that is not reflected in the models and that may inform our analyses, whether because the data were not available to the model authors or because the data is more recent than the latest model version for a specific taxon.

The ENGOs pointed to additional data that can be obtained from sightings databases, passive acoustic monitoring efforts, aerial surveys, and autonomous vehicles. The ENGO’s pointed specifically to monthly standardized marine mammal aerial surveys flown in the Massachusetts and Rhode Island and Massachusetts Wind Energy Areas by the New England Aquarium from October 2018 through August 2019 and March 2020 through July 2021. The 2018-2019 New England Aquarium study showed North Atlantic right whales were primarily found to the east of the Project Area although, distribution changed seasonally. There was only one North Atlantic right whale sighted in the Lease Area while limited numbers were found north of the Lease Area in the export cable corridor route occurring between Martha’s Vineyard and Nantucket heading to a landfall location in Falmouth, MA. Sightings of north Atlantic right whales occurred in these areas only during the spring while Mayflower plans to conduct operations from June 2021 to December 31, 2021. Information on the results from the 2020-2021 aerial survey was unavailable at the time of the issuance of the final IHA. The commenters

also referenced a study funded by the Bureau of Offshore Energy Management (BOEM) using an autonomous vehicle for real-time acoustical monitoring of marine mammals from December 2019 through March 2020 and again from December 2020 through February 2021 on Cox Ledge, located approximately 35 miles east of Montauk Point, New York between Block Island and Martha's Vineyard. Note that only a small portion of BOEM's acoustic study area overlapped with Mayflower's export cable corridor route running to Narraganset Bay. Between November 15, 2020 and February 26, 2021 (103 days) North Atlantic right whales were acoustically detected on 19 days and possibly detected on an additional 12 days. Most of these detections and possible detections occurred south of Mayflower's planned export cable corridor route outside of the Project Area. No North Atlantic right whales were detected in BOEM's study area between March 25, 2021 and June 29, 2021 (96 days). The data from these recent studies does not indicate that NMFS should employ seasonal restrictions or alter any of the required mitigation and monitoring requirements, particularly as NMFS considers impacts from these types of survey operations to be near de minimis and that Mayflower will not be conducting survey operations during the spring. It would be difficult to draw any qualitative conclusions from these study results given that most of the observations and detections occurred outside of Mayflower's Project Area.

NMFS will review any other recommended data sources that become available to evaluate their applicability in a quantitative sense (*e.g.*, to an estimate of take numbers) and, separately, to ensure that relevant information is considered qualitatively when assessing the impacts of the specified activity on the affected species or stocks and their habitat. NMFS will continue to use the best available scientific information, and we welcome future input from interested parties on data sources that may be of use in analyzing the potential presence and movement patterns of marine mammals, including North Atlantic right whales, in U.S. Atlantic waters.

While the ENGO's referenced additional data, no specific recommendations were made with regard to use of this information in informing the take estimates. Rather, the commenters suggested that NMFS should "collate and integrate these and more recent data sets to more accurately reflect marine mammal presence for future IHAs and other work." NMFS would welcome in the future constructive suggestions as to how these objectives might be more effectively accomplished. NMFS used the best scientific information available at the time the analyses for the proposed and modified proposed IHAs were conducted, and has considered all available data, including sources referenced by the commenters, in reaching its determinations in support of issuance of the IHA requested by Mayflower.

*Comment 4:* The ENGOs recommended that NMFS require the implementation of seasonal restrictions on site characterization activities that have the potential to injure or harass the North Atlantic right whale from December 1, 2021 through April 30, 2022. The ENGOs further note that they consider source levels greater than 180 dB re 1  $\mu$ Pa (SPL) at 1-meter at frequencies between 7 Hz and 35 kHz to be potentially harmful to low-frequency cetaceans.

*Response:* NMFS is concerned about the status of the North Atlantic right whale, given that a UME has been in effect for this species since June of 2017 and that there have been a number of recent mortalities. NMFS appreciates the value of seasonal restrictions under some circumstances. However, in this case, we have determined seasonal restrictions are not warranted since NMFS considers impacts from these types of survey operations to be near *de minimis*. NMFS, however, is requiring Mayflower to comply with restrictions associated with identified seasonal management areas (SMAs) and they must comply with dynamic management areas (DMAs), if any DMAs are established near the Project Area. Furthermore, we have established a 500-m shutdown zone for North Atlantic right whales, which is more than three times as large as the greatest Level B harassment isopleth calculated for the specified activities for this IHA (141 m). Take estimation conservatively assumes that these acoustic sources will operate on all survey days although it is probable that Mayflower will only use sparkers on a subset of survey days,

and on the remaining days utilize HRG equipment with considerably smaller Level B harassment isopleths. Therefore, the number of Level B harassment takes is likely an overestimate. Finally, significantly shortening Mayflower's work season is impracticable given the number of survey days planned for the specified activity for this IHA.

It is unclear how the commenters determined that source levels greater than 180 dB re 1  $\mu$ Pa (SPL) are potentially harmful to low-frequency cetaceans. NMFS historically applied a received level (not source level) root mean square (rms) threshold of 180 dB SPL as the potential for marine mammals to incur PTS (i.e., Level A (injury) harassment); however, in 2016, NMFS published its *Technical Guidance for Assessing the Effects of Anthropogenic Sound on Marine Mammal Hearing* which updated the 180 dB SPL Level A harassment threshold. Since that time, NMFS has been applying dual threshold criteria based on both peak and a weighted (to account for marine mammal hearing) cumulative sound exposure level. NMFS released a revised version of the Technical Guidance in 2018. We encourage the ENGOs to review the Technical Guidance available at <https://www.fisheries.noaa.gov/national/marine-mammal-protection/marine-mammal-acoustic-technical-guidance> to inform future reviews of any proposed IHA on which they may wish to comment. As described in the Estimated Take section, NMFS has established a PTS (Level A harassment) threshold of 183 dB cumulative SEL for low frequency specialists, and a right whale would need to approach within 2 meters of the source to potentially incur PTS from the largest source.

*Comment 5:* The ENGOs recommended that NMFS should prohibit the commencement of geophysical surveys at night to maximize the probability that marine mammals are detected and confirmed clear of the EZ. The commenters asserted that initiation of work should occur with ramp-up, only during daylight hours.

*Response:* NMFS acknowledges the limitations inherent in detection of marine mammals at night. However, no injury is expected to result even in the absence of mitigation, given the characteristics of the sources planned for use (supported by the very small estimated Level A

harassment zones). The ENGOs do not provide any support for the apparent contention that injury is a potential outcome of these activities. Regarding Level B harassment, any potential impacts would be limited to short-term behavioral responses, as described in greater detail herein. The commenters establish that the status of North Atlantic right whales in particular is precarious. NMFS agrees in general with the discussion of this status provided by the commenters. Note that NMFS considers impacts from this category of survey operations to be near de minimis, with the potential for Level A harassment for any species to be discountable and the severity of Level B harassment (and, therefore, the impacts of the take event on the affected individual), if any, to be low. NMFS is also requiring Mayflower to deploy two PSOs during nighttime hours who must have access to night-vision equipment (*i.e.*, night-vision goggles and/or infrared technology). Given these factors, NMFS does not believe that there is a need for more restrictive mitigation requirements.

Restricting surveys in the manner suggested by the commenters may reduce marine mammal exposures by some degree in the short term, but would not result in any significant reduction in either intensity or duration of noise exposure. Vessels would also potentially be on the water for an extended time introducing noise into the marine environment. The restriction recommended by the commenters could result in the surveys spending increased time on the water, which may result in greater overall exposure to sound for marine mammals; thus the commenters have not demonstrated that such a requirement would result in a net benefit. Furthermore, restricting the applicant to begin operations only during daylight hours would have the potential to result in lengthy shutdowns of the survey equipment, which could result in the applicant failing to collect the data they have determined is necessary and, subsequently, the need to conduct additional surveys the following year. This would result in significantly increased costs incurred by the applicant. Thus, the restriction suggested by the commenters would not be practicable for the applicant to implement. In consideration of the likely effects of the activity on marine mammals absent mitigation, potential unintended consequences of the

measures as proposed by the commenters, and practicability of the recommended measures for the applicant, NMFS has determined that restricting operations as recommended is not warranted or practicable in this case.

*Comment 6:* Based on the assertion that the 160 dB threshold for behavioral harassment is not supported by best available scientific information and grossly underestimates Level B take, the ENGOs recommended that NMFS establish an EZ of 1,000 m around each vessel conducting activities with noise levels that they assert could result in injury or harassment to North Atlantic right whales, and a minimum EZ of 500 m for all other large whale species and strategic stocks of small cetaceans.

*Response:* NMFS disagrees with this recommendation and the assertion that the 160 dB threshold for behavioral harassment is not supported by best available scientific information and grossly underestimates take by Level B harassment.

Regarding the 160-dB threshold, NMFS acknowledges that the 160-dB rms step-function approach is simplistic, and that an approach reflecting a more complex probabilistic function may more effectively represent the known variation in responses at different levels due to differences in the receivers, the context of the exposure, and other factors. The commenters suggested that our use of the 160-dB threshold implies that we do not recognize the science indicating that animals may react in ways constituting behavioral harassment when exposed to lower received levels (RL). However, we do recognize the potential for Level B harassment at exposures to RLs below 160 dB rms, in addition to the potential that animals exposed to RLs above 160 dB rms will not respond in ways constituting behavioral harassment (*e.g.*, Malme *et al.*, 1983, 1984, 1985, 1988; McCauley *et al.*, 1998, 2000a, 2000b; Barkaszi *et al.*, 2012; Stone, 2015a; Gailey *et al.*, 2016; Barkaszi and Kelly, 2018). These comments appear to evidence a misconception regarding the concept of the 160-dB threshold. While it is correct that in practice it works as a step-function, *i.e.*, animals exposed to RLs above the threshold are considered to be “taken” and those exposed to levels below the threshold are not, it is in fact intended as a sort of

mid-point of likely behavioral responses (which are extremely complex depending on many factors including species, noise source, individual experience, and behavioral context). What this means is that, conceptually, the function recognizes that some animals exposed to levels below the threshold will in fact react in ways that are appropriately considered take, while others that are exposed to levels above the threshold will not. Use of the 160-dB threshold allows for a simplistic quantitative estimate of take, while we can qualitatively address the variation in responses across different RLs in our discussion and analysis.

As behavioral responses to sound depend on the context in which an animal receives the sound, including the animal's behavioral mode when it hears sounds, prior experience, additional biological factors, and other contextual factors, defining sound levels that disrupt behavioral patterns is extremely difficult. Even experts have not previously been able to suggest specific new criteria due to these difficulties (*e.g.*, Southall *et al.* 2007; Gomez *et al.*, 2016).

Regarding the shutdown zone recommendation, we note that the 500-m EZ for North Atlantic right whales exceeds the modeled distance to the largest 160-dB Level B harassment isopleth distance (141 m) by a factor of more than three. Given that calculated Level B harassment isopleths are likely conservative, and NMFS considers impacts from HRG survey activities to be near *de minimis*, a 100-m shutdown for other marine mammal species (including large whales and strategic stocks of small cetaceans) is sufficiently protective to effect the least practicable adverse impact on those species and stocks.

*Comment 7:* The ENGOs recommended that Mayflower must employ a minimum of four protected species observers (PSOs) following a two-on, two-off rotation, each responsible for scanning no more than 180° of the horizon during both daylight and nighttime hours. The commenters also recommended that infrared equipment should be during daylight hours to maximize the probability of detection of marine mammals.

*Response:* NMFS typically requires that a single PSO must be stationed at the highest vantage point and engaged in general 360-degree scanning during daylight hours. Although

NMFS acknowledges that the single PSO cannot reasonably maintain observation of the entire 360-degree area around the vessel, it is reasonable to assume that the single PSO engaged in continual scanning of such a small area (*i.e.*, 500-m EZ, which is greater than the maximum 141-m harassment zone) will be successful in detecting marine mammals that are available for detection at the surface. The monitoring reports submitted to NMFS have demonstrated that PSOs active only during daylight operations are able to detect marine mammals and implement appropriate mitigation measures. Nevertheless, as night vision technology has continued to improve, NMFS has adapted its practice, and two PSOs are required to be on duty at night. As the ENGOs noted, NMFS has included a requirement in the final IHA that night-vision equipment (*i.e.*, night-vision goggles with thermal clip-ons and infrared/thermal imaging technology) must be available for use. Under the issued IHA, survey operators are not required to provide PSOs with infrared devices during the day but observers are not prohibited from employing them. Given that use of infrared devices for detecting marine mammals during the day has been shown to be helpful under certain conditions, NMFS will consider requiring them to be made accessible for daytime PSOs

*Comment 8:* The ENGOs recommended that NMFS should require passive acoustic monitoring (PAM) at all times, both day and night, to maximize the probability of detection for North Atlantic right whales, and other protected species and stocks.

*Response:* The foremost concern expressed by the ENGOs in making the recommendation to require use of PAM is with regard to North Atlantic right whales. However, the commenters do not explain why they expect that PAM would be effective in detecting vocalizing mysticetes. It is generally well-accepted fact that, even in the absence of additional acoustic sources, using a towed passive acoustic sensor to detect baleen whales (including right whales) is not typically effective because the noise from the vessel, the flow noise, and the cable noise are in the same frequency band and will mask the vast majority of baleen whale calls. Vessels produce low-frequency noise, primarily through propeller cavitation, with main energy



in the 5-300 Hertz (Hz) frequency range. Source levels range from about 140 to 195 decibel (dB) re 1  $\mu$ Pa (micropascal) at 1 m (NRC, 2003; Hildebrand, 2009), depending on factors such as ship type, load, and speed, and ship hull and propeller design. Studies of vessel noise show that it appears to increase background noise levels in the 71-224 Hz range by 10-13 dB (Hatch *et al.*, 2012; McKenna *et al.*, 2012; Rolland *et al.*, 2012). PAM systems employ hydrophones towed in streamer cables approximately 500 m behind a vessel. Noise from water flow around the cables and from strumming of the cables themselves is also low-frequency and typically masks signals in the same range. Experienced PAM operators participating in a recent workshop (Thode *et al.*, 2017) emphasized that a PAM operation could easily report no acoustic encounters, depending on species present, simply because background noise levels rendered any acoustic detection impossible. The same workshop report stated that a typical eight-element array towed 500 m behind a vessel could be expected to detect delphinids, sperm whales, and beaked whales at the required range, but not baleen whales, due to expected background noise levels (including seismic noise, vessel noise, and flow noise).

There are several additional reasons why we do not agree that use of PAM is warranted for 24-hour HRG surveys. While NMFS agrees that PAM can be an important tool for augmenting detection capabilities in certain circumstances, its utility in further reducing impact during HRG survey activities is limited. First, for this activity, the area expected to be ensonified above the Level B harassment threshold is relatively small (a maximum of 141 m)—this reflects the fact that, to start with, the source level is comparatively low and the intensity of any resulting impacts would be lower level and, further, it means that inasmuch as PAM will only detect a portion of any animals exposed within a zone, the overall probability of PAM detecting an animal in the harassment zone is low—together these factors support the limited value of PAM for use in reducing take with smaller zones. PAM is only capable of detecting animals that are actively vocalizing, while many marine mammal species vocalize infrequently or during certain activities, which means that only a subset of the animals within the range of the PAM would be

detected (and potentially have reduced impacts). Additionally, localization and range detection can be challenging under certain scenarios. For example, odontocetes are fast moving and often travel in large or dispersed groups which makes localization difficult.

Given that the effects to marine mammals from the types of surveys authorized in this IHA are expected to be limited to low level behavioral harassment even in the absence of mitigation, the limited additional benefit anticipated by adding this detection method (especially for right whales and other low frequency cetaceans, species for which PAM has limited efficacy), and the cost and impracticability of implementing a full-time PAM program, we have determined the current requirements for visual monitoring are sufficient to ensure the least practicable adverse impact on the affected species or stocks and their habitat.

*Comment 9:* The ENGOs recommended that NMFS should require Mayflower to select sub-bottom profiling systems for survey activities, and operate those systems at power settings that achieve the lowest practicable source level for the objective.

*Response:* Wind energy developers selected the equipment necessary during HRG surveys to achieve their objectives. As part of the analysis for all HRG IHAs, NMFS evaluated the effects expected as a result of use of this equipment, made the necessary findings, and imposed mitigation requirements sufficient to achieve the least practicable adverse impact on the affected species and stocks of marine mammals. It is not within NMFS' purview to make judgments regarding what constitutes the "lowest practicable source level" for an operator's survey objectives.

*Comment 10:* The ENGOs recommended that NMFS require all offshore wind energy related project vessels operating within or transiting to/from survey areas, regardless of size, to observe a 10-knot speed restriction during the entire survey period.

*Response:* NMFS does not concur with these measures. NMFS has analyzed the potential for ship strike resulting from various HRG activities and has determined that the mitigation measures specific to ship strike avoidance are sufficient to avoid the potential for ship strike.

These include: a requirement that all vessel operators comply with 10 knot (18.5 km/hour) or less speed restrictions in any established DMA or SMA; a requirement that all vessel operators reduce vessel speed to 10 knots (18.5 km/hour) or less when any large whale, mother/calf pairs, pods, or large assemblages of non-delphinid cetaceans are observed within 100 m of an underway vessel; a requirement that all survey vessels maintain a separation distance of 500 m or greater from any sighted North Atlantic right whale; a requirement that, if underway, vessels must steer a course away from any sighted North Atlantic right whale at 10 knots or less until the 500 m minimum separation distance has been established; a requirement that all vessels must maintain a minimum separation distance of 100 m from sperm whales and all other baleen whales; and a requirement that all vessels must, to the maximum extent practicable, attempt to maintain a minimum separation distance of 50 m from all other marine mammals, with an understanding that at times this may not be possible (*e.g.*, for animals that approach the vessel). We have determined that the ship strike avoidance measures are sufficient to ensure the least practicable adverse impact on species or stocks and their habitat. Furthermore, no documented vessel strikes have occurred for any marine site characterization survey activities which were issued IHAs from NMFS.

*Comment 11:* The ENGOs recommend that NMFS develop a robust and effective near real-time monitoring and mitigation system for North Atlantic right whales and other endangered and protected species that will be more responsive to the ongoing dynamic species distributional shifts resulting from climate change, as well as provide more flexibility to developers during offshore wind energy development.

*Response:* NMFS is generally supportive of this concept. A network of near real-time baleen whale monitoring devices are active or have been tested in portions of New England and Canadian waters. These systems employ various digital acoustic monitoring instruments which have been placed on autonomous platforms including slocum gliders, wave gliders, profiling floats and moored buoys. Systems that have proven to be successful will likely see increased use

as operational tools for many whale monitoring and mitigation applications. The ENGOs cited the NMFS publication “Technical Memorandum NMFS-OPR-64: North Atlantic Right Whale Monitoring and Surveillance: Report and Recommendations of the National Marine Fisheries Service's Expert Working Group” which is available at: <https://www.fisheries.noaa.gov/resource/document/north-atlantic-right-whale-monitoring-and-surveillance-report-and-recommendations>. This report summarizes a workshop NMFS convened to address objectives related to monitoring North Atlantic right whales and presents the Expert Working Group's recommendations for a comprehensive monitoring strategy to guide future analyses and data collection. Among the numerous recommendations found in the report, the Expert Working Group encouraged the widespread deployment of auto-buoys to provide near real-time detections of North Atlantic right whale calls that visual survey teams can then respond to for collection of identification photographs or biological samples.

*Comment 12:* The ENGOs state that NMFS must not issue renewal IHAs since the process is contrary to statutory requirements.

*Response:* NMFS' IHA renewal process meets all statutory requirements. In prior responses to comments about IHA Renewals (e.g., 84 FR 52464; October 02, 2019 and 85 FR 53342, August 28, 2020), NMFS has explained how the renewal process, as implemented, is consistent with the statutory requirements contained in section 101(a)(5)(D) of the MMPA, provides additional efficiencies beyond the use of abbreviated notices, and, further, promotes NMFS' goals of improving conservation of marine mammals and increasing efficiency in the MMPA compliance process. Therefore, we intend to continue implementing the renewal process.

The notice of the modified proposed IHA published in the **Federal Register** on May 20, 2021 (86 FR 86 FR 27393) made clear that the agency was seeking comment on the modified proposed IHA and the potential issuance of a renewal for this project. Because any renewal is limited to another year of identical or nearly identical activities in the same location or the same activities that were not completed within the 1-year period of the initial IHA, reviewers have the

information needed to effectively comment on both the immediate proposed IHA and a possible 1-year renewal, should the IHA holder choose to request one in the coming months.

While there would be additional documents submitted with a renewal request, for a qualifying renewal these would be limited to documentation that NMFS would make available and use to verify that the activities are identical to those in the initial IHA, are nearly identical such that the changes would have either no effect on impacts to marine mammals or decrease those impacts, or are a subset of activities already analyzed and authorized but not completed under the initial IHA. NMFS would also need to confirm, among other things, that the activities would occur in the same location; involve the same species and stocks; provide for continuation of the same mitigation, monitoring, and reporting requirements; and that no new information has been received that would alter the prior analysis. The renewal request would also contain a preliminary monitoring report, in order to verify that effects from the activities do not indicate impacts of a scale or nature not previously analyzed. The additional 15-day public comment period provides the public an opportunity to review these few documents, provide any additional pertinent information and comment on whether they think the criteria for a renewal have been met. Between the initial 30-day comment period on these same activities and the additional 15 days, the total comment period for a renewal is 45 days.

### **Changes from the Modified Proposed IHA to Final IHA**

There were no changes made between the modified proposed IHA and the final IHA.

### **Description of Marine Mammals in the Area of the Specified Activities**

Sections 3 and 4 of the application summarize available information regarding status and trends, distribution and habitat preferences, and behavior and life history, of the potentially affected species. Additional information regarding population trends and threats may be found in NMFS's Stock Assessment Reports (SARs; <https://www.fisheries.noaa.gov/national/marine-mammal-protection/marine-mammal-stock-assessments>) and more general information about

these species (*e.g.*, physical and behavioral descriptions) may be found on NMFS's website (<https://www.fisheries.noaa.gov/find-species>).

Table 2 lists all species or stocks for which take is expected and authorized for this action, and summarizes information related to the population or stock, including regulatory status under the MMPA and ESA and potential biological removal (PBR), where known. For taxonomy, NMFS follows Committee on Taxonomy (2020). PBR is defined by the MMPA as the maximum number of animals, not including natural mortalities, that may be removed from a marine mammal stock while allowing that stock to reach or maintain its optimum sustainable population (as described in NMFS's SARs). While no mortality is anticipated or authorized here, PBR and annual serious injury and mortality from anthropogenic sources are included here as gross indicators of the status of the species and other threats.

Marine mammal abundance estimates presented in this document represent the total number of individuals that make up a given stock or the total number estimated within a particular study or Project Area. NMFS's stock abundance estimates for most species represent the total estimate of individuals within the geographic area, if known, that comprises that stock. For some species, this geographic area may extend beyond U.S. waters. All managed stocks in this region are assessed in NMFS's U.S. Atlantic SARs. All values presented in Table 2 are the most recent available at the time of publication and are available in the 2019 Atlantic and Gulf of Mexico Marine Mammal SARs (Hayes *et al.*, 2020), available online at: [www.fisheries.noaa.gov/national/marine-mammal-protection/marine-mammal-stock-assessment-reports-region](http://www.fisheries.noaa.gov/national/marine-mammal-protection/marine-mammal-stock-assessment-reports-region) and draft 2020 Atlantic and Gulf of Mexico Marine Mammal SARs available online at: <https://www.fisheries.noaa.gov/national/marine-mammal-protection/draft-marine-mammal-stock-assessment-reports>.

**Table 2—Marine Mammals Likely to Occur in the Project Area That May be Affected by Mayflower's Planned Activity**

Common name	Scientific name	Stock	ESA/MMPA status; Strategic (Y/N) <sup>1</sup>	Stock abundance (CV, N <sub>min</sub> , most recent abundance survey) <sup>2</sup>	PBR <sup>3</sup>	Annual M/SI <sup>3</sup>
Order Cetartiodactyla – Cetacea – Superfamily Mysticeti (baleen whales)						
Family Balaenidae						
North Atlantic right whale	<i>Eubalaena glacialis</i>	Western North Atlantic	E/D; Y	412 (0; 408; 2018)	0.89	18.6
Family Balaenopteridae (rorquals)						
Humpback whale	<i>Megaptera novaeangliae</i>	Gulf of Maine	-/-; Y	1,393 (0; 1,375; 2016)	22	58
Fin whale	<i>Balaenoptera physalus</i>	Western North Atlantic	E/D; Y	6,820 (0.24; 5,573; 2016)	12	2.35
Sei whale	<i>Balaenoptera borealis</i>	Nova Scotia	E/D; Y	6292 (1.02; 3,098; 2016)	6.2	1.2
Minke whale	<i>Balaenoptera acutorostrata</i>	Canadian East Coast	-/-; N	21,968 (0.31; 17,002; 2016)	170	10.6
Superfamily Odontoceti (toothed whales, dolphins, and porpoises)						
Family Physeteridae						
Sperm whale	<i>Physeter macrocephalus</i>	NA	E; Y	4,349 (0.28; 3,451; See SAR)	3.9	0
Family Delphinidae						
Long-finned pilot whale	<i>Globicephala melas</i>	Western North Atlantic	-/-; N	39,215 (0.3; 30,627; See SAR)	306	21
Bottlenose dolphin	<i>Tursiops truncatus</i>	Western North Atlantic Offshore	-/-; N	62,851 (0.213; 51,914; See SAR)	519	28
Common dolphin	<i>Delphinus delphis</i>	Western North Atlantic	-/-; N	172,897 (0.21; 145,216; 2016)	1,452	399
Atlantic white-sided dolphin	<i>Lagenorhynchus acutus</i>	Western North Atlantic	-/-; N	92,233 (0.71; 54,433; See SAR)	544	26
Risso's dolphin	<i>Grampus griseus</i>	Western North Atlantic	-/-; N	35,493 (0.19; 30,289; See SAR)	303	54.3
Family Phocoenidae (porpoises)						
Harbor porpoise	<i>Phocoena phocoena</i>	Gulf of Maine/Bay of Fundy	-/-; N	95,543 (0.31; 74,034; 2016)	851	217
Order Carnivora – Superfamily Pinnipedia						
Family Phocidae (earless seals)						
Gray seal <sup>4</sup>	<i>Halichoerus grypus</i>	Western North Atlantic	-/-; N	27,131 (0.19;	1,389	4,729

				23,158, 2016)		
Harbor seal	<i>Phoca vitulina</i>	Western North Atlantic	-/-; N	75,834 (0.15; 66,884, 2012)	2,006	350

<sup>1</sup> - Endangered Species Act (ESA) status: Endangered (E), Threatened (T)/MMPA status: Depleted (D). A dash (-) indicates that the species is not listed under the ESA or designated as depleted under the MMPA. Under the MMPA, a strategic stock is one for which the level of direct human-caused mortality exceeds PBR or which is determined to be declining and likely to be listed under the ESA within the foreseeable future. Any species or stock listed under the ESA is automatically designated under the MMPA as depleted and as a strategic stock.

<sup>2</sup> - NMFS marine mammal stock assessment reports online at: <https://www.fisheries.noaa.gov/national/marine-mammal-protection/marine-mammal-stock-assessment-reports-region/>. CV is coefficient of variation; Nmin is the minimum estimate of stock abundance. In some cases, CV is not applicable

<sup>3</sup> - Potential biological removal, defined by the MMPA as the maximum number of animals, not including natural mortalities, that may be removed from a marine mammal stock while allowing that stock to reach or maintain its optimum sustainable population size (OSP). Annual M/SI, found in NMFS' SARs, represent annual levels of human-caused mortality plus serious injury from all sources combined (*e.g.*, commercial fisheries, subsistence hunting, ship strike). Annual M/SI values often cannot be determined precisely and is in some cases presented as a minimum value.

<sup>4</sup> - NMFS stock abundance estimate applies to U.S. population only, actual stock abundance is approximately 451,431.

As indicated above, all 14 species (with 14 managed stocks) in Table 2 temporally and spatially co-occur with the planned activity to the degree that take is reasonably likely to occur, and NMFS has authorized such take.

A description of the marine mammals for which take is likely to occur may be found in the documents supporting Mayflower's previous IHA covering Lease Area OCS-A 0521 and potential submarine cable routes (85 FR 45578; July 29, 2020), the same general geographic areas where Mayflower has planned activities for this IHA. The most recent draft SARs data has been included in Table 2.

### **Effects of Specified Activities on Marine Mammals and their Habitat**

The underwater noise from Mayflower's survey activities has the potential to result in take of marine mammals by harassment in the vicinity of the survey area. The **Federal Register** notice for the proposed IHA (86 FR 11930; March 1, 2021) included a discussion of the effects of anthropogenic noise on marine mammals and their habitat. That information and analysis is incorporated by reference into this final IHA determination and is not repeated here; please refer to the notice of proposed IHA (86 FR 11930; March 1, 2021).

### **Estimated Take**



This section provides an estimate of the number of incidental takes authorized through this IHA, which will inform both NMFS' consideration of "small numbers" and the negligible impact determination.

Harassment is the only type of take expected to result from these activities. Except with respect to certain activities not pertinent here, section 3(18) of the MMPA defines "harassment" as any act of pursuit, torment, or annoyance, which (i) has the potential to injure a marine mammal or marine mammal stock in the wild (Level A harassment); or (ii) has the potential to disturb a marine mammal or marine mammal stock in the wild by causing disruption of behavioral patterns, including, but not limited to, migration, breathing, nursing, breeding, feeding, or sheltering (Level B harassment).

Authorized takes would be by Level B harassment only in the form of disruption of behavioral patterns for individual marine mammals resulting from exposure to HRG sources. Based on the nature of the activity and the anticipated effectiveness of the mitigation measures (*i.e.*, EZs and shutdown measures), discussed in detail below in the **Mitigation** section, Level A harassment is neither anticipated nor authorized.

As described previously, no mortality is anticipated or authorized for this activity. Below we describe how the take is estimated.

Generally speaking, we estimate take by considering: (1) acoustic thresholds above which NMFS believes the best available science indicates marine mammals will be behaviorally harassed or incur some degree of permanent hearing impairment; (2) the area or volume of water that will be ensonified above these levels in a day; (3) the density or occurrence of marine mammals within these ensonified areas; and, (4) and the number of days of activities. We note that while these basic factors can contribute to a basic calculation to provide an initial prediction of takes, additional information that can qualitatively inform take estimates is also sometimes available (*e.g.*, previous monitoring results or average group size). Below, we describe the

factors considered here in more detail and present the authorized take.

### *Acoustic Thresholds*

NMFS recommends the use of acoustic thresholds that identify the received level of underwater sound above which exposed marine mammals would be reasonably expected to be behaviorally harassed (equated to Level B harassment) or to incur permanent threshold shift (PTS) of some degree (equated to Level A harassment).

*Level B Harassment for non-explosive sources* – Though significantly driven by received level, the onset of behavioral disturbance from anthropogenic noise exposure is also informed to varying degrees by other factors related to the source (*e.g.*, frequency, predictability, duty cycle), the environment (*e.g.*, bathymetry), and the receiving animals (hearing, motivation, experience, demography, behavioral context) and can be difficult to predict (Southall *et al.*, 2007, Ellison *et al.*, 2012). Based on what the available science indicates and the practical need to use a threshold based on a factor that is both predictable and measurable for most activities, NMFS uses a generalized acoustic threshold based on received level to estimate the onset of behavioral harassment. NMFS predicts that marine mammals are likely to be behaviorally harassed in a manner NMFS considers Level B harassment when exposed to underwater anthropogenic noise above received levels of 120 dB re 1  $\mu$ Pa (rms) for continuous (*e.g.*, vibratory pile-driving, drilling) and above 160 dB re 1  $\mu$ Pa (rms) for non-explosive impulsive (*e.g.*, seismic airguns) or intermittent (*e.g.*, scientific sonar) sources. Mayflower's planned activity includes the use of intermittent sources (geophysical survey equipment), and therefore use of the 160 dB re 1  $\mu$ Pa (rms) threshold is applicable.

*Level A harassment for non-explosive sources* – NMFS' Technical Guidance for Assessing the Effects of Anthropogenic Sound on Marine Mammal Hearing (Version 2.0) (Technical Guidance, 2018) identifies dual criteria to assess auditory injury (Level A harassment) to five different marine mammal groups (based on hearing sensitivity) as a result of exposure to noise from two different types of sources (impulsive or non-impulsive).

Mayflower’s planned activities that could result in take by harassment include the use of impulsive and non-impulsive sources.

Predicted distances to Level A harassment isopleths, which vary based on marine mammal functional hearing groups were calculated. The updated acoustic thresholds for impulsive and non-impulsive sounds contained in the Technical Guidance (NMFS, 2018) were presented as dual metric acoustic thresholds using both cumulative sound exposure level ( $SEL_{cum}$ ) and peak sound pressure level metrics. As dual metrics, NMFS considers onset of PTS (Level A harassment) to have occurred when either one of the two metrics is exceeded (*i.e.*, metric resulting in the largest isopleth). The  $SEL_{cum}$  metric considers both level and duration of exposure, as well as auditory weighting functions by marine mammal hearing group.

These thresholds are provided in Table 3 below. The references, analysis, and methodology used in the development of the thresholds are described in NMFS 2018 Technical Guidance, which may be accessed at: [www.fisheries.noaa.gov/national/marine-mammal-protection/marine-mammal-acoustic-technical-guidance](http://www.fisheries.noaa.gov/national/marine-mammal-protection/marine-mammal-acoustic-technical-guidance).

**Table 3. Thresholds identifying the onset of Permanent Threshold Shift**

Hearing Group	PTS Onset Acoustic Thresholds* (Received Level)	
	Impulsive	Non-impulsive
Low-Frequency (LF) Cetaceans	<i>Cell 1</i> $L_{pk,flat}$ : 219 dB $L_{E,LF,24h}$ : 183 dB	<i>Cell 2</i> $L_{E,LF,24h}$ : 199 dB
Mid-Frequency (MF) Cetaceans	<i>Cell 3</i> $L_{pk,flat}$ : 230 dB $L_{E,MF,24h}$ : 185 dB	<i>Cell 4</i> $L_{E,MF,24h}$ : 198 dB
High-Frequency (HF) Cetaceans	<i>Cell 5</i> $L_{pk,flat}$ : 202 dB $L_{E,HF,24h}$ : 155 dB	<i>Cell 6</i> $L_{E,HF,24h}$ : 173 dB
Phocid Pinnipeds (PW) (Underwater)	<i>Cell 7</i> $L_{pk,flat}$ : 218 dB $L_{E,PW,24h}$ : 185 dB	<i>Cell 8</i> $L_{E,PW,24h}$ : 201 dB
Otariid Pinnipeds (OW) (Underwater)	<i>Cell 9</i> $L_{pk,flat}$ : 232 dB $L_{E,OW,24h}$ : 203 dB	<i>Cell 10</i> $L_{E,OW,24h}$ : 219 dB

\* Dual metric acoustic thresholds for impulsive sounds: Use whichever results in the largest isopleth for calculating PTS onset. If a non-impulsive sound has the potential of exceeding the peak sound pressure level thresholds associated with impulsive sounds, these thresholds should also be considered.

Note: Peak sound pressure ( $L_{pk}$ ) has a reference value of 1  $\mu\text{Pa}$ , and cumulative sound exposure level ( $L_{E}$ ) has a reference value of 1  $\mu\text{Pa}^2\text{s}$ . In this Table, thresholds are abbreviated to reflect American National Standards Institute standards (ANSI 2013). However, peak sound pressure is defined by ANSI as incorporating frequency weighting, which is not the intent for this Technical Guidance. Hence, the subscript “flat” is being included to indicate peak sound pressure should be flat weighted or unweighted within the generalized hearing range. The subscript associated with cumulative sound exposure level thresholds indicates the designated marine mammal auditory weighting function (LF, MF, and HF cetaceans, and PW and OW pinnipeds) and that the recommended accumulation period is 24 hours. The cumulative sound exposure level thresholds could be exceeded in a multitude of ways (i.e., varying exposure levels and durations, duty cycle). When possible, it is valuable for action proponents to indicate the conditions under which these acoustic thresholds will be exceeded.

### *Ensonified Area*

Here, we describe operational and environmental parameters of the activity that will feed into identifying the area ensonified above the acoustic thresholds, which include source levels and transmission loss coefficient.

The planned survey activities would entail the use of HRG equipment. The distance to the isopleth corresponding to the threshold for Level B harassment was calculated for all HRG equipment with the potential to result in harassment of marine mammals. NMFS has developed methodology for determining the rms sound pressure level ( $\text{SPL}_{\text{rms}}$ ) at the 160-dB isopleth for the purposes of estimating take by Level B harassment resulting from exposure to HRG survey equipment. This methodology incorporates frequency and some directionality to refine estimated ensonified zones. Mayflower used this methodology. For sources that operate with different beam widths, the maximum beam width was used. The lowest frequency of the source was used when calculating the absorption coefficient. The formulas used to apply the methodology are described in detail in Appendix A of the IHA application.

NMFS considers the data provided by Crocker and Fratantonio (2016) to represent the best available information on source levels associated with HRG equipment and therefore recommends that source levels provided by Crocker and Fratantonio (2016) be incorporated in the method described above to estimate isopleth distances to the Level B harassment threshold.

Table 1 shows the HRG equipment types that may be used during the planned surveys and the sound levels associated with those HRG equipment.

**Table 4—Estimated Distances to Level A and Level B harassment Thresholds for the Planned Survey Equipment**

Representative System(s)	Distance (m) to Level A Harassment Threshold <sup>1</sup>					Distance to Level B Harassment Threshold (m)
	LFC	MFC	HFC	PPW	OPW	All Marine Mammals
Sparker						
SIG ELC 820 @ 750 J	1	<1	4 <sup>2</sup>	<1	<1	141
Sub-bottom Profiler						
Teledyne Benthos Chirp III	2	<1	57	1	<1	66
Boomer						
Applied Acoustics S-boom @ 700 J	<1	<1	1 <sup>2</sup>	<1	<1	90

1— Distances to the Level A harassment threshold based on the larger of the dual criteria (peak SPL and SEL<sub>cum</sub>) are shown.

2—Peak SPL pressure level resulted in larger isopleth than SEL<sub>cum</sub>.

NMFS has determined that the potential for take by Level A harassment is so low as to be discountable and has not authorized take by Level A harassment of any mammals. This determination is based on the modeling of distances to Level A harassment thresholds which resulted in small isopleths. This modeling was performed for all types of HRG equipment planned for use with the potential to result in harassment of marine mammals. Rather than repeat the description of the model here, NMFS refers the reader to the notice of modified proposed IHA published in the **Federal Register** (86 FR 27393; May 20, 2021). Note that there is one species (harbor porpoise) within the high frequency functional hearing group that may be impacted by the planned activities. However, the largest modeled distance to the Level A harassment threshold for the high frequency functional hearing group was 57 m (Table 4) for the Chirp III. This is likely a conservative assessment given that the JASCO model treats all devices

as impulsive and results in gross overestimates for non-impulsive devices. Level A harassment would also be more likely to occur at close approach to the sound source or as a result of longer duration exposure to the sound source, and mitigation measures—including a 100 m EZ zone for harbor porpoises—are expected to minimize the potential for close approach or longer duration exposure to active HRG sources. In addition, harbor porpoises are a notoriously shy species which is known to avoid vessels. Harbor porpoises would also be expected to avoid a sound source prior to that source reaching a level that would result in injury (Level A harassment). Therefore, NMFS has determined that take of harbor porpoises or any other animal is unlikely to occur.

The largest distance to the 160 dB SPL<sub>rms</sub> Level B harassment threshold is expected to be 141 m from the sparkers. This distance was used as described in this section to estimate the area of water potentially exposed above the Level B harassment threshold by the planned activities.

Up to 14,350 km of survey activity may occur from April through November 2021, including turns between lines or occasional testing of equipment while not collecting geophysical data. For the purposes of calculating take, Mayflower's HRG survey activities have been split into two different areas, 1) the lease area plus the deep-water portion of the cable route, and 2) the shallow water portion of the cable route including very shallow water sections of the cable route.

Within the Lease Area and deep-water portion of the cable route, the vessel will conduct surveys at a speed of approximately 3 knots (5.6 km/hr) during mostly 24-hr operations. Allowing for weather and equipment downtime, the survey vessel is expected to collect geophysical data over an average distance of 80 km per day. Using a 160 dB SPL<sub>rms</sub> threshold distance of 141 m, the total daily ensonified area is estimated to be 282.8 km<sup>2</sup> within the Lease Area and deep-water portion of the cable route.

Along the shallow-water portion of the cable route, survey vessels will also conduct surveys at a speed of approximately 3 knots (5.6 km/hr) during either daylight only or 24-hour

operations. Survey operations in very shallow water will occur only during daylight hours. Allowing for weather and equipment downtime, the survey vessels are expected to cover an average distance of approximately 30–60 km per day in shallow waters and only 15 km per day in very shallow waters. Assuming daylight only operations and 30 km per day of surveys in shallow waters results in slightly larger ensonified area estimates. Distributing the 3,250 km of survey data to be collected in shallow waters and the 4,100 km to be collected in very shallow waters across the 7-month period of anticipated activity results in approximately 15.5 and 39 survey days per month in shallow and very-shallow waters, respectively. Using a 160 dB SPL<sub>rms</sub> threshold distance of 141 m, the total daily ensonified area in shallow waters is estimated to be 8.5 km<sup>2</sup>, and in very-shallow waters 4.3 km<sup>2</sup>. Combined, these result in an average monthly ensonified area in the combined shallow water survey areas of 299.5 km<sup>2</sup>.

#### *Marine Mammal Occurrence*

In this section NMFS provides the information about the presence, density, or group dynamics of marine mammals that will inform the take calculations. Note that Mayflower submitted a partial marine mammal monitoring report under the existing IHA (85 FR 45578; July 39, 2020) which included the first 90 days of survey work. A total of 415 individual identifiable marine mammals from six species were observed within the predicted Level B harassment zone while an HRG source was active. These observations included one humpback whale, two minke whales, two sei whales, three bottlenose dolphins and 405 common dolphins. There were also two unidentified seal observations. An additional 24 unidentified dolphins and one unidentified whale were observed inside the estimated Level B harassment zone but those observations could not be identified to the species level. All mitigation and monitoring requirements were followed and Mayflower did not exceed authorized take limits for any species.

Density estimates for all species except North Atlantic right whale within the deep and shallow portions of the survey areas were derived from habitat-based density modeling results reported by Roberts *et al.* (2016, 2017, 2018). Those data provide abundance estimates for

species or species guilds within 10 km x 10 km grid cells (100 km<sup>2</sup>) on a monthly or annual basis, depending on the species. In order to select a representative sample of grid cells in and near the survey areas, a 10-km wide perimeter around the lease area and an 8-km wide perimeter around the cable routes were created in GIS (ESRI 2017). The perimeters were then used to select grid cells near the survey areas containing the most recent monthly or annual estimates for each species in the Roberts *et al.* (2016, 2017, 2018) data. The average monthly abundance for each species in each survey area was calculated as the mean value of the grid cells within each survey area in each month and then converted to density (individuals / 1 km<sup>2</sup>) by dividing by 100 km<sup>2</sup> (Table 5, Table 6).

The estimated monthly densities of North Atlantic right whales were based on updated model results from Roberts *et al.* (2020). These updated data for North Atlantic right whales are provided as densities (individuals/1 km<sup>2</sup>) within 5 km x 5 km grid cells (25 km<sup>2</sup>) on a monthly basis. The same GIS process described above was used to select the appropriate grid cells from each month and the monthly North Atlantic right whales density in each survey area was calculated as the mean value of the grid cells within each survey area as shown in Table 5 and Table 6.

The estimated monthly density of seals provided in Roberts *et al.* (2018) includes all seal species present in the region as a single guild. Mayflower did not separate this guild into the individual species based on the proportion of sightings identified to each species within the dataset because so few of the total sightings used in the Roberts *et al.* (2018) analysis were actually identified to species (Table 5, Table 6).

Marine mammal densities from Roberts *et al.* (2018) data in areas immediately adjacent to the coast and within Nantucket Sound were used when calculating potential takes from survey activities within Narragansett Bay. This is a conservative approach since there have only been a few reported sightings of marine mammal species, besides seals, within Narragansett Bay (Raposa 2009).



For comparison purposes and to account for local variation not captured by the predicted densities provided by Roberts *et al.* (2016, 2017, 2018, 2020), Protected Species Observers (PSOs) data from Mayflower’s 2020 HRG surveys were analyzed to assess the appropriateness of the density-based take calculations. To do this, the total number of individual marine mammals sighted by PSOs within 150 m of a sound source (rounding up from the 141-m Level B harassment distance) from April 19 through September 19, 2020, a period of 23 weeks, were summed by species or “unidentified” species group when sightings were not classified to the species level. As a conservative approach, all sightings were included in this calculation regardless of whether the source was operating at the time. In order to include the “unidentified” individuals in the species-specific calculations, the number of individuals in each unidentified species group (*e.g.*, unidentified whale) was then added to the sums of the known species within that group (*e.g.*, humpback whale, fin whale, etc.) according to the proportion of individuals within that group positively identified to the species level. With individuals from “unidentified” species sightings proportionally distributed among the species, Mayflower then divided the total number of individuals of each species by the number of survey weeks to calculate the average number of individuals of each species sighted within 150 m of the sound sources per week during the surveys. See section 6.4 in application for additional detail.

Mayflower currently plans for its survey activities to be concluded in December 2021. If survey activities extend beyond December 2021, the monthly densities for the marine mammals listed below may change, potentially affecting take values. In that situation, Mayflower would need to contact NMFS to determine a path forward to ensure that they remain in compliance with the MMPA.

**Table 5—Average Monthly Densities for species that may occur in the Lease Area and along the Deep-Water Section of the Cable Route During the Planned Survey Period**

Species	Jun	Jul	Aug	Sep	Oct	Nov	Dec
<i>Mysticetes</i>							
Fin Whale	0.0025	0.0025	0.0024	0.0020	0.0013	0.0011	0.0012
Humpback Whale	0.0012	0.0013	0.0009	0.0020	0.0015	0.0005	0.0006

Minke Whale	0.0018	0.0007	0.0005	0.0005	0.0005	0.0003	0.0004
North Atlantic Right Whale	0.0002	0.0000	0.0000	0.0000	0.0001	0.0005	0.0028
Sei Whale	0.0002	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<i>Odontocetes</i>							
Atlantic White-Sided Dolphin	0.0449	0.0318	0.0180	0.0183	0.0234	0.0249	0.0317
Common Bottlenose Dolphin	0.0267	0.0585	0.0483	0.0546	0.0459	0.0223	0.0136
Harbor Porpoise	0.0133	0.0088	0.0080	0.0067	0.0081	0.0267	0.0260
Pilot Whales	0.0046	0.0046	0.0046	0.0046	0.0046	0.0046	0.0046
Risso's Dolphin	0.0001	0.0003	0.0006	0.0005	0.0002	0.0002	0.0004
Short-Beaked Common Dolphin	0.0410	0.0432	0.0747	0.1187	0.1280	0.0903	0.1563
Sperm Whale	0.0001	0.0003	0.0003	0.0001	0.0001	0.0001	0.0000
<i>Pinnipeds</i>							
Seals (Harbor and Gray)	0.0322	0.0078	0.0041	0.0054	0.0085	0.0091	0.0345

**Table 6—Average Monthly Densities for Species that may Occur Along the Shallow-Water Section of the Cable Route During the Planned Survey Period**

Species	Jun	Jul	Aug	Sep	Oct	Nov	Dec
<i>Mysticetes</i>							
Fin Whale	0.0003	0.0003	0.0003	0.0003	0.0002	0.0001	0.0001
Humpback Whale	0.0001	0.0001	0.0000	0.0001	0.0002	0.0001	0.0017
Minke Whale	0.0002	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
North Atlantic Right Whale*	0.0000	0.0000	0.0000	0.0000	0.0000	0.0001	0.0005
Sei Whale*	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<i>Odontocetes</i>							
Atlantic White-Sided Dolphin	0.0010	0.0006	0.0005	0.0008	0.0014	0.0011	0.0006
Common Bottlenose Dolphin	0.2308	0.4199	0.3211	0.3077	0.1564	0.0813	0.0174
Harbor Porpoise	0.0048	0.0023	0.0037	0.0036	0.0003	0.0214	0.0253
Pilot Whales	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Risso's Dolphin	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Short-Beaked Common Dolphin	0.0003	0.0002	0.0006	0.0009	0.0008	0.0010	0.0006
Sperm Whale	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<i>Pinnipeds</i>							
Seal (Harbor and Gray)	0.2496	0.0281	0.0120	0.0245	0.0826	0.5456	1.3589

### *Take Calculation and Estimation*

Here NMFS describes how the information provided above is brought together to produce a quantitative take estimate.

The potential numbers of takes by Level B harassment were calculated by multiplying the monthly density for each species in each survey area shown in Table 5 and Table 6 by the respective monthly ensonified area within each survey area. The results are shown in the

“Calculated Take” columns of Table 7. The survey area estimates were then summed to produce the “Total Density-based Calculated Take” and then rounded up to arrive at the number of “Density-based Takes” for each species (Table 7).

To account for potential local variation in animal presence compared to the predicted densities, the average weekly number of individuals for each species observed within 150 m of the HRG survey sound sources in 2020, regardless of their operational status at the time were multiplied by the anticipated 32-week survey period in 2021. These results are shown in the “Sightings-based Takes” column of Table 7. The larger of the take estimates from the density-based and sightings-based methods are shown in the “Take” column, except as noted below.

Based on density and sightings data for the modified Project Area, Mayflower modified its take authorization request and NMFS concurred with its modification. Accordingly, NMFS has authorized the following take reductions by Level B harassment as part of the issued IHA: 37 to 33 humpback whale takes; 15 to 14 minke whale takes; 85 to 57 Atlantic white-sided dolphin takes; 2,153 to 1,969 common dolphin takes; 61 to 46 harbor porpoise takes; and 989 to 718 seal takes. The number of authorized takes by Level B harassment for bottlenose dolphins has been increased from 483 to 536.

The differences in requested take for four species (Atlantic white-sided dolphin, common bottlenose dolphin, harbor porpoise, and seals) resulted from a combination of different monthly densities as well as a different monthly ensonified area being applied to those densities. The same calculations were performed for all species, so the relative changes in the requested take for these species was driven by the amount of change in monthly densities for each species. The densities changed between applications for two reasons, 1) the survey area location was changed to include the alternative cable route and 2) the months in which the activity will occur were shifted later in the year, from April - November to June – December. The various combinations of changes to these factors resulted in different relative changes to the requested takes for these four species.

For the other three species (*i.e.* humpback whale, minke whale, common dolphin) take calculated based on Roberts *et al.* densities was considerably lower than observed numbers of animals during the 2020 surveys. Therefore, the numbers of observations per week were considered more representative of the area densities. For humpback whale, the requested take in the original proposed IHA was based on the average weekly sightings rate from 2020 PSO observations (1.04 humpback whales/week). The reduction in the authorized take is a result of the shortened overall length of the activity from 35 weeks to 32 weeks. For minke whale, the average weekly sightings rate from 2020 PSO observations (0.43 minke whales/week) reduced authorized take due to shortened overall length of the activity (from 35 weeks to 32 weeks). The same reduction in authorized take of common dolphin was similarly based on the average weekly sightings rate from 2020 PSO observations (61.52 common dolphins/week) and the decreased overall length of the activity. The reduction in the requested take is a result of the shortened overall length of the activity (from 35 weeks to 32 weeks).

Using the best available density data (Roberts *et al.* 2016, 2017, 2018, 2020), Mayflower requested and NMFS has authorized 57 takes of white-sided dolphin, 536 takes of bottlenose dolphin and 46 harbor porpoise takes by Level B harassment. For six species, humpback whale, North Atlantic right whale, sei whale, pilot whales, Risso's dolphin, and sperm whale the authorized take column reflects a rounding up of three times the mean group size calculated from survey data in this region (Kraus *et al.* 2016; Palka *et al.* 2017). Three times the group size was used rather than a single group size to account for more than one chance encounter with these species during the surveys.

NFMS concurred with this assessment and, therefore, has authorized take by Level B harassment of 9 North Atlantic right whales, 6 fin whales, 6 sei whales, 27 pilot whales, 18 Risso's dolphins and 6 sperm whales. The authorized take numbers for these species remains unchanged from the original proposed IHA.

The authorized number of takes by Level B harassment as a percentage of the “best available” abundance estimates provided in the most recent NMFS draft Stock Assessment Reports (Hayes *et al.* 2020) are also provided in Table 7. For the seal guild, the estimated abundance for both gray and harbor seals was summed in Table 7. Mayflower requested and NMFS has authorized 718 incidental takes of harbor and gray seal by Level B harassment.

Bottlenose dolphins encountered in the survey area would likely belong to the Western North Atlantic Offshore Stock (Hayes *et al.* 2020). However, it is possible that a few animals encountered during the surveys could be from the North Atlantic Northern Migratory Coastal Stock, but they generally do not range farther north than New Jersey. Also, based on the distributions described in Hayes *et al.* (2020), pilot whale sightings in the survey area would most likely be long-finned pilot whales, although short-finned pilot whales could be encountered in the survey area during the summer months.

For North Atlantic right whales, the implementation of a 500 m EZ means that the likelihood of an exposure to received sound levels greater than 160 dB SPL<sub>rms</sub> is very low. In addition, most of the survey activity will take place during the time of year when North Atlantic right whales are unlikely to be present in this region. Nonetheless, it is possible that North Atlantic right whales could occur within 500 m of the vessel without first being detected PSO, so Mayflower requested and NMFS has authorized take consistent with other species (*i.e.* three times average group size).

**Table 7–Number of Level B Harassment Takes Authorized by NMFS and Percentages of Each Stock Abundance**

	Lease Area + Deep water Cable	Shallow Water Cable	Total Density- based takes	Density Based Takes	Sightings based Takes	Authorized Takes	Abundance	Percent of Stock Abundance
<i>Mysticetes</i>								
Fin Whale	3.7	0.5	4.1	5	1	6	3,006	0.2
Humpback Whale	2.2	0.7	2.9	3	33	33	1,396	2.4
Minke Whale	1.3	0.1	1.5	2	14	14	2,591	0.5
North Atlantic Right Whale	1.0	0.2	1.2	2	0	9	368	2.4
Sei Whale	0.1	0.0	0.1	1	0	6	28	21.4
<i>Odontocetes</i>								
Atlantic White -Sided Dolphin	54.6	1.8	56.4	57	0	57	31,912	0.2
Common Bottlenose Dolphin	76.3	459.6	536.0	536	59	536	62,851	0.9
Harbor Porpoise	27.6	18.4	46.0	46	0	46	75,079	0.1
Pilot Whales	9.2	0.0	9.2	10	17	27	68,139	0.0
Risso’s Dolphin	0.7	0.0	0.7	1	0	18	35,493	0.1
Short-Beaked Common Dolphin	184.5	1.3	185.8	186	1,969	1,969	80,227	2.5
Sperm Whale	0.3	0.0	0.3	1	0	6	4,349	0.1
<i>Pinnipeds</i>								
Seals (Harbor and Gray)	28.7	689.2	718.0	718	141	718	102,965	0.7

## **Mitigation**

In order to issue an IHA under section 101(a)(5)(D) of the MMPA, NMFS must set forth the permissible methods of taking pursuant to the activity, and other means of effecting the least practicable impact on the species or stock and its habitat, paying particular attention to rookeries, mating grounds, and areas of similar significance, and on the availability of the species or stock for taking for certain subsistence uses (latter not applicable for this action). NMFS regulations require applicants for incidental take authorizations to include information about the availability and feasibility (economic and technological) of equipment, methods, and manner of conducting the activity or other means of effecting the least practicable adverse impact upon the affected species or stocks and their habitat (50 CFR 216.104(a)(11)).

In evaluating how mitigation may or may not be appropriate to ensure the least practicable adverse impact on species or stocks and their habitat, as well as subsistence uses where applicable, NMFS carefully considers two primary factors:

(1) The manner in which, and the degree to which, the successful implementation of the measure(s) is expected to reduce impacts to marine mammals, marine mammal species or stocks, and their habitat. This considers the nature of the potential adverse impact being mitigated (likelihood, scope, range). It further considers the likelihood that the measure will be effective if implemented (probability of accomplishing the mitigating result if implemented as planned), the likelihood of effective implementation (probability implemented as planned), and;

(2) The practicability of the measures for applicant implementation, which may consider such things as cost, and impact on operations.

### *Marine Mammal Exclusion Zones and Harassment Zones*

NMFS is requiring Mayflower to implement the following mitigation measures during Mayflower's planned marine site characterization surveys.

Marine mammal EZs would be established around the HRG survey equipment and monitored by protected species observers (PSO) during HRG surveys as follows:

- A 500-m EZ would be required for North Atlantic right whales during use of all acoustic sources; and
- 100 m EZ for all marine mammals, with certain exceptions specified below, during operation of impulsive acoustic sources (boomer and/or sparker).

If a marine mammal is detected approaching or entering the EZs during the HRG survey, the vessel operator would adhere to the shutdown procedures described below to minimize noise impacts on the animals. These stated requirements will be included in the site-specific training to be provided to the survey team.

#### *Pre-Clearance of the Exclusion Zones*

Mayflower will implement a 30-minute pre-clearance period of the EZs prior to the initiation of ramp-up of HRG equipment. During this period, the EZ will be monitored by the PSOs, using the appropriate visual technology. Ramp-up may not be initiated if any marine mammal(s) is within its respective EZ. If a marine mammal is observed within an EZ during the pre-clearance period, ramp-up may not begin until the animal(s) has been observed exiting its respective EZ or until an additional time period has elapsed with no further sighting (*i.e.*, 15 minutes for small odontocetes and seals, and 30 minutes for all other species).

#### *Ramp-Up of Survey Equipment*

When technically feasible, a ramp-up procedure will be used for HRG survey equipment capable of adjusting energy levels at the start or restart of survey activities. The ramp-up procedure will be used at the beginning of HRG survey activities in order to provide additional protection to marine mammals near the Project Area by allowing them to vacate the area prior to the commencement of survey equipment operation at full power.

A ramp-up will begin with the powering up of the smallest acoustic HRG equipment at its lowest practical power output appropriate for the survey. When technically feasible, the power will then be gradually turned up and other acoustic sources would be added.



Ramp-up activities will be delayed if a marine mammal(s) enters its respective EZ. Ramp-up will continue if the animal has been observed exiting its respective EZ or until an additional time period has elapsed with no further sighting (*i.e.*, 15 minutes for small odontocetes and seals and 30 minutes for all other species).

Activation of survey equipment through ramp-up procedures may not occur when visual observation of the pre-clearance zone is not expected to be effective (*i.e.*, during inclement conditions such as heavy rain or fog).

#### *Shutdown Procedures*

An immediate shutdown of the impulsive HRG survey equipment is required if a marine mammal is sighted entering or within its respective EZ. The vessel operator must comply immediately with any call for shutdown by the Lead PSO. Any disagreement between the Lead PSO and vessel operator should be discussed only after shutdown has occurred. Subsequent restart of the survey equipment can be initiated if the animal has been observed exiting its respective EZ or until an additional time period has elapsed (*i.e.*, 30 minutes for all other species).

If a species for which authorization has not been granted, or, a species for which authorization has been granted but the authorized number of takes have been met, approaches or is observed within the Level B harassment zone (48 m, non-impulsive; 141 m impulsive), shutdown will occur.

If the acoustic source is shut down for reasons other than mitigation (*e.g.*, mechanical difficulty) for less than 30 minutes, it may be activated again without ramp-up if PSOs have maintained constant observation and no detections of any marine mammal have occurred within the respective EZs. If the acoustic source is shut down for a period longer than 30 minutes and PSOs have maintained constant observation, then pre-clearance and ramp-up procedures will be initiated as described in the previous section.

The shutdown requirement would be waived for small delphinids of the following genera: *Delphinus*, *Lagenorhynchus*, *Stenella*, and *Tursiops* and seals. Specifically, if a delphinid from the specified genera or a pinniped is visually detected approaching the vessel (*i.e.*, to bow ride) or towed equipment, shutdown is not required. Furthermore, if there is uncertainty regarding identification of a marine mammal species (*i.e.*, whether the observed marine mammal(s) belongs to one of the delphinid genera for which shutdown is waived), PSOs must use best professional judgement in making the decision to call for a shutdown. Additionally, shutdown is required if a delphinid or pinniped detected in the EZ and belongs to a genus other than those specified.

#### *Vessel Strike Avoidance*

Mayflower will ensure that vessel operators and crew maintain a vigilant watch for cetaceans and pinnipeds and slow down or stop their vessels to avoid striking these species. Survey vessel crew members responsible for navigation duties will receive site-specific training on marine mammals sighting/reporting and vessel strike avoidance measures. Vessel strike avoidance measures would include the following, except under circumstances when complying with these requirements would put the safety of the vessel or crew at risk:

- Vessel operators and crews must maintain a vigilant watch for all protected species and slow down, stop their vessel, or alter course, as appropriate and regardless of vessel size, to avoid striking any protected species. A visual observer aboard the vessel must monitor a vessel strike avoidance zone based on the appropriate separation distance around the vessel (distances stated below). Visual observers monitoring the vessel strike avoidance zone may be third-party observers (*i.e.*, PSOs) or crew members, but crew members responsible for these duties must be provided sufficient training to 1) distinguish protected species from other phenomena and 2) broadly to identify a marine mammal as a right whale, other whale (defined in this

context as sperm whales or baleen whales other than right whales), or other marine mammal.

- All vessels (*e.g.*, source vessels, chase vessels, supply vessels), regardless of size, must observe a 10-knot speed restriction in specific areas designated by NMFS for the protection of North Atlantic right whales from vessel strikes including SMAs and DMAs when in effect;
- All vessels greater than or equal to 19.8 m in overall length operating from November 1 through April 30 will operate at speeds of 10 knots or less while transiting to and from Project Area;
- All vessels must reduce their speed to 10 knots or less when mother/calf pairs, pods, or large assemblages of cetaceans are observed near a vessel.
- All vessels must maintain a minimum separation distance of 500 m from right whales. If a whale is observed but cannot be confirmed as a species other than a right whale, the vessel operator must assume that it is a right whale and take appropriate action.
- All vessels must maintain a minimum separation distance of 100 m from sperm whales and all other baleen whales.
- All vessels must, to the maximum extent practicable, attempt to maintain a minimum separation distance of 50 m from all other marine mammals, with an understanding that at times this may not be possible (*e.g.*, for animals that approach the vessel).
- When marine mammals are sighted while a vessel is underway, the vessel shall take action as necessary to avoid violating the relevant separation distance (*e.g.*, attempt to remain parallel to the animal's course, avoid excessive speed or abrupt changes in direction until the animal has left the area). If marine mammals are sighted within the relevant separation distance, the vessel must reduce speed and shift the engine to neutral, not engaging the engines until animals are clear of the area. This does not apply to any vessel towing gear or any vessel that is navigationally constrained.

- These requirements do not apply in any case where compliance would create an imminent and serious threat to a person or vessel or to the extent that a vessel is restricted in its ability to maneuver and, because of the restriction, cannot comply.
- Members of the monitoring team will consult NMFS North Atlantic right whale reporting system and Whale Alert, as able, for the presence of North Atlantic right whales throughout survey operations, and for the establishment of a DMA. If NMFS should establish a DMA in the Lease Areas during the survey, the vessels will abide by speed restrictions in the DMA.

Project-specific training will be conducted for all vessel crew prior to the start of a survey and during any changes in crew such that all survey personnel are fully aware and understand the mitigation, monitoring, and reporting requirements. Prior to implementation with vessel crews, the training program will be provided to NMFS for review and approval. Confirmation of the training and understanding of the requirements will be documented on a training course log sheet. Signing the log sheet will certify that the crew member understands and will comply with the necessary requirements throughout the survey activities.

Based on our evaluation of the applicant's proposed measures, as well as other measures considered by NMFS, we have determined that the required mitigation measures provide the means of effecting the least practicable impact on marine mammal species or stocks and their habitat, paying particular attention to rookeries, mating grounds, and areas of similar significance.

### **Monitoring and Reporting**

In order to issue an IHA for an activity, section 101(a)(5)(D) of the MMPA states that NMFS must set forth requirements pertaining to the monitoring and reporting of such taking. The MMPA implementing regulations at 50 CFR 216.104 (a)(13) indicate that requests for authorizations must include the suggested means of accomplishing the necessary monitoring and reporting that will result in increased knowledge of the species and of the level of taking or

impacts on populations of marine mammals that are expected to be present in the planned action area. Effective reporting is critical both to compliance as well as ensuring that the most value is obtained from the required monitoring.

Monitoring and reporting requirements prescribed by NMFS should contribute to improved understanding of one or more of the following:

- Occurrence of marine mammal species or stocks in the area in which take is anticipated (*e.g.*, presence, abundance, distribution, density).
- Nature, scope, or context of likely marine mammal exposure to potential stressors/impacts (individual or cumulative, acute or chronic), through better understanding of: (1) action or environment (*e.g.*, source characterization, propagation, ambient noise); (2) affected species (*e.g.*, life history, dive patterns); (3) co-occurrence of marine mammal species with the action; or (4) biological or behavioral context of exposure (*e.g.*, age, calving or feeding areas).
- Individual marine mammal responses (behavioral or physiological) to acoustic stressors (acute, chronic, or cumulative), other stressors, or cumulative impacts from multiple stressors.
- How anticipated responses to stressors impact either: (1) long-term fitness and survival of individual marine mammals; or (2) populations, species, or stocks.
- Effects on marine mammal habitat (*e.g.*, marine mammal prey species, acoustic habitat, or other important physical components of marine mammal habitat).
- Mitigation and monitoring effectiveness.

### *Monitoring Measures*

Visual monitoring will be performed by qualified, NMFS-approved PSOs, the resumes of whom will be provided to NMFS for review and approval prior to the start of survey activities. Mayflower would employ independent, dedicated, trained PSOs, meaning that the PSOs must 1) be employed by a third-party observer provider, 2) have no tasks other than to conduct observational effort, collect data, and communicate with and instruct relevant vessel crew with

regard to the presence of marine mammals and mitigation requirements (including brief alerts regarding maritime hazards), and 3) have successfully completed an approved PSO training course appropriate for their designated task. On a case-by-case basis, non-independent observers may be approved by NMFS for limited, specific duties in support of approved, independent PSOs on smaller vessels with limited crew capacity operating in nearshore waters.

The PSOs will be responsible for monitoring the waters surrounding each survey vessel to the farthest extent permitted by sighting conditions, including EZs, during all HRG survey operations. PSOs will visually monitor and identify marine mammals, including those approaching or entering the established EZs during survey activities. It will be the responsibility of the Lead PSO on duty to communicate the presence of marine mammals as well as to communicate the action(s) that are necessary to ensure mitigation and monitoring requirements are implemented as appropriate.

During all HRG survey operations (*e.g.*, any day on which use of an HRG source is planned to occur), a minimum of one PSO must be on duty during daylight operations on each survey vessel, conducting visual observations at all times on all active survey vessels during daylight hours (*i.e.*, from 30 minutes prior to sunrise through 30 minutes following sunset). Two PSOs will be on watch during nighttime operations. The PSO(s) would ensure 360° visual coverage around the vessel from the most appropriate observation posts and would conduct visual observations using binoculars and/or night vision goggles and the naked eye while free from distractions and in a consistent, systematic, and diligent manner. PSOs may be on watch for a maximum of four consecutive hours followed by a break of at least two hours between watches and may conduct a maximum of 12 hours of observation per 24-hour period. In cases where multiple vessels are surveying concurrently, any observations of marine mammals would be communicated to PSOs on all nearby survey vessels.

Vessels conducting HRG survey activities in very-shallow waters using shallow-draft vessels are very limited in the number of personnel that can be onboard. In such cases, one visual

PSO will be onboard and the vessel captain (or crew member on watch) will conduct observations when the PSO is on required breaks. All vessel crew conducting PSO watches will receive training in monitoring and mitigation requirements and species identification necessary to reliably carry out the mitigation requirements. Given the small size of these vessels, the PSO would effectively remain available to confirm sightings and any related mitigation measures while on break.

PSOs must be equipped with binoculars and have the ability to estimate distance and bearing to detect marine mammals, particularly in proximity to EZs. Reticulated binoculars must also be available to PSOs for use as appropriate based on conditions and visibility to support the sighting and monitoring of marine mammals. During nighttime operations, night-vision goggles with thermal clip-ons and infrared technology would be used. Position data would be recorded using hand-held or vessel GPS units for each sighting.

During good conditions (*e.g.*, daylight hours; Beaufort sea state (BSS) 3 or less), to the maximum extent practicable, PSOs will also conduct observations when the acoustic source is not operating for comparison of sighting rates and behavior with and without use of the active acoustic sources. Any observations of marine mammals by crew members aboard any vessel associated with the survey will be relayed to the PSO team.

Data on all PSO observations will be recorded based on standard PSO collection requirements. This will include dates, times, and locations of survey operations; dates and times of observations, location and weather; details of marine mammal sightings (*e.g.*, species, numbers, behavior); and details of any observed marine mammal behavior that occurs (*e.g.*, noted behavioral disturbances).

### *Reporting Measures*

Within 90 days after completion of survey activities or expiration of this IHA, whichever comes sooner, a final technical report will be provided to NMFS that fully documents the methods and monitoring protocols, summarizes the data recorded during monitoring, summarizes

the number of marine mammals observed during survey activities (by species, when known), summarizes the mitigation actions taken during surveys (including what type of mitigation and the species and number of animals that prompted the mitigation action, when known), and provides an interpretation of the results and effectiveness of all mitigation and monitoring. Any recommendations made by NMFS must be addressed in the final report prior to acceptance by NMFS. All draft and final marine mammal and acoustic monitoring reports must be submitted to *PR.ITP.MonitoringReports@noaa.gov*. The report must contain, at minimum, the following:

- PSO names and affiliations;
- Dates of departures and returns to port with port name;
- Dates and times (Greenwich Mean Time) of survey effort and times corresponding with PSO effort;
- Vessel location (latitude/longitude) when survey effort begins and ends; vessel location at beginning and end of visual PSO duty shifts;
- Vessel heading and speed at beginning and end of visual PSO duty shifts and upon any line change;
- Environmental conditions while on visual survey (at beginning and end of PSO shift and whenever conditions change significantly), including wind speed and direction, Beaufort sea state, Beaufort wind force, swell height, weather conditions, cloud cover, sun glare, and overall visibility to the horizon;
- Factors that may be contributing to impaired observations during each PSO shift change or as needed as environmental conditions change (*e.g.*, vessel traffic, equipment malfunctions); and
- Survey activity information, such as type of survey equipment in operation, acoustic source power output while in operation, and any other notes of significance (*i.e.*, pre-clearance survey, ramp-up, shutdown, end of operations, etc.)

If a marine mammal is sighted, the following information should be recorded:



- Watch status (sighting made by PSO on/off effort, opportunistic, crew, alternate vessel/platform);
- PSO who sighted the animal;
- Time of sighting;
- Vessel location at time of sighting;
- Water depth;
- Direction of vessel's travel (compass direction);
- Direction of animal's travel relative to the vessel;
- Pace of the animal;
- Estimated distance to the animal and its heading relative to vessel at initial sighting;
- Identification of the animal (*e.g.*, genus/species, lowest possible taxonomic level, or unidentified); also note the composition of the group if there is a mix of species;
- Estimated number of animals (high/low/best) ;
- Estimated number of animals by cohort (adults, yearlings, juveniles, calves, group composition, etc.);
- Description (as many distinguishing features as possible of each individual seen, including length, shape, color, pattern, scars or markings, shape and size of dorsal fin, shape of head, and blow characteristics);
- Detailed behavior observations (*e.g.*, number of blows, number of surfaces, breaching, spyhopping, diving, feeding, traveling; as explicit and detailed as possible; note any observed changes in behavior);
- Animal's closest point of approach and/or closest distance from the center point of the acoustic source;
- Platform activity at time of sighting (*e.g.*, deploying, recovering, testing, data acquisition, other); and

- Description of any actions implemented in response to the sighting (*e.g.*, delays, shutdown, ramp-up, speed or course alteration, etc.) and time and location of the action.

If a North Atlantic right whale is observed at any time by PSOs or personnel on any project vessels, during surveys or during vessel transit, Mayflower must immediately report sighting information to the NMFS North Atlantic Right Whale Sighting Advisory System: (866) 755-6622. North Atlantic right whale sightings in any location may also be reported to the U.S. Coast Guard via channel 16.

In the event that Mayflower personnel discover an injured or dead marine mammal, Mayflower would report the incident to the NMFS Office of Protected Resources (OPR) and the NMFS New England/Mid-Atlantic Stranding Coordinator as soon as feasible. The report would include the following information:

- Time, date, and location (latitude/longitude) of the first discovery (and updated location information if known and applicable);
- Species identification (if known) or description of the animal(s) involved;
- Condition of the animal(s) (including carcass condition if the animal is dead);
- Observed behaviors of the animal(s), if alive;
- If available, photographs or video footage of the animal(s); and
- General circumstances under which the animal was discovered.

In the unanticipated event of a ship strike of a marine mammal by any vessel involved in the activities covered by the IHA, Mayflower would report the incident to the NMFS OPR and the NMFS New England/Mid-Atlantic Stranding Coordinator as soon as feasible. The report would include the following information:

- Time, date, and location (latitude/longitude) of the incident;
- Species identification (if known) or description of the animal(s) involved;
- Vessel's speed during and leading up to the incident;
- Vessel's course/heading and what operations were being conducted (if applicable);

- Status of all sound sources in use;
- Description of avoidance measures/requirements that were in place at the time of the strike and what additional measures were taken, if any, to avoid strike;
- Environmental conditions (*e.g.*, wind speed and direction, Beaufort sea state, cloud cover, visibility) immediately preceding the strike;
- Estimated size and length of animal that was struck;
- Description of the behavior of the marine mammal immediately preceding and following the strike;
- If available, description of the presence and behavior of any other marine mammals immediately preceding the strike;
- Estimated fate of the animal (*e.g.*, dead, injured but alive, injured and moving, blood or tissue observed in the water, status unknown, disappeared); and
- To the extent practicable, photographs or video footage of the animal(s)

### **Negligible Impact Analysis and Determination**

NMFS has defined negligible impact as an impact resulting from the specified activity that cannot be reasonably expected to, and is not reasonably likely to, adversely affect the species or stock through effects on annual rates of recruitment or survival (50 CFR 216.103). A negligible impact finding is based on the lack of likely adverse effects on annual rates of recruitment or survival (*i.e.*, population-level effects). An estimate of the number of takes alone is not enough information on which to base an impact determination. In addition to considering estimates of the number of marine mammals that might be “taken” through harassment, NMFS considers other factors, such as the likely nature of any responses (*e.g.*, intensity, duration), the context of any responses (*e.g.*, critical reproductive time or location, migration), as well as effects on habitat, and the likely effectiveness of the mitigation. NMFS also assess the number, intensity, and context of estimated takes by evaluating this information relative to population status. Consistent with the 1989 preamble for NMFS’s implementing regulations (54 FR 40338;

September 29, 1989), the impacts from other past and ongoing anthropogenic activities are incorporated into this analysis via their impacts on the environmental baseline (*e.g.*, as reflected in the regulatory status of the species, population size and growth rate where known, ongoing sources of human-caused mortality, or ambient noise levels).

To avoid repetition, our analysis applies to all the species listed in Table 7 given that NMFS expects the anticipated effects of the planned survey to be similar in nature. Where there are meaningful differences between species or stocks - as in the case of the North Atlantic right whale - they are included as separate subsections below.

NMFS does not anticipate that serious injury or mortality would occur as a result from HRG surveys, even in the absence of mitigation, and no serious injury or mortality is authorized. As discussed in the **Potential Effects of Specified Activity on Marine Mammals and their Habitat** section in the initial notice of proposed IHA (86 FR 11930; March 1, 2021), non-auditory physical effects and vessel strike are not expected to occur. NMFS expects that all potential takes would be in the form of short-term Level B harassment behavioral harassment in the form of temporary avoidance of the area or decreased foraging (if such activity was occurring), reactions that are considered to be of low severity and with no lasting biological consequences (*e.g.*, Southall *et al.*, 2007). Even repeated Level B harassment of some small subset of an overall stock is unlikely to result in any significant realized decrease in viability for the affected individuals, and thus would not result in any adverse impact to the stock as a whole. As described above, Level A harassment is not expected to occur given the nature of the operations, the estimated size of the Level A harassment zones, and the required shutdown zones for certain activities - and is not authorized. The potential effects associated with the addition of the new export cable route extending through Narragansett Bay are similar to those described in the initial notice of proposed IHA (86 FR 11930; March 1, 2021).

In addition to being temporary, the maximum expected harassment zone for the modified proposed IHA is identical to that in the initial proposed IHA with a distance of 141 m per vessel.

Therefore, the ensonified area surrounding each vessel is also identical, and relatively small, compared to the overall distribution of the animals in the area and their use of the habitat. Feeding behavior is not likely to be significantly impacted as prey species are mobile and are broadly distributed throughout the modified Project Area; therefore, marine mammals that may be temporarily displaced during survey activities are expected to be able to resume foraging once they have moved away from areas with disturbing levels of underwater noise. Similar to the initial proposed IHA, given the temporary nature of the disturbance and availability of similar habitat and resources in the surrounding area, the impacts to marine mammals and the food sources that they utilize are not expected to cause significant or long-term consequences for individual marine mammals or their populations in the issued IHA.

Furthermore, the Project Area is located approximately 50 miles west of feeding BIAs for North Atlantic right whales (February-April) and sei whales (May-November) and approximately 40 west of feeding BIAs for humpback whales (March-December) and fin whales (March-October). These were discussed in the previous IHA (85 FR 45578; July 29, 2020) issued for this area. Additionally, the new Narragansett Bay cable route corridor is located just to the north of another fin whale BIA (March-October) south of Martha's Vineyard. Even if whales are feeding outside of the identified feeding BIAs, they are extensive and sufficiently large (705 km<sup>2</sup> and 3,149 km<sup>2</sup> for North Atlantic right whales; 47,701 km<sup>2</sup> for humpback whales; 2,933 km<sup>2</sup> for fin whales; and 56,609 km<sup>2</sup> for sei whales), and the acoustic footprint of the planned survey is sufficiently small, such that feeding opportunities for these whales would not be reduced appreciably. Therefore, under the issued IHA, NMFS does not expect impacts to whales within feeding BIAs to affect the fitness of any large whales. Furthermore, NMFS does not anticipate impacts from the planned survey that would impact the fitness of any individual marine mammals, much less annual rates of recruitment..

There are no rookeries, mating or calving grounds known to be biologically important to marine mammals within the Project Area. Furthermore, there is no designated critical habitat for any ESA-listed marine mammals in the Project Area.

#### *North Atlantic right whales*

The status of the North Atlantic right whale population is of heightened concern and, therefore, merits additional analysis. As noted previously, elevated North Atlantic right whale mortalities began in June 2017 and there is an active UME. Overall, our findings support human interactions, specifically vessel strikes and entanglements, as the cause of death for the majority of North Atlantic right whales. In addition to the right whale feeding BIA located west of the planned Project Area noted above, the Project Area overlaps a migratory corridor BIA for North Atlantic right whales (effective March-April and November-December) that extends from Massachusetts to Florida (LeBrecque *et al.*, 2015). Off the coast of Massachusetts, this migratory BIA extends from the coast to beyond the shelf break. Due to the fact that that the planned survey activities are temporary and the spatial extent of sound produced by the survey would be very small relative to the spatial extent of the available migratory habitat in the BIA, right whale migration is not expected to be impacted by the planned survey. Given the relatively small size of the ensonified area, it is unlikely that prey availability would be adversely affected by HRG survey operations. Required vessel strike avoidance measures will also decrease risk of ship strike during migration; no ship strike is expected to occur during Mayflower's planned activities. Additionally, only very limited take by Level B harassment of North Atlantic right whales has been requested by Mayflower and authorized by NMFS as HRG survey operations are required to maintain a 500-m EZ and shutdown if a North Atlantic right whale is sighted at or within the EZ. The 500-m shutdown zone for North Atlantic right whales is conservative, considering the Level B harassment isopleth for the most impactful acoustic source (*i.e.*, GeoMarine Geo-Source 400 tip sparker) is estimated to be 141 m, and thereby minimizes the

potential for behavioral harassment of this species. As noted previously, Level A harassment is not expected due to the small PTS zones associated with HRG equipment types planned use.

As described previously, North Atlantic right whale presence is increasingly variable in identified core habitats, including the recently identified foraging area south of Martha's Vineyard and Nantucket islands where both visual and acoustic detections of North Atlantic right whales indicate a nearly year-round presence (Oleson *et al.*, 2020). However, prey for North Atlantic right whales are mobile and broadly distributed throughout the Project Area; therefore, North Atlantic right whales are expected to be able to resume foraging once they have moved away from any areas with disturbing levels of underwater noise. In addition, there are no North Atlantic right whale mating or calving areas within the Project Area.

Given the information above, NMFS does not anticipate North Atlantic right whales takes that would result from Mayflower's planned activities would impact the reproduction or survival of any individual North Atlantic right whales, much less annual rates of recruitment or survival. Thus, any takes that occur under the issued IHA would not result in population level impacts for the species.

#### *Other marine mammal species with active UMEs*

As noted in the previous IHA (85 FR 45578; July 29, 2020) there are several active UMEs occurring in the vicinity of Mayflower's Project Area. Elevated humpback whale mortalities have occurred along the Atlantic coast from Maine through Florida since January 2016. Of the cases examined, approximately half had evidence of human interaction (ship strike or entanglement). The UME does not yet provide cause for concern regarding population-level impacts. Despite the UME, the relevant population of humpback whales (the Gulf of Maine humpback whale stock) is characterized by a positive trend in abundance of approximately 2.8 percent (Hayes *et al.* 2020).

Beginning in January 2017, elevated minke whale strandings have occurred along the Atlantic coast from Maine through South Carolina, with highest numbers in Massachusetts,

Maine, and New York. This event does not provide cause for concern regarding population level impacts, as the population abundance is greater than 20,000 whales.

Elevated numbers of harbor seal and gray seal mortalities were first observed in July 2018 and have occurred across Maine, New Hampshire, and Massachusetts. Based on tests conducted so far, the main pathogen found in the seals is phocine distemper virus, although additional testing to identify other factors that may be involved in this UME are underway. The UME does not yet provide cause for concern regarding population-level impacts to any of these stocks. For harbor seals, the population abundance is over 75,000 and annual M/SI (350) is well below PBR (2,006) (Hayes *et al.*, 2020). The population abundance for gray seals in the United States is over 27,000, with an estimated abundance, including seals in Canada, of approximately 505,000. In addition, the abundance of gray seals is likely increasing in the U.S. Atlantic Exclusive Economic Zone as well as in Canada (Hayes *et al.*, 2020).

The required mitigation measures are expected to reduce the number and/or severity of authorized takes for all species listed in Table 7, including those with active UME's to the level of least practicable adverse impact. In particular they would provide animals the opportunity to move away from the sound source throughout the Project Area before HRG survey equipment reaches full energy, thus preventing them from being exposed to sound levels that have the potential to cause injury (Level A harassment) or more severe Level B harassment. No Level A harassment is anticipated, even in the absence of mitigation measures, or authorized by NMFS.

NMFS expects that takes would be in the form of short-term Level B harassment behavioral harassment by way of brief startling reactions and/or temporary vacating of the area, or temporarily decreased foraging (if such activity was occurring)—reactions that (at the scale and intensity anticipated here) are considered to be of low severity, with no lasting biological consequences. Since both the sources and marine mammals are mobile, animals would only be exposed briefly to a small ensonified area that might result in take. Additionally, required



mitigation measures would further reduce exposure to sound that could result in more severe behavioral harassment.

Mayflower's planned HRG survey activities consist of 471 survey days (conducted by up to four survey vessels) and the total trackline distance is 14,350 km, which are identical to the values presented in the initial proposed IHA (86 FR 11930; March 1, 2021) and any effects or impacts are expected to be similar. Note that due to differences in densities in the cable route corridors associated with the initial proposed IHA compared to the issued IHA authorized takes in the issued IHA have been reduced for 6 species (*i.e.*, humpback whale, minke whale, Atlantic white-sided dolphin, common dolphin, harbor porpoise and seal) while authorized take has only increased for one species (*i.e.* bottlenose dolphin).

In summary and as described above, the following factors primarily support our determination that the impacts resulting from this activity are not expected to adversely affect the species or stock through effects on annual rates of recruitment or survival:

- No mortality or serious injury is anticipated or authorized;
- No Level A harassment (PTS) is anticipated, even in the absence of mitigation measures, or authorized;
- Take is anticipated to be limited to Level B behavioral harassment consisting of brief startling reactions and/or temporary avoidance of the Project Area;
- Due to the relatively small footprint of the survey activities in relation to the size of feeding BIAs for North Atlantic right, humpback, fin, and sei whales, the survey activities are not expected to directly affect foraging success of these whale species;
- Foraging success is not likely to be significantly impacted through effects on species that serve as prey species for marine mammals, as effects from the survey are expected to be minimal;

- Alternate areas of nearby similar habitat value will be available for marine mammals that temporarily vacate the Project Area during the planned survey to avoid exposure to sounds from the activity;
- While the Project Area is within areas noted as a migratory BIA for North Atlantic right whales, the activities would occur in such a comparatively small area such that any avoidance of the Project Area due to activities would not affect migration. In addition, mitigation measures to shutdown at 500 m to minimize potential for Level B behavioral harassment would limit any take of the species;
- While the foraging areas south of Martha's Vineyard and Nantucket overlap with the Project Area, prey for North Atlantic right whales are mobile and broadly distributed. Therefore, North Atlantic right whales are expected to be able to resume foraging once they have moved away from any areas with disturbing noise levels, which would be temporary in nature;
- The required mitigation measures, including visual monitoring and shutdowns, are expected to minimize potential impacts to marine mammals; and
- While UMEs are in effect for some species, the take from Mayflower's activities is not expected to impact the reproduction or survival of any individuals of any species, and therefore, is not expected to impact annual rates of recruitment or survival either alone or in combination with the effects of the UMEs.

Based on the analysis contained herein of the likely effects of the specified activity on marine mammals and their habitat, and taking into consideration the implementation of the required monitoring and mitigation measures, NMFS finds that the total marine mammal take from the planned activity will have a negligible impact on all affected marine mammal species or stocks.

### **Small Numbers**

As noted above, only small numbers of incidental take may be authorized under sections 101(a)(5)(A) and (D) of the MMPA for specified activities other than military readiness activities. The MMPA does not define small numbers and so, in practice, where estimated numbers are available, NMFS compares the number of individuals taken to the most appropriate estimation of abundance of the relevant species or stock in our determination of whether an authorization is limited to small numbers of marine mammals. When the predicted number of individuals to be taken is fewer than one third of the species or stock abundance, the take is considered to be of small numbers. Additionally, other qualitative factors may be considered in the analysis, such as the temporal or spatial scale of the activities.

NMFS has authorized incidental take of 14 marine mammal species. The total amount of authorized takes is less than 3 percent for all species and stocks authorized for take except for sei whales (less than 22 percent), which NMFS finds are small numbers of marine mammals relative to the estimated overall population abundances for those stocks. See Table 7. Based on the analysis contained herein of the planned activity (including the required mitigation and monitoring measures) and the anticipated take of marine mammals, NMFS finds that small numbers of marine mammals will be taken relative to the population size of the affected species or stocks.

### **Unmitigable Adverse Impact Analysis and Determination**

There are no relevant subsistence uses of the affected marine mammal stocks or species implicated by this action. Therefore, NMFS has determined that the total taking of affected species or stocks would not have an unmitigable adverse impact on the availability of such species or stocks for taking for subsistence purposes.

### **National Environmental Policy Act**

To comply with the National Environmental Policy Act of 1969 (NEPA; 42 U.S.C. 4321 *et seq.*) and NOAA Administrative Order (NAO) 216-6A, NMFS must review our planned

action (*i.e.*, the issuance of an incidental harassment authorization) with respect to potential impacts on the human environment.

This action is consistent with categories of activities identified in Categorical Exclusion B4 (incidental harassment authorizations with no anticipated serious injury or mortality) of the Companion Manual for NOAA Administrative Order 216-6A, which do not individually or cumulatively have the potential for significant impacts on the quality of the human environment and for which we have not identified any extraordinary circumstances that would preclude this categorical exclusion. Accordingly, NMFS has determined that the issuance of the IHA qualifies to be categorically excluded from further NEPA review.

### **Endangered Species Act (ESA)**

Section 7(a)(2) of the Endangered Species Act of 1973 (16 U.S.C. 1531 *et seq.*) requires that each Federal agency insure that any action it authorizes, funds, or carries out is not likely to jeopardize the continued existence of any endangered or threatened species or result in the destruction or adverse modification of designated critical habitat. To ensure ESA compliance for the issuance of IHAs, NMFS consults internally, in this case with the NMFS Greater Atlantic Regional Fisheries Office (GARFO), whenever we propose to authorize take for endangered or threatened species.

The NMFS Office of Protected Resources is authorizing the incidental take of four species of marine mammals which are listed under the ESA: fin, sei, sperm, and North Atlantic right whales. We requested initiation of consultation under section 7 of the ESA with NMFS GARFO on March 5, 2021, for the issuance of this IHA. On March 5, 2021, NMFS GARFO determined our issuance of the IHA to Mayflower was not likely to adversely affect the North Atlantic right, fin, sei, and sperm whale or the critical habitat of any ESA-listed species or result in the take of any marine mammals in violation of the ESA. GARFO determined that since the issued IHA includes only a small modification to the geographic scope of the survey activities

they previously consulted on and there are no additional effects to listed species anticipated that were not already considered, no additional consultation was necessary.

### **Authorization**

NMFS has issued an IHA to Mayflower for the potential harassment of small numbers of 14 marine mammal species incidental to the conducting marine site characterization surveys offshore of Massachusetts and Rhode Island in the area of the Commercial Lease of Submerged Lands for Renewable Energy Development on the Outer Continental Shelf (OCS-A 0521) and along a potential submarine cable routes to landfall at Falmouth, Massachusetts and Narraganset Bay, provided the previously mentioned mitigation, monitoring and reporting requirements are followed.

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Catherine Marzin,  
Acting Director, Office of Protected Resources,  
National Marine Fisheries Service.