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DEPARTMENT OF COMMERCE

National Oceanic and Atmospheric Administration

RIN 0648-XC228

Takes of Marine Mammals Incidental to Specified Activities; Taking Marine Mammals Incidental to Operation, Maintenance, and Repair of the Northeast Gateway Liquefied Natural Gas Port and the Algonquin Pipeline Lateral Facilities in Massachusetts Bay

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

ACTION: Notice; issuance of an incidental take authorization.

SUMMARY: In accordance with the Marine Mammal Protection Act (MMPA) regulations, notification is hereby given that NMFS has issued an Incidental Harassment Authorization (IHA) to the Northeast Gateway® Energy Bridge™, L.P. (Northeast Gateway or NEG) and Algonquin Gas Transmission, L.L.C. (Algonquin) to take, by harassment, small numbers of 14 species of marine mammals incidental to operating, maintaining, and repairing a liquefied natural gas (LNG) port and the Algonquin Pipeline Lateral (Pipeline Lateral) facilities by NEG and Algonquin, in Massachusetts Bay, between December 22, 2014, through December 21, 2015.

DATES: Effective December 22, 2014, through December 21, 2015.

ADDRESSES: A copy of the original and revised application containing a list of the references used in this document, The Maritime Administration (MARAD), U.S. Coast Guard (USCG) Final Environmental Impact Statement (Final EIS) on the Northeast Gateway Energy Bridge LNG Deepwater Port license application, and other related documents are available for viewing at http://www.nmfs.noaa.gov/pr/permits/incidental.htm#applications.

FOR FURTHER INFORMATION CONTACT: Shane Guan, Office of Protected Resources, NMFS, (301) 427-8401.

Background

Sections 101(a)(5)(A) (D) of the MMPA (16 U.S.C. 1361 et seq.) direct the Secretary of Commerce (Secretary) to allow, upon request, the incidental, but not intentional taking 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 regulations are issued or, if the taking is limited to harassment, a notice of a proposed authorization is provided to the public for review.

An authorization for incidental takings shall be granted if NMFS finds that the taking will have a negligible impact on the species or stock(s), will not have an unmitigable adverse impact on the availability of the species or stock(s) for subsistence uses (where relevant), and if the permissible methods of taking and requirements pertaining to the mitigation, monitoring and reporting of such takings are set forth. NMFS has defined "negligible impact" in 50 CFR 216.103 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."

Section 101(a)(5)(D) of the MMPA established an expedited process by which citizens of the U.S. can apply for a one-year authorization to incidentally take small numbers of marine mammals by harassment, provided that there is no potential for serious injury or mortality to result from the activity. Section 101(a)(5)(D) establishes a 45-day time limit for NMFS review of an application followed by a 30-day public notice and comment period on any proposed authorizations for the incidental harassment of marine mammals. Within 45 days of the close

of the comment period, NMFS must either issue or deny the authorization.

Summary of Request

On January 18, 2013, NMFS received an application from Excelerate and Tetra Tech, on behalf of Northeast Gateway and Algonquin, for an authorization to take 14 species of marine mammals by Level B harassment incidental to operations, maintenance, and repair of an LNG port and the Pipeline Lateral facilities in Massachusetts Bay. They are: North Atlantic right whale, humpback whale, fin whale, sei whale, minke whale, long-finned pilot whale, Atlantic white-sided dolphin, bottlenose dolphin, short-beaked common dolphin, killer whale, Risso's dolphin, harbor porpoise, harbor seal, and gray seal. Since LNG Port and Pipeline Lateral operation, maintenance, and repair activities have the potential to take marine mammals, a marine mammal take authorization under the MMPA is warranted.

In response to the IHA application, NMFS published a Federal Register notice for the proposed IHA on November 18, 2013 (78 FR 69049), which included proposed mitigation and monitoring measures to minimize and monitor potential impacts to marine mammals that could result from the proposed LNG Port and Pipeline Lateral operation, maintenance, and repair activities. After the close of the public comment period, Northeast Gateway notified NMFS that it does not intend to use marine autonomous recording units (MARUs) for long-term passive acoustic monitoring (PAM), as was described in the November 18, 2013, proposed IHA Federal Register notice, the IHA application, and marine mammal monitoring plan, except under certain levels of LNG port activity, and requested NMFS to modify the monitoring measures in the proposed IHA to use alternative acoustic monitoring, with triggers for additional long-term monitoring during higher levels of LNG port activity (which would require reinstallation of MARUs).

Following discussions with NMFS' Office of Protected Resources, the NMFS Greater Atlantic Regional Fisheries Office (GARFO), and National Ocean Service's Stellwagen Bank National Marine Sanctuary, on June 20, 2014, Excelerate and Tetra Tech submitted a revised IHA application with tiered PAM measures corresponding to different levels of LNG Port and Pipeline Lateral operation, maintenance, and repair activities. On October 6, 2014, NMFS published a Federal Register notice (79 FR 60142) for the revised proposed IHA that include updated PAM. No changes was made for the proposed updated PAM as described in the revised proposed IHA. Please refer to Federal Register notices for the proposed IHA (78 FR 69049; November 18, 2013) and the revised proposed IHA (79 FR 60142; October 6, 2014) for a detailed description of the project activities and the updated PAM.

Comments and Responses

A notice of NMFS' proposal to issue an IHA to Northeast Gateway and Algonquin was published in the Federal Register notice on November 18, 2013 (78 FR 69049), and was revised in a second Federal Register notice on October 6, 2014 (79 FR 60142). These notices described, in detail, Northeast Gateway and Algonquin's activities, the marine mammal species that may be affected by the activity, the anticipated effects on marine mammals, and the proposed monitoring, mitigation, and reporting measures.

During the 30-day public comment period for the Federal Register notice published on November 18, 2013, NMFS received two comment letters: one from the Marine Mammal Commission (Commission) and one from the Whale and Dolphin Conservation (WDC) and the Humane Society of the United States (HSUS). During the 30-day public comment period for the Federal Register notice published on October 6, 2014, NMFS received only one comment letter from the Commission. In that comment letter, the Commission states that it believes that the

revised acoustic monitoring measures are justified and, in combination with other previously proposed mitigation and monitoring measures, are sufficient to ensure that NMFS' previous findings and determinations are still valid. All relevant comments are addressed here.

Comment 1: The Commission recommends that NMFS issue the requested authorization, subject to inclusion of the proposed mitigation and monitoring measures.

Response: NMFS concurs with the Commission's recommendation and has included the mitigation and monitoring measures contained in the proposed authorization in the issued IHA.

Comment 2: Citing Mussoline et al. (2012), the WDC and HSUS state that North Atlantic right whales are detected within Massachusetts Bay year round, and therefore NEG's maintenance and repair activities between May 1 and November 30 would have "direct impact" to North Atlantic right whales. In addition, the WDC and HSUS point out that other endangered whale species can also be found in Massachusetts Bay during this time span but they are not mentioned in the IHA application. WDC and HSUS thus conclude that since no lethal take can be authorized, any takes would violate both the MMPA and the Endangered Species Act (ESA).

Response: NMFS does not agree with the WDC and HSUS' assessment on the potential impacts of whales in Massachusetts Bay and their conclusion in regards to lethal takes.

First, Mussoline et al. (2012) used marine autonomous recording units (MARUs) deployed throughout the Stellwagen Bank National Marine Sanctuary (SBNMS, Massachusetts Bay) from January 2006 to February 2007 to study the presence and absence of the North Atlantic right whales in the area by detection of the whale's up-calls. The results showed that although up-calls were detected year round, except during July and August, in the SBNMS area,

calling rates were highest from January through May, peaking in April (Mussoline et al. 2012, Figure 2), suggesting seasonal variation. These seasonal variations in distribution of the North Atlantic right whale in the project vicinity were taken into consideration when analyzing potential human impacts from the proposed NEG and Algonquin LNG Port operations and maintenance and repair activities and fashioning mitigation such as the window for planned maintenance and repair.

Second, with regard to the issue of lethal take, it is stated clearly in the Federal Register notices for the proposed IHA that no mortality or injury of marine mammals from the proposed LNG Port/Pipeline operations and maintenance and repair activities (with mitigation and monitoring) is expected and none are authorized. Potential adverse effects to marine mammals, including endangered whales that might occur in the proposed LNG Port action area, were assessed and provided in the Federal Register notice for the proposed IHA, as well as the associated EIS. Finally, in preparation for the issuance of the IHA, NMFS Office of Protected Resources conducted a section 7 consultation under the ESA with the NMFS Greater Atlantic Region Fisheries Office. A Biological Opinion was issued on November 21, 2014, concluding that the proposed action is not likely to jeopardize the continued existence of endangered marine mammal and other species, with no mortality anticipated.

Comment 3: Citing potential vessel collision of the endangered North Atlantic right whales, WDC and HSUS recommend limiting the Energy Bridge Regasification Vessel (EBRV) speeds to 10 knots as right whales have been sighted throughout Massachusetts and Cape Cod Bays at all times of the year. The WDC and HSUS further state that monitoring measures are not effective because not all whales in an area will be seen or heard, and detection can only provide a record of where whales have been recently seen.

Response: NMFS is aware of the potential threats of vessel collision to the North Atlantic right whale from all transiting cargo ships, not just EBRVs, in the area. Therefore, a series of temporal and spatial vessel speed related measures are required for the LNG Port/Pipeline operations and maintenance and repair activities in the Massachusetts Bay. These measures are the results of careful analyses and assessment on the seasonal and spatial distribution of the right whale, and the balance between species conservation and practicability. Although right whales are sighted in Massachusetts and Cape Cod Bays throughout the year, their presence in the summer months is extremely rare, and NMFS does not believe reducing vessel speeds from 12 knots to 10 knots would provide any additional conservation benefits to the species because vessels will have protected species observers on board. However, mitigation measures require that once a whale is acoustically detected, the vessel must slow down to 10 knots or less within 5 miles (8 km) of the last sighting area, which provides for a fairly large buffer to avoid any potential collision with North Atlantic right whales. We determined that this measure was protective and would reduce the likelihood of collision further.

Comment 4: Citing the NEG IHA application that maintenance and repair activities will result in "increased levels of turbidity which can interfere with the ability of whales to forage effectively by obscuring visual detection of or dispersing potential prey," WDC and HSUS state that the proposed LNG Port maintenance and repair activities may result in reduced fitness of marine mammal species.

Response: NMFS disagrees with the cited statement in the IHA application, as well as the conclusion from WDC and HSUS based on the incorrect statement. NMFS is aware that turbidity is a potential effect from Algonquin Pipeline Lateral maintenance and repair activities. However, the area that may be affected by these activities is expected to be of very small scale,

on the order of tens of meters. Because the disturbance would occur on such a small scale relative to the size of Massachusetts Bay and available foraging area, we determined that the maintenance and repair activities would not appreciably affect the visual detection of prey by marine mammals. In addition, the turbidity by soil disturbance from the proposed maintenance and repair activities is expected to be brief in duration. Suspended sediments from the ocean bottom are expected to resettle within hours after any disturbance.

Comment 5: The WDC and HSUS are concerned about the dramatic increase in water withdrawal that has been requested. The WDC and HSUS states that these withdrawals would increase from 2.6 billion gallons of sea water per year to 11 billion gallons per year. The WDC and HSUS question the assessment performed by the applicant on abundance of planktonic species due to their patchy distribution (citing Baumgartner et al. 2003). Further, without providing any scientific evidence, the WDC and HSUS state that an increase of 400% or more in water uptake is bound to have significant effects on localized plankton aggregations.

Response: NMFS does not agree with WDC and HSUS' statement that the increase of water intake would have significant effects on localized plankton aggregations. The Federal Register notice for the proposed IHA provided detailed analyses on the extra water intake by the proposed LNG Port operations and maintenance and repair activities. Under the requested water-use scenario, Tech Tech (2011) conducted an environmental impact assessment (EIA) titled "Environmental Assessment: Northeast Gateway Deepwater Port" on the potential impacts to marine mammals and their prey. To evaluate impacts to phytoplankton under the increased water usage, the biomass of phytoplankton lost from the Massachusetts Bay ecosystem was estimated based on the same method presented in the final Environmental Impact Statement/Environmental Impact Report (EIS/EIR). Phytoplankton densities of 65,000 to

390,000 cells/gallon were multiplied by the annual planned activities withdrawal rate of 11 billion gallons to estimate a loss of 7.15×10^{14} to 4.29×10^{15} cells per year. Assuming a dry-weight biomass of 10^{-10} to 10^{-11} gram per cell (g/cell), an estimated 7.2 kg to 429 kg of biomass would be lost annually from Massachusetts Bay under the proposed activity, up to approximately 4.2 times greater than that estimated in the EIS/EIR for the permitted operational scenario. An order of magnitude estimate of the effect of this annual biomass loss on the regional food web can be calculated assuming a 10 percent transfer of biomass from one trophic level to the next (Sumich 1988) following the method used in the final EIS/EIR. This suggests that the loss of 7.2 kg to 429 kg of phytoplankton will result in the loss of about 0.7 kg to 42.9 kg of zooplankton, less than 0.1 kg to 4.3 kg of small planktivorous fish, and up to 0.4 kg of large piscivorous fish (approximately equivalent to a single 1-pound striped bass). Relative to the biomass of these trophic levels in the project area, this biomass loss is minor and consistent with the findings in the final EIS/EIR. NMFS' analysis relied on the analysis in the EIA for its own analysis, and the comment does not provide support for a contradictory conclusion.

In addition, the density of zooplankton determined by the sampling conducted by the Massachusetts Water Resource Authority (MWRA) to characterize the area is approximately of 34.9×10^3 organisms per m^3. Applying this density, the water withdrawal volume under the proposed activity would result in the entrainment of 2.2×10^{10} zooplankton individuals per trip or 1.5×10^{12} individuals per year. Assuming an average biomass of 0.63×10^{-6} g per individual, this would result in the loss of 14.1 kg of zooplankton per shipment or 916.5 kg of zooplankton per year for 65 shipments. As discussed for phytoplankton, biomass transfers from one trophic level to the next at a rate of about 10 percent. Therefore, this entrainment of zooplankton would result in loss of about 91.6 kg of planktivorous fish and 9.2 kg of large piscivorous fish

(approximately equivalent to two 9-pound striped bass). These losses are minor relative to the total biomass of these trophic levels in Massachusetts Bay.

Finally, ichthyoplankton (fish eggs and larvae) losses and equivalent age one juvenile fish estimates under the proposed activity were made based on actual monthly ichthyoplankton data collected in the port area from October 2005 through December 2009 and the proposed activity withdrawal volume of 11 billion gallons per year evenly distributed among months (0.92 billion gallons per month) as a worst-case scenario, representing the maximum number of Port deliveries during any given month. Similarly, the lower, upper, and mean annual entrainment estimates are based on the lower and upper 95 percent confidence limits, of the monthly mean ichthyoplankton densities, and the monthly mean estimates multiplied by the monthly withdrawal rate of 0.92 billion gallons per month. At this withdrawal rate, approximately 106 million eggs and 67 million larvae are estimated to be lost. Nevertheless, the demand for natural gas and corresponding Port activities will likely be greatest during the winter heating season (November through March) when impacts from entrainment will likely be lower.

These estimated losses are not significant given the very high natural mortality of ichthyoplankton. This comparison was done in the final EIS/EIR where ichthyoplankton losses based on historic regional ichthyoplankton densities and a withdrawal rate of approximately 2.6 billion gallons per year were represented by the equivalent number of age one fish. Under the final EIS/EIR withdrawal scenario, equivalent age one losses due to entrainment ranged from 1 haddock to 43,431 sand lance (Tetra Tech 2010). Equivalent age one losses when no NEG Port operations occurred were recalculated using Northeast Gateway monitoring data in order to facilitate comparisons between the permitted scenario and no action scenario. Using Northeast Gateway monitoring data, withdrawal of 2.6 billion gallons per year would result in equivalent

age one losses ranging from less than 1 haddock to 5,602 American sand lance. By comparison, equivalent age one losses under the proposed activity withdrawal rate of 11 billion gallons per year ranged from less than 1 haddock to 23,701 sand lance and were generally similar to or less than those in the final EIS/EIR.

Although no reliable annual food consumption rates of baleen whales are available for comparison, based on the calculated quantities of phytoplankton, zooplankton, and ichthyoplankton removal analyzed above, we believe it is reasonable to conclude that baleen whale predation rates would dwarf any reasonable estimates of prey removals by NEG Port operations.

In conducting this analysis, NMFS is aware of the prey patchiness in the natural environment. However, for a large scale and long-term environmental assessment, random and uniform plankton distribution is a valid assumption to make. Therefore, NMFS determined that the prey removals by NEG Port operations resulting from water usage will have inconsequential impacts on plankton aggregation.

Comment 6: The WDC and HSUS are concerned about the increased discharge of warm water during off-loading. The WDC and HSUS state that there are likely to be adverse impacts to zooplankton in the area and, consequently, the forage base for several endangered whale species. The WDC and HSUS further state that in particular, this warmer water could affect right whale prey distribution and prey availability, as their primary prey, Calanus finmarchicus, tends to be concentrated in discrete thermal layers (Baumgartner and Mate, 2005). In addition, WDC and HSUS point out that research by Keller et al (2002) has indicated that presence or absence of right whales was dependent on water temperature differences of as little as 2°C.

Response: NMFS is aware of the increased discharge of warm water during NEG LNG Port operation off-loading process. In 2011, NMFS requested that NEG conduct an analysis of its warm water discharge from the cooling systems. The analysis used a refined software system, CORnell MIxing Zone Expert System (CORMIX), to estimate behavior of the thermal plumes (Dill and Hamilton 2011).

Initial data indicate the actual temperature difference (ΔT) associated with the discharge water can approach 12 °C, which is greater than originally anticipated (2.6 °C). Using the newer version of the modeling software (CORMIX 6.0-GT) to simulate the originally estimated discharge characteristics as a point of comparison, and to simulate a range of conditions, including variable plume discharge ΔT levels from the main condenser cooling system of 4 to 12 °C, and variable receiving water conditions in winter and summer, the results showed the following:

- Summer conditions: Results showed for summer (when the water column in Massachusetts Bay is stratified) that the plume generally is expected to surface when ΔT is 6 °C or greater. The plume is unstable in the near-field, and may surface immediately adjacent to the hull. Lower temperature differences (e.g., ΔT of 4 °C) can mix at depth within the cooler lower layer of Massachusetts Bay. The distance at which a ΔT of 0.8 °C is achieved ranges from 13 to 65 m from the ship. At 500 m from the ship, the surface ΔT is 0.34 °C or less.
- Winter conditions: Results showed for winter (when the water column is well-mixed) that the plume surfaces within 37 m (discharge ΔT of 12 °C) to 78 m (discharge ΔT of 4 °C) from the ship. The distance at which ΔT of 0.8 °C is achieved ranges from 19 to 37 m from the ship, which is a submerged position within the plume.

Maximum surface ΔT is less than 1 °C. At 500 m from the ship, the surface ΔT is 0.31 °C or less.

In summary, the temperature difference is expected to drop to non-significant over the distance of tens of meters from the vessel. Therefore, NMFS determined that the warm water discharge from the LNG Port operations is expected to have no effects on the marine environment, zooplankton in the area, and marine mammal prey distribution.

Comment 7: The WDC and HSUS state that the applicant does not appear concerned that underwater sound resulting from maintenance and operation of the port is likely to result in harassment to marine mammals, except noise from a DP dive vessel. The WDC and HSUS further states that sound propagation calculations the applicant performed were based on outdated data that may no longer be applicable, as environmental factors such as seabed composition are likely to have changed in the past twenty years, and the applicant acknowledges that the maximum radius of the Zone of Influence (ZOI) is inherently variable.

Response: NMFS does not agree. The initial Federal Register notice (FR 69049; November 18, 2013) for the proposed IHA described noise from the proposed maintenance and repair activities, and the analysis discussed more than just sound from a DP dive vessel, including models used to assess vessel noises such as turning screws, engine noise, noise of operating machinery, and thruster use. In addition, to confirm these modeled results and better understand the noise footprint associated with the initial construction activities at the LNG Port, field measurements were taken of various construction activities during the 2007 NEG Port and Algonquin Pipeline Lateral Construction period. Measurements were taken to establish the ''loudest'' potential construction measurement event. The location at the LNG Port was used to determine site-specific distances to the 120/180 dB re 1 μPa isopleths for NEG Port

maintenance and repair activities.

As described for NEG Port operations, sound propagation calculations were performed to determine the noise footprint of the construction activity. The calculations took into consideration aspects of water depth, sea state, bathymetry, and seabed composition, and specifically evaluated sound energy in the range that encompasses the auditory frequencies of marine mammals and sound propagation beyond the immediate vicinity of the source. These results were then summed across frequencies to provide the broadband received levels at receptor locations. The resulting distance to the 120 dB isopleth (180 dB re 1 μPa does not exist) was estimated to determine the maximum distance at which Level B harassment may occur.

NMFS used the most recent and best data available regarding sound measurements from the Port, which were collected during maintenance and repair activities in 2009. We note, however, that this IHA requires the applicant to conduct passive acoustic monitoring (PAM) for the noise environment in Massachusetts Bay during operations and maintenance and repair activities. The acoustic data collected by the PAM will measure and document the sound ''budget'' of Massachusetts Bay so as to eventually assist in determining whether or not an overall increase in noise in the Bay associated with the Project might be having a potentially negative impact on marine mammals. These acoustic data will provide additional new insight on the noise levels from NEG's proposed LNG Port operations and maintenance and repair activities.

Comment 8: The WDC and HSUS state that the applicant does not take into account the fact that GDF SUEZ-Neptune LNG is also operating in Massachusetts Bay, and because the ports are "very similar in their potential need and type or maintenance and repair", the

cumulative impacts of noise from both ports should be considered but have not been discussed by the applicant.

Response: The potential cumulative impacts from the nearby Neptune LNG Port were analyzed in the EIS/EIR for the NEG LNG project. However, on July 5, 2013, the Maritime Administration granted the request of Neptune LNG to suspend operations of their LNG Port facility for a period of 5 years, which began on June 26, 2013. Therefore, Neptune LNG will not be conducting any operations until at least June 26, 2018.

Comment 9: The WDC and HSUS are concerned by the estimated number of takes of marine mammals, particularly the North Atlantic right whale. The applicant estimates takes for this species as high as 29 per year due to port operations and maintenance and repair activities of the NEG Port and the Algonquin Pipeline Lateral.

Response: As analyzed and discussed in detail in the Federal Register notices for the proposed IHA, the estimated take of up to 29 North Atlantic right whale by Level B behavioral harassment represent 6.59% of the population. Since it is likely that individual animals could be "taken" by harassment multiple times, the percentage is the upper boundary of the numbers of animals in the population that could be affected. The Level B behavioral harassment of these animals is expected to consist of brief exposure of anthropogenic underwater noise levels above 120 dB re 1 μPa, and animals exposed to that level may exhibit brief alert or avoidance activities during the exposure. In addition, no mortality or injury is expected to occur, and due to the nature, degree, and context of the Level B harassment anticipated, the activity is not expected to impact rates of recruitment or survival.

Comment 10: The WDC and HSUS point out an inconsistency in the IHA application regarding historical marine mammal take numbers. The WDC and HSUS state that in the IHA

application, the applicant stated that "to date, based on both ERBV vessel observations and MARU data, no take by harassment has been recorded during NEG Port operations," while later in the application it stated that "[t]o date, these mitigation and monitoring activities have successfully safeguarded marine mammals and sea turtles, resulting in a total of only 1 take by acoustic harassment over the past 3 years of operation."

Response: NMFS contacted NEG for clarification of these two statements. After review of the original marine mammal monitoring records, NEG's contractor Tetra Tech states that the only observed take of a marine mammal was on February 5, 2009, when an unidentified small marine mammal (either a seal or a dolphin) was briefly spotted within the 120 dB re 1 µPa zone of influence at a distance between 1 and 1.2 miles from the EBRV Explorer while DP thrusters were engaged.

Description of Marine Mammals in the Area of the Specified Activities

The Federal Register notice (78 FR 69049; November 18, 2013) for the proposed IHA and Northeast Gateway's IHA application identified 14 marine mammal species under NMFS jurisdiction likely to occur in the construction area:

North Atlantic right whale (Eubalaena glacialis),

humpback whale (Megaptera novaeangliae),

fin whale (Balaenoptera physalus),

minke whale (B. acutorostrata),

long-finned pilot whale (Globicephala melas),

Atlantic white-sided dolphin (Lagenorhynchus acutus),

bottlenose dolphin (Tursiops truncatus),

common dolphin (Delphinus delphis),

killer whale (Orcinus orca),

Risso's dolphin (Grampus griseus),

harbor porpoise (Phocoena phocoena),

harbor seal (Phoca vitulina), and

gray seal (Halichoerus grypus).

Information on those species that may be affected by this activity is discussed in detail in the USCG Final EIS on the Northeast Gateway LNG proposal. Please refer to that document for more information on these species and potential impacts from operation of this LNG facility. In addition, general information on these marine mammal species can also be found in Wűrsig et al. (2000) and in the NMFS Stock Assessment Reports (Waring et al., 2014). This latter document is available at: http://www.nmfs.noaa.gov/pr/sars/pdf/ao2013_tm228.pdf. That information has not changed and is therefore not repeated here.

Potential Effects of the Specified Activity on Marine Mammals

The proposed NEG LNG port/pipeline operations and maintenance and repair activities could affect marine mammal species and stocks by exposing them to elevated noise levels in the vicinity of the activity area. As described in detail in the Federal Register notice of proposed IHA (78 FR 69049, November 18, 2013), potential impacts from port operations and maintenance and repair activities could result in behavioral disturbances, masking, habituation, and although highly unlikely temporary hearing threshold shift. That information has not changed and is therefore not repeated here.

Northeast Gateway contracted with Tetra Tech EC, Inc. (Tetra Tech) to perform field investigations to document various underwater noise levels emitted during the construction of the NEG Port and Algonquin Pipeline Lateral and during the operation of NEG Port facilities

(namely the operation of EBRVs). Tetra Tech conducted five offshore hydroacoustic field programs: one in 2005 and one in 2006 at the Gulf Gateway Deepwater Port located approximately 116 miles off the coast of Louisiana in the Gulf of Mexico; and three in 2007 at the NEG Port and Algonquin Pipeline Lateral Project area. The 2005 measurements were completed to determine underwater noise levels during EBRV onboard regasification and vessel movements. The data from the 2005 field program was used to support the modeling and analysis of potential acoustic effects of EBRV operations in Massachusetts Bay during the NEG Port permitting and licensing process. The data collected in 2006 was also associated with EBRV operation activities and were collected for the purpose of verifying the measurement completed in 2005 as well as to further document sound levels during additional operational and EBRV activities such as EBRV coupling and decoupling from the buoy system, transit and the use of stern and bow thrusters required for dynamic positioning. The 2007 measurements were collected during NEG Port and Algonquin Pipeline Lateral construction to obtain site-specific underwater sound-level data associated with various construction activities that were previously modeled in support of permitting and licensing. These data are used here to analyze potential noise impacts to marine mammals and to provide the basis for take calculation before new measurements are made on-site (see Monitoring Measures section below).

A detailed report describing both the 2006 and 2007 operation and construction noise measurement events and associated results have been included as Appendix B of the IHA application. The Federal Register notice of proposed IHA provided a complete description of NEG port operations, NEG port maintenance and repair, and Algonquin pipeline lateral operations and maintenance and unplanned repair, the activities that could result in Level B harassment from the described activities.

Potential Effects on Marine Mammal Habitat

NEG Port Operations

Operation of the NEG Port will not result in short-term effects on habitat; however, long-term effects on the marine environment, including alteration of the seafloor conditions, continued disturbance of the seafloor, regular withdrawal of sea water, and regular generation of underwater noise, will result from Port operations. Specifically, a small area (0.14 acre) along the Pipeline Lateral has been permanently altered (armored) at two cable crossings. In addition, the structures associated with the NEG Port (flowlines, mooring wire rope and chain, suction anchors, and pipeline end manifolds) occupy 4.8 acres of seafloor. An additional area of the seafloor of up to 43 acres (a worst case scenario based on severe 100-year storm with EBRVs occupying both STL buoys) will be subject to disturbance due to chain sweep while the buoys are occupied. Given the relatively small size of the NEG Port area that will be directly affected by Port operations, NMFS does not anticipate that habitat loss will be significant.

EBRVs are currently authorized to withdraw an average of 4.97 million gallons per day (mgd) and 2.6 billion gallons per year of sea water for general ship operations during it cargo delivery activities at the NEG Port. However, during the operations of the NEG Port facility, it was revealed that significantly more water usage is needed from what was originally evaluated in the final USCG Environmental Impact Statement/Environmental Impact Report (EIS/EIR). The updates for the needed water intake and discharge temperature are:

- 11 billion gallons of total annual water use at the Port;
- Maximum daily intake volume of up to 56 mgd at a rate of 0.45 feet per second when an EBRV is not able to achieve the heat recovery system (HRS: it is the capability of reducing water use during the regasification process) mode of operation; and,

- Maximum daily change in discharge temperature of 12ºC (21.6ºF) from ambient from the vessel's main condenser cooling system.

Under the requested water-use scenario, Tech Tech (2011) conducted an environmental analysis on the potential impacts to marine mammals and their prey. To evaluate impacts to phytoplankton under the increased water usage, the biomass of phytoplankton lost from the Massachusetts Bay ecosystem was estimated based on the method presented in the final EIS/EIR. Phytoplankton densities of 65,000 to 390,000 cells/gallon were multiplied by the annual planned activities of withdrawal rate of 11 billion gallons to estimate a loss of 7.15×10^{14} to 4.29×10^{15} cells per year. Assuming a dry-weight biomass of 10^{-10} to 10^{-11} gram per cell (g/cell), an estimated 7.2 kg to 429 kg of biomass would be lost from Massachusetts Bay under the proposed activity, up to approximately 4.2 times that estimated in the final EIS/EIR for the permitted operational scenario. An order of magnitude estimate of the effect of this annual biomass loss on the regional food web can be calculated assuming a 10 percent transfer of biomass from one trophic level to the next (Sumich 1988) following the method used in the final EIS/EIR. This suggests that the loss of 7.2 kg to 429 kg of phytoplankton will result in the loss of about 0.7 kg to 42.9 kg of zooplankton, less than 0.1 kg to 4.3 kg of small planktivorous fish, and up to 0.4 kg of large piscivorous fish (approximately equivalent to a single 1-pound striped bass). Relative to the biomass of these trophic levels in the project area, this biomass loss is minor and consistent with the findings in the final EIS/EIR.

In addition, zooplankton losses will also increase proportionally to the increase in water withdrawn. The final EIS/EIR used densities of zooplankton determined by the sampling conducted by the Massachusetts Water Resource Authority (MWRA) to characterize the area around its offshore outfall and assumed a mean zooplankton density of 34.9×10^3 organisms per

m^3. Applying this density, the water withdrawal volume under the proposed activity would result in the entrainment of 2.2×10^{10} zooplankton individuals per trip or 1.5×10^{12} individuals per year. Assuming an average biomass of 0.63×10^{-6} g per individual, this would result in the loss of 14.1 kg of zooplankton per shipment or 916.5 kg of zooplankton per year. As discussed for phytoplankton, biomass transfers from one trophic level to the next at a rate of about 10 percent. Therefore, this entrainment of zooplankton would result in loss of about 91.6 kg of planktivorous fish and 9.2 kg of large piscivorous fish (approximately equivalent to two 9-pound striped bass). These losses are minor relative to the total biomass of these trophic levels in Massachusetts Bay.

Finally, ichthyoplankton (fish eggs and larvae) losses and equivalent age one juvenile fish estimates under the proposed activity were made based on actual monthly ichthyoplankton data collected in the port area from October 2005 through December 2009 and the proposed activity withdrawal volume of 11 billion gallons per year evenly distributed among months (0.92 billion gallons per month) as a worst-case scenario, representing the maximum number of Port deliveries during any given month. Similarly, the lower, upper, and mean annual entrainment estimates are based on the lower and upper 95 percent confidence limits, of the monthly mean ichthyoplankton densities, and the monthly mean estimates multiplied by the monthly withdrawal rate of 0.92 billion gallons per month. At this withdrawal rate approximately 106 million eggs and 67 million larvae are estimated to be lost (see Table 4.2-2 of the IHA application). The most abundant species and life stages estimated to be entrained under the proposed activity are cunner post yolk-sac larvae (33.3 million), yellowtail flounder/Labridae eggs (27.4 million) and hake species eggs (18.7 million). Together, these species and life stages accounted for approximately 46 percent of the total entrainment estimated. Entrainment

was estimated to be highest in June through July when 97.4 million eggs and larvae (approximately 57 percent of the annual total) were estimated to be entrained. Nevertheless, the demand for natural gas and corresponding Port activities will likely be greatest during the winter heating season (November through March), when impacts from entrainment will likely be lower.

These estimated losses are not significant given the very high natural mortality of ichthyoplankton. This comparison was done in the final EIS/EIR where ichthyoplankton losses based on historic regional ichthyoplankton densities and a withdrawal rate of approximately 2.6 billion gallons per year were represented by the equivalent number of age one fish. Under the final EIS/EIR withdrawal scenario, equivalent age one losses due to entrainment ranged from 1 haddock to 43,431 sand lance (Tetra Tech 2010). Equivalent age one losses under the conditions when no NEG Port operations occur were recalculated using Northeast Gateway monitoring data in order to facilitate comparisons between the permitted scenario. Using Northeast Gateway monitoring data, withdrawal of 2.6 billion gallons per year would result in equivalent age one losses ranging from less than 1 haddock to 5,602 American sand lance. By comparison, equivalent age one losses under the proposed activity withdrawal rate of 11 billion gallons per year ranged from less than 1 haddock to 23,701 sand lance and were generally similar to or less than those in the final EIS/EIR. Substantially more equivalent age one Atlantic herring, pollock, and butterfish were estimated to be lost under the final EIS/EIR at a withdrawal rate of 2.6 billion gallons per year, while substantially more equivalent age one Atlantic cod, silver hake and hake species, cunner, and Atlantic mackerel are estimated to be lost under the proposed activity.

Although no reliable annual food consumption rates of baleen whales are available for comparison, based on the calculated quantities of phytoplankton, zooplankton, and

ichthyoplankton removal analyzed above, it is reasonable to conclude that baleen whale predation rates would dwarf any reasonable estimates of prey removals by NEG Port operations. Therefore, NMFS believes that the prey removals by NEG Port operations resulting from water usage will have negligible impacts on marine mammal habitat.

NEG Port Maintenance

As stated earlier, NEG LNG Port will require scheduled maintenance inspections using either divers or ROVs. The duration of these inspections are not anticipated to be more than two 8-hour working days. An EBRV will not be required to support these annual inspections. Water usage during the LNG Port maintenance would be limited to the standard requirements of NEG's normal support vessel. As with all vessels operating in Massachusetts Bay, sea water uptake and discharge is required to support engine cooling, typically using a once-through system. The rate of seawater uptake varies with the ship's horsepower and activity and therefore will differ between vessels and activity type. For example, the Gateway Endeavor is a 90-foot vessel powered with a 1,200 horsepower diesel engine with a four-pump seawater cooling system. This system requires seawater intake of about 68 gallons per minute (gpm) while idling and up to about 150 gpm at full power. Use of full power is required generally for transit. A conservatively high estimate of vessel activity for the Gateway Endeavor would be operation at idle for 75 percent of the time and full power for 25 percent of the time. During the routine activities this would equate to approximately 42,480 gallons of seawater per 8-hour work day. When compared to the engine cooling requirements of an EBRV over an 8-hour period (approximately 18 million gallons), the Gateway Endeavour uses about 0.2 percent of the EBRV requirement. To put this water use into context, potential effects from the waters-use scenario of 56 mgd have been concluded to be orders of magnitude less than the natural

fluctuations of Massachusetts Bay and Cape Cod Bay and not detectable. Water use by support vessels during routine port activities would not materially add to the overall impacts.

Certain maintenance and repair activities may also require the presence of an EBRV at the Port. Such instances may include maintenance and repair on the STL Buoy, vessel commissioning, and any onboard equipment malfunction or failure occurring while a vessel is present for cargo delivery. Because the requested water-use scenario allows for daily water use of up to 56 mgd to support standard EBRV requirements when not operating in the HRS mode, vessels would be able to remain at the Port as necessary to support all such maintenance and repair scenarios. Therefore, NMFS considers that NEG Port maintenance and repair would have negligible impacts to marine mammal habitat in the proposed activity area.

Unanticipated Algonquin Pipeline Lateral Maintenance and Repair

Proper care and maintenance of the Algonquin Pipeline Lateral should minimize the likelihood of an unanticipated maintenance and/or repair event; however, unanticipated activities may occur from time to time if facility components become damaged or malfunction. Unanticipated repairs may range from relatively minor activities requiring minimal equipment and one or two diver/ROV support vessels to major activities requiring larger construction-type vessels similar to those used to support the construction and installation of the facility.

Major repair activities, although unlikely, may include repairing or replacement of pipeline manifolds or sections of the Pipeline Lateral. This type of work would likely require the use of large specialty construction vessels such as those used during the construction and installation of the NEG Port and Algonquin Pipeline Lateral. The duration of a major unplanned activity would depend upon the type of repair work involved and would require careful planning and coordination.

Turbidity would likely be a potential effect of Algonquin Pipeline Lateral maintenance and repair activities on listed species. In addition, the possible removal of benthic or planktonic species, resulting from relatively minor construction vessel water use requirements, as measured in comparison to EBRV water use, is unlikely to affect in a measurable way the food sources available to marine mammals. Therefore, NMFS considers that Algonquin Pipeline Lateral maintenance and repair would have negligible impacts to marine mammal habitat in the proposed activity area.

Mitigation Measures

In order to issue an incidental take authorization under section 101(a)(5)(D) of the MMPA, NMFS must set forth the permissible methods of taking pursuant to such activity, and other means of effecting the least practicable adverse impact on such species or stock and its habitat, paying particular attention to rookeries, mating grounds, and areas of similar significance, and on the availability of such species or stock for taking for certain subsistence uses.

NMFS is requiring the following mitigation measures to minimize the potential impacts to marine mammals in the project vicinity as a result of the LNG Port and Algonquin Pipeline Lateral operations and maintenance and repair activities. The primary purpose of these mitigation measures is to ensure that no marine mammal will be injured or killed by vessels transiting the LNG Port facility, and to minimize the intensity of noise exposure of marine mammals in the activity area.

(a) General Marine Mammal Avoidance Measures

(i) All vessels shall utilize the International Maritime Organization (IMO)-approved Boston Traffic Separation Scheme (TSS) on their approach to and departure from the NEG Port and/or the repair/maintenance area at the earliest practicable point of transit in order to avoid the

risk of whale strikes.

(ii) Upon entering the TSS and areas where North Atlantic right whales are known to occur, including the Great South Channel Seasonal Management Area (GSC-SMA) and the SBNMS, the EBRV shall go into "Heightened Awareness" as described below.

(A) Prior to entering and navigating the modified TSS the Master of the vessel shall:

(I) Consult Navigational Telex (NAVTEX), NOAA Weather Radio, the NOAA Right Whale Sighting Advisory System (SAS) or other means to obtain current right whale sighting information as well as the most recent Cornell acoustic monitoring buoy data for the potential presence of marine mammals;

(II) Post a look-out to visually monitor for the presence of marine mammals;

(III) Provide the US Coast Guard (USCG) required 96-hour notification of an arriving EBRV to allow the NEG Port Manager to notify Cornell of vessel arrival.

(B) The look-out shall concentrate his/her observation efforts within the 2-mile radius zone of influence (ZOI) from the maneuvering EBRV.

(C) If marine mammal detection was reported by NAVTEX, NOAA Weather Radio, SAS and/or an acoustic monitoring buoy, the look-out shall concentrate visual monitoring efforts towards the areas of the most recent detection.

(D) If the look-out (or any other member of the crew) visually detects a marine mammal within the 2-mile radius ZOI of a maneuvering EBRV, he/she will take the following actions:

(I) The Officer-of-the-Watch shall be notified immediately; who shall then relay the sighting information to the Master of the vessel to ensure action(s) can be taken to avoid physical contact with marine mammals.

(II) The sighting shall be recorded in the sighting log by the designated look-out.

(iii) In accordance with 50 CFR 224.103(c), all vessels associated with NEG Port and Pipeline Lateral activities shall not approach closer than 500 yards (460 m) to a North Atlantic right whale and 100 yards (91 m) to other whales to the extent physically feasible given navigational constraints. In addition, when approaching and departing the project area, vessels shall be operated so as to remain at least 1 km away from any visually-detected North Atlantic right whales.

(iv) In response to active right whale sightings and active acoustic detections, and taking into account exceptional circumstances, EBRVs, repair and maintenance vessels shall take appropriate actions to minimize the risk of striking whales. Specifically vessels shall:

(A) Respond to active right whale sightings and/or Dynamic Management Area (DMA) as described at 73 FR 60173, 60180 (October 10, 2008) reported on the Mandatory Ship Reporting (MSR) or SAS by concentrating monitoring efforts towards the area of most recent detection and reducing speed to 10 knots or less if the vessel is within the boundaries of a DMA or within the circular area centered on an area 8 nm in radius from a sighting location;

(B) Respond to active acoustic detections by concentrating monitoring efforts towards the area of most recent detection and reducing speed to 10 knots or less within an area 5 nm in radius centered on the detecting AB; and

(C) Respond to additional sightings made by the designated look-outs within a 2-mile radius of the vessel by slowing the vessel to 10 knots or less and concentrating monitoring efforts towards the area of most recent sighting.

(v) All vessels operated under NEG and Algonquin must follow the established specific speed restrictions when calling at the NEG Port. The specific speed restrictions required for all

vessels (i.e., EBRVs and vessels associated with maintenance and repair) consist of the following:

(A) Vessels shall reduce their maximum transit speed while in the TSS from 12 knots or less to 10 knots or less from March 1 to April 30 in all waters bounded by straight lines connecting the following points in the order stated below unless an emergency situation dictates for an alternate speed. This area shall hereafter be referred to as the Off Race Point Seasonal Management Area (ORP-SMA) and tracks NMFS regulations at 50 CFR 224.105:

42°30' N 70°30' W	41°40' N 69°57' W
42°30' N 69°45' W	42°12' N 70°15' W
41°40' N 69°45' W	42°12' N 70°30' W
42°04.8' N 70°10' W	42°30' N 70°30' W

(B) Vessels shall reduce their maximum transit speed while in the TSS to 10 knots or less unless an emergency situation dictates for an alternate speed from April 1 to July 31 in all waters bounded by straight lines connecting the following points in the order stated below. This area shall hereafter be referred to as the GSC-SMA and tracks NMFS regulations at 50 CFR 224.105:

42°30' N 69°45' W	41°40' N 69°45' W
42°30' N 67°27' W	42°30' N 69°45' W
42°09' N 67°08.4' W	41°00' N 69°05' W

(C) Vessels are not expected to transit the Cape Cod Bay or the Cape Cod Canal; however, in the event that transit through the Cape Cod Bay or the Cape Cod Canal is required, vessels shall reduce maximum transit speed to 10 knots or less from January 1 to May 15 in all waters in Cape Cod Bay, extending to all shorelines of Cape Cod Bay, with a northern boundary

of 42°12’ N latitude and the Cape Cod Canal. This area shall hereafter be referred to as the Cape Cod Bay Seasonal Management Area (CCB-SMA).

(D) All Vessels transiting to and from the project area shall report their activities to the mandatory reporting Section of the USCG to remain apprised of North Atlantic right whale movements within the area. All vessels entering and exiting the MSRA shall report their activities to WHALESNORTH. Vessel operators shall contact the USCG by standard procedures promulgated through the Notice to Mariner system.

(E) All Vessels greater than or equal to 300 gross tons (GT) shall maintain a speed of 10 knots or less, unless an emergency situation requires speeds greater than 10 knots.

(F) All Vessels less than 300 GT traveling between the shore and the project area that are not generally restricted to 10 knots will contact the Mandatory Ship Reporting (MSR) system, the USCG, or the project site before leaving shore for reports of active DMAs and/or recent right whale sightings and, consistent with navigation safety, restrict speeds to 10 knots or less within 5 miles (8 kilometers) of any sighting location, when traveling in any of the seasonal management areas (SMAs) or when traveling in any active DMA.

(b) NEG Port-specific Operations

(i) In addition to the general marine mammal avoidance requirements identified in (5)(a) above, vessels calling on the NEG Port must comply with the following additional requirements:

(A) EBRVs shall travel at 10 knots maximum speed when transiting to/from the TSS or to/from the NEG Port/Pipeline Lateral area. For EBRVs, at 1.86 miles (3 km) from the NEG Port, speed will be reduced to 3 knots and to less than 1 knot at 1,640 ft (500 m) from the NEG buoys, unless an emergency situation dictates the need for an alternate speed.

(B) EBRVs that are approaching or departing from the NEG Port and are within the

ATBA5 surrounding the NEG Port, shall remain at least 1 km away from any visually-detected North Atlantic right whale and at least 100 yards (91 m) away from all other visually-detected whales unless an emergency situation requires that the vessel stay its course. During EBRV maneuvering, the Vessel Master shall designate at least one look-out to be exclusively and continuously monitoring for the presence of marine mammals at all times while the EBRV is approaching or departing from the NEG Port.

(C) During NEG Port operations, in the event that a whale is visually observed within 1 km of the NEG Port or a confirmed acoustic detection is reported on either of the two ABs closest to the NEG Port (western-most in the TSS array), departing EBRVs shall delay their departure from the NEG Port, unless an emergency situation requires that departure is not delayed. This departure delay shall continue until either the observed whale has been visually (during daylight hours) confirmed as more than 1 km from the NEG Port or 30 minutes have passed without another confirmed detection either acoustically within the acoustic detection range of the two ABs closest to the NEG Port, or visually within 1 km from the NEG Port.

(ii) Vessel captains shall focus on reducing dynamic positioning (DP) thruster power to the maximum extent practicable, taking into account vessel and Port safety, during the operation activities. Vessel captains will shut down thrusters whenever they are not needed.

(c) Planned and Unplanned Maintenance and Repair Activities

(i) NEG Port

(A) The Northeast Gateway shall conduct empirical source level measurements on all noise emitting construction equipment and all vessels that are involved in maintenance/repair work.

(B) If dynamic positioning (DP) systems are employed and/or activities will emit noise

with a source level of 139 dB re 1 μPa at 1 m or greater, activities shall be conducted in accordance with the requirements for DP systems listed in (b)(ii) above.

(C) Northeast Gateway shall provide the NMFS Headquarters Office of the Protected Resources, NMFS Northeast Region Ship Strike Coordinator, and SBNMS with a minimum of 30 days notice prior to any planned repair and/or maintenance activity. For any unplanned/emergency repair/maintenance activity, Northeast Gateway shall notify the agencies as soon as it determines that repair work must be conducted. Northeast Gateway shall continue to keep the agencies apprised of repair work plans as further details (e.g., the time, location, and nature of the repair) become available. A final notification shall be provided to agencies 72 hours prior to crews being deployed into the field.

(ii) Pipeline Lateral

(A) Pipeline maintenance/repair vessels less than 300 GT traveling between the shore and the maintenance/repair area that are not generally restricted to 10 knots shall contact the MSR system, the USCG, or the project site before leaving shore for reports of active DMAs and/or recent right whale sightings and, consistent with navigation safety, restrict speeds to 10 knots or less within 5 miles (8 km) of any sighting location, when travelling in any of the seasonal management areas (SMAs) as defined above.

(B) Maintenance/repair vessels greater than 300 GT shall not exceed 10 knots, unless an emergency situation that requires speeds greater than 10 knots.

(C) Planned maintenance and repair activities shall be restricted to the period between May 1 and November 30.

(D) Unplanned/emergency maintenance and repair activities shall be conducted utilizing anchor-moored dive vessel whenever operationally possible.

(E) Algonquin shall also provide the NMFS Office of the Protected Resources, NMFS Northeast Region Ship Strike Coordinator, and Stellwagen Bank National Marine Sanctuary (SBNMS) with a minimum of 30-day notice prior to any planned repair and/or maintenance activity. For any unplanned/emergency repair/maintenance activity, Northeast Gateway shall notify the agencies as soon as it determines that repair work must be conducted. Algonquin shall continue to keep the agencies apprised of repair work plans as further details (e.g., the time, location, and nature of the repair) become available. A final notification shall be provided to agencies 72 hours prior to crews being deployed into the field.

(F) If dynamic positioning (DP) systems are to be employed and/or activities will emit noise with a source level of 139 dB re 1 µPa at 1 m or greater, activities shall be conducted in accordance with the requirements for DP systems listed in (b)(ii) above.

(G) In the event that a whale is visually observed within 0.5 mile (0.8 kilometers) of a repair or maintenance vessel, the vessel superintendent or on-deck supervisor shall be notified immediately. The vessel's crew shall be put on a heightened state of alert and the marine mammal shall be monitored constantly to determine if it is moving toward the repair or maintenance area.

(H) Repair/maintenance vessel(s) must cease any movement and/or cease all activities that emit noises with source level of 139 dB re 1 µPa @ 1 m or higher when a right whale is sighted within or approaching at 500 yd (457 m) from the vessel. Repair and maintenance work may resume after the marine mammal is positively reconfirmed outside the established zones (500 yd [457 m]) or 30 minutes have passed without a redetection. Any vessels transiting the maintenance area, such as barges or tugs, must also maintain these separation distances.

(I) Repair/maintenance vessel(s) must cease any movement and/or cease all activities

that emit noises with source level of 139 dB re 1 µPa @ 1 m or higher when a marine mammal other than a right whale is sighted within or approaching at 100 yd (91 m) from the vessel. Repair and maintenance work may resume after the marine mammal is positively reconfirmed outside the established zones (100 yd [91 m]) or 30 minutes have passed without a redetection. Any vessels transiting the maintenance area, such as barges or tugs, must also maintain these separation distances.

(J) Algonquin and associated contractors shall also comply with the following:

(I) Operations involving equipment with sound source levels exceeding 139 dB re 1µPa @ 1 m shall "ramp-up" sound sources, allowing whales a chance to leave the area before sounds reach maximum levels. In addition, Northeast Gateway, Algonquin, and other associated contractors shall maintain equipment to manufacturers' specifications, including any sound-muffling devices or engine covers in order to minimize noise effects. Noisy construction equipment shall only be used as needed and equipment shall be turned off when not in operation.

(II) Any material that has the potential to entangle marine mammals (e.g., anchor lines, cables, rope or other construction debris) shall only be deployed as needed and measures shall be taken to minimize the chance of entanglement.

(III) For any material mentioned above that has the potential to entangle marine mammals, such material shall be removed from the water immediately unless such action jeopardizes the safety of the vessel and crew as determined by the Captain of the vessel.

(IV) In the event that a marine mammal becomes entangled, the marine mammal coordinator and/or PSO will notify NMFS (if outside the SBNMS), and SBNMS staff (if inside the SBNMS) immediately so that a rescue effort may be initiated.

(K) All maintenance/repair activities shall be scheduled to occur between May 1 and

November 30; however, in the event of unplanned/emergency repair work that cannot be scheduled during the preferred May through November work window, the following additional measures shall be followed for Pipeline Lateral maintenance and repair related activities between December and April:

(I) Between December 1 and April 30, if on-board PSOs do not have at least 0.5-mile visibility, they shall call for a shutdown. At the time of shutdown, the use of thrusters must be minimized. If there are potential safety problems due to the shutdown, the captain will decide what operations can safely be shut down.

(II) Prior to leaving the dock to begin transit, the barge shall contact one of the PSOs on watch to receive an update of sightings within the visual observation area. If the PSO has observed a North Atlantic right whale within 30 minutes of the transit start, the vessel shall hold for 30 minutes and again get a clearance to leave from the PSOs on board. PSOs shall assess whale activity and visual observation ability at the time of the transit request to clear the barge for release.

(III) Transit route, destination, sea conditions and any marine mammal sightings/mitigation actions during watch shall be recorded in the log book. Any whale sightings within 1,000 m of the vessel shall result in a high alert and slow speed of 4 knots or less and a sighting within 750 m shall result in idle speed and/or ceasing all movement.

(IV) The material barges and tugs used in repair and maintenance shall transit from the operations dock to the work sites during daylight hours when possible provided the safety of the vessels is not compromised. Should transit at night be required, the maximum speed of the tug shall be 5 knots.

(V) All repair vessels must maintain a speed of 10 knots or less during daylight hours.

All vessels shall operate at 5 knots or less at all times within 5 km of the repair area.

(d) Acoustic Monitoring Related Activities

(i) Vessels associated with maintaining the AB network operating as part of the mitigation/monitoring protocols shall adhere to the following speed restrictions and marine mammal monitoring requirements.

(A) In accordance with 50 CFR 224.103 (c), all vessels associated with NEG Port activities shall not approach closer than 500 yards (460 meters) to a North Atlantic right whale.

(B) All vessels shall obtain the latest DMA or right whale sighting information via the NAVTEX, MSR, SAS, NOAA Weather Radio, or other available means prior to operations to determine if there are right whales present in the operational area.

(I) In the ORP-SMA between March 1 and April 30; and

(II) In the CCB-SMA between January 1 and May 15.

(C) All vessels shall obtain the latest DMA or right whale sighting information via the NAVTEX, MSR, SAS, NOAA Weather Radio, or other available means prior to operations to determine if there are right whales present in the operational area.

Mitigation Conclusions

NMFS has carefully evaluated the mitigation measures in the context of ensuring that NMFS prescribes the means of effecting the least practicable impact on the affected marine mammal species and stocks and their habitat. Our evaluation of potential measures included consideration of the following factors in relation to one another:

- The manner in which, and the degree to which, the successful implementation of the measure is expected to minimize adverse impacts to marine mammals;
- The proven or likely efficacy of the specific measure to minimize adverse impacts

as planned; and

- The practicability of the measure for applicant implementation.

Based on our evaluation of mitigation measures, NMFS has determined that the 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 Measures

In order to issue an ITA 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 ITAs 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 proposed action area.

Monitoring Measures

(a) Vessel-based visual monitoring

(i) Vessel-based monitoring for marine mammals shall be done by trained look-outs during NEG LNG Port and Pipeline Lateral operations and maintenance and repair activities. The observers shall monitor the occurrence of marine mammals near the vessels during LNG Port and Pipeline Lateral related activities. Lookout duties include watching for and identifying marine mammals; recording their numbers, distances, and reactions to the activities; and documenting "take by harassment".

(ii) The vessel look-outs assigned to visually monitor for the presence of marine mammals shall be provided with the following:

(A) Recent NAVTEX, NOAA Weather Radio, SAS and/or acoustic monitoring buoy detection data;

(B) Binoculars to support observations;

(C) Marine mammal detection guide sheets; and

(D) Sighting log.

(b) NEG LNG Port Operations

(i) All individuals onboard the EBRVs responsible for the navigation duties and any other personnel that could be assigned to monitor for marine mammals shall receive training on marine mammal sighting/reporting and vessel strike avoidance measures.

(ii) While an EBRV is navigating within the designated TSS, there shall be three people with look-out duties on or near the bridge of the ship including the Master, the Officer-of-the-Watch and the Helmsman-on-watch. In addition to the standard watch procedures, while the EBRV is transiting within the designated TSS, maneuvering within the Area to be Avoided (ATBA), and/or while actively engaging in the use of thrusters, an additional look-out shall be designated to exclusively and continuously monitor for marine mammals.

(iii) All sightings of marine mammals by the designated look-out, individuals posted to navigational look-out duties and/or any other crew member while the EBRV is transiting within the TSS, maneuvering within the ATBA and/or when actively engaging in the use of thrusters, shall be immediately reported to the Officer-of-the-Watch who shall then alert the Master. The Master or Officer-of-the-Watch shall ensure the required reporting procedures are followed and the designated marine mammal look-out records all pertinent information relevant to the sighting.

(iv) Visual sightings made by look-outs from the EBRVs shall be recorded using a

standard sighting log form. Estimated locations shall be reported for each individual and/or group of individuals categorized by species when known. This data shall be entered into a database and a summary of monthly sighting activity shall be provided to NMFS. Estimates of take and copies of these log sheets shall also be included in the reports to NMFS.

(c) Planned and Unplanned Maintenance and Repair

(i) Two (2) qualified and NMFS-approved protected species observers (PSOs) shall be assigned to each vessel that will use dynamic positioning (DP) systems during maintenance and repair related activities. PSOs shall operate individually in designated shifts to accommodate adequate rest schedules. Additional PSOs shall be assigned to additional vessels if auto-detection buoy (AB) data indicates that sound levels exceed 120 dB re 1 μPa, further then 100 meters (328 feet) from these vessels.

(ii) All PSOs shall receive NMFS-approved marine mammal observer training and be approved in advance by NMFS after review of their resume. All PSOs shall have direct field experience on marine mammal vessels and/or aerial surveys in the Atlantic Ocean/Gulf of Mexico.

(iii) PSOs (one primary and one secondary) shall be responsible for visually locating marine mammals at the ocean's surface and, to the extent possible, identifying the species. The primary PSO shall act as the identification specialist and the secondary PSO will serve as data recorder and also assist with identification. Both PSOs shall have responsibility for monitoring for the presence of marine mammals and sea turtles. Specifically PSO's shall:

(A) Monitor at all hours of the day, scanning the ocean surface by eye for a minimum of 40 minutes every hour.

(B) Monitor the area where maintenance and repair work is conducted beginning at

daybreak using 25x power binoculars and/or hand-held binoculars. Night vision devices must be provided as standard equipment for monitoring during low-light hours and at night.

(C) Conduct general 360° visual monitoring during any given watch period and target scanning by the observer shall occur when alerted of a whale presence.

(D) Alert the vessel superintendent or construction crew supervisor of visual detections within 2 miles (3.31 kilometers) immediately.

(E) Record all sightings on marine mammal field sighting logs. Specifically, all data shall be entered at the time of observation, notes of activities will be kept, and a daily report prepared and attached to the daily field sighting log form. The basic reporting requirements include the following:

- Beaufort sea state;
- Wind speed;
- Wind direction;
- Temperature;
- Precipitation;
- Glare;
- Percent cloud cover;
- Number of animals;
- Species;
- Position;
- Distance;
- Behavior;
- Direction of movement; and

- Apparent reaction to construction activity.

(iv) In the event that a whale is visually observed within the 2-mile (3.31-kilometers) zone of influence (ZOI) of a DP vessel or other construction vessel that has shown to emit noise with source level in excess of 139 dB re 1 µPa @ 1 m, the PSO will notify the repair/maintenance construction crew to minimize the use of thrusters until the animal has moved away, unless there are divers in the water or an ROV is deployed.

(d) Acoustic Monitoring

(i) Northeast Gateway shall deploy 10 ABs within the Separation Zone of the TSS for the operational life of the Project.

(ii) The ABs shall be used to detect a calling North Atlantic right whale an average of 5 nm from each AB. The AB system shall be the primary detection mechanism that alerts the EBRV Master to the occurrence of right whales, heightens EBRV awareness, and triggers necessary mitigation actions as described in section (5) above.

(iii) Northeast Gateway shall conduct short-term passive acoustic monitoring to document sound levels during:

(A) the initial operational events in the 2014-2015 winter heating season;

(B) regular deliveries outside the winter heating season should such deliveries occur; and

(C) scheduled and unscheduled maintenance and repair activities.

(iv) Northeast Gateway shall conduct long-term monitoring of the noise environment in Massachusetts Bay in the vicinity of the NEG Port and Pipeline Lateral using marine autonomous recording units (MARUs) when there is anticipated to be more than 5 LNG shipments in a 30-day period or over 20 shipments in a six-month period.

(v) The acoustic data collected in 6(d)(ii) shall be analyzed to document the seasonal

occurrences and overall distributions of whales (primarily fin, humpback and right whales) within approximately 10 nm of the NEG Port and shall measure and document the noise "budget" of Massachusetts Bay so as to eventually assist in determining whether or not an overall increase in noise in the Bay associated with the Project might be having a potentially negative impact on marine mammals.

(vi) Northeast Gateway shall make all acoustic data, including data previously collected by the MARUs during prior construction, operations, and maintenance and repair activities, available to NOAA. Data storage will be the responsibility of NOAA.

(e) Acoustic Whale Detection and Response Plan

(i) NEG Port Operations

(A) Ten (10) ABs that have been deployed since 2007 shall be used to continuously screen the low-frequency acoustic environment (less than 1,000 Hertz) for right whale contact calls occurring within an approximately 5-nm radius from each buoy (the AB's detection range).

(B) Once a confirmed detection is made, the Master of any EBRVs operating in the area will be alerted immediately.

(ii) NEG Port and Pipeline Lateral Planned and Unplanned/Emergency Repair and Maintenance Activities

(A) If the repair/maintenance work is located outside of the detectible range of the 10 project area ABs, Northeast Gateway and Algonquin shall consult with NOAA (NMFS and SBNMS) to determine if the work to be conducted warrants the temporary installation of an additional AB(s) to help detect and provide early warnings for potential occurrence of right whales in the vicinity of the repair area.

(B) The number of ABs installed around the activity site shall be commensurate with

the type and spatial extent of maintenance/repair work required, but must be sufficient to detect vocalizing right whales within the 120-dB impact zone.

(C) Should acoustic monitoring be deemed necessary during a planned or unplanned/emergency repair and/or maintenance event, active monitoring for right whale calls shall begin 24 hours prior to the start of activities.

(D) Revised noise level data from the acoustic recording units deployed in the NEG Port and/or Pipeline Lateral maintenance and repair area shall be provided to NMFS.

Reporting Measures

(a) Throughout NEG Port and Pipeline Lateral operations, Northeast Gateway and Algonquin shall provide a monthly Monitoring Report. The Monitoring Report shall include:

(i) Both copies of the raw visual EBRV lookout sighting information of marine mammals that occurred within 2 miles of the EBRV while the vessel transits within the TSS, maneuvers within the ATBA, and/or when actively engaging in the use of thrusters, and a summary of the data collected by the look-outs over each reporting period.

(ii) Copies of the raw PSO sightings information on marine mammals gathered during pipeline repair or maintenance activities. This visual sighting data shall then be correlated to periods of thruster activity to provide estimates of marine mammal takes (per species/species class) that took place during each reporting period.

(iii) Conclusion of any planned or unplanned/emergency repair and/or maintenance period, a report shall be submitted to NMFS summarizing the repair/maintenance activities, marine mammal sightings (both visual and acoustic), empirical source-level measurements taken during the repair work, and any mitigation measures taken.

(b) During the maintenance and repair of NEG Port and Pipeline Lateral components,

weekly status reports shall be provided to NOAA (both NMFS and SBNMS) using standardized reporting forms. The weekly reports shall include data collected for each distinct marine mammal species observed in the repair/maintenance area during the period that maintenance and repair activities were taking place. The weekly reports shall include the following information:

(i) Location (in longitude and latitude coordinates), time, and the nature of the maintenance and repair activities;

(ii) Indication of whether a DP system was operated, and if so, the number of thrusters being used and the time and duration of DP operation;

(iii) Marine mammals observed in the area (number, species, age group, and initial behavior);

(iv) The distance of observed marine mammals from the maintenance and repair activities;

(v) Changes, if any, in marine mammal behaviors during the observation;

(vi) A description of any mitigation measures (power-down, shutdown, etc.) implemented;

(vii) Weather condition (Beaufort sea state, wind speed, wind direction, ambient temperature, precipitation, and percent cloud cover etc.);

(viii) Condition of the observation (visibility and glare); and

(ix) Details of passive acoustic detections and any action taken in response to those detections.

(d) Injured/Dead Protected Species Reporting

(i) In the unanticipated event that survey operations clearly cause the take of a marine mammal in a manner prohibited by the proposed IHA, such as an injury (Level A harassment),

serious injury or mortality (e.g., ship-strike, gear interaction, and/or entanglement), NEG and/or Algonquin shall immediately cease activities and immediately report the incident to the Supervisor of the Incidental Take Program, Permits and Conservation Division, Office of Protected Resources, NMFS, at 301-427-8401 and/or by email to Jolie.Harrison@noaa.gov and Shane.Guan@noaa.gov and the Northeast Regional Stranding Coordinators (Mendy.Garron@noaa.gov or Lanni.Hall@noaa.gov) or by phone at 978-281-9300. The report must include the following information:

(A) time, date, and location (latitude/longitude) of the incident;

(B) the name and type of vessel involved;

(C) the vessel's speed during and leading up to the incident;

(D) description of the incident;

(E) status of all sound source use in the 24 hours preceding the incident;

(F) water depth;

(G) environmental conditions (e.g., wind speed and direction, Beaufort sea state, cloud cover, and visibility);

(H) description of marine mammal observations in the 24 hours preceding the incident;

(I) species identification or description of the animal(s) involved;

(J) the fate of the animal(s); and

(K) photographs or video footage of the animal (if equipment is available).

Activities shall not resume until NMFS is able to review the circumstances of the prohibited take. NMFS shall work with NEG and/or Algonquin to determine what is necessary to minimize the likelihood of further prohibited take and ensure MMPA compliance. NEG and/or Algonquin may not resume their activities until notified by NMFS via letter, email, or

telephone.

(ii) In the event that NEG and/or Algonquin discovers an injured or dead marine mammal, and the lead PSO determines that the cause of the injury or death is unknown and the death is relatively recent (i.e., in less than a moderate state of decomposition as described in the next paragraph), NEG and/or Algonquin will immediately report the incident to the Supervisor of the Incidental Take Program, Permits and Conservation Division, Office of Protected Resources, NMFS, at 301-427-8401, and/or by email to Jolie.Harrison@noaa.gov and Shane.Guan@noaa.gov and the NMFS Northeast Stranding Coordinators (Mendy.Garron@noaa.gov or Lanni.Hall@noaa.gov) or by phone at 978-281-9300, within 24 hours of the discovery. The report must include the same information identified above. Activities may continue while NMFS reviews the circumstances of the incident. NMFS will work with NEG and/or Algonquin to determine whether modifications in the activities are appropriate.

(iii) In the event that NEG or Algonquin discovers an injured or dead marine mammal, and the lead PSO determines that the injury or death is not associated with or related to the activities authorized (if the IHA is issued) (e.g., previously wounded animal, carcass with moderate to advanced decomposition, or scavenger damage), NEG and/or Algonquin shall report the incident to the Supervisor of the Incidental Take Program, Permits and Conservation Division, Office of Protected Resources, NMFS, at 301-427-8401, and/or by email to Jolie.Harrison@noaa.gov and Shane.Guan@noaa.gov and the NMFS Northeast Stranding Coordinators (Mendy.Garron@noaa.gov or Lanni.Hall@noaa.gov) or by phone at 978-281-9300, within 24 hours of the discovery. NEG and/or Algonquin shall provide photographs or video footage (if available) or other documentation of the stranded animal sighting to NMFS and the

Marine Mammal Stranding Network. NEG and/or Algonquin can continue its operations under such a case.

Summary of Previous Monitoring Reports

Based on monthly activity reports submitted to NMFS for the period between August 2010 and January 2014, there were no activities at the NEG Port during the period. Therefore, no take of marine mammals occurred or were reported during this period.

Estimated Take by Incidental Harassment

Except with respect to certain activities not pertinent here, 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]. Only take by Level B harassment is anticipated as a result of NEG's operation and maintenance and repair activities. Anticipated take of marine mammals is associated with operation of dynamic positioning during the docking of the LNG vessels and positioning of maintenance and dive vessels, and by operations of certain machinery during maintenance and repair activities. The regasification process itself is an activity that does not rise to the level of taking, as the modeled source level for this activity is 108 dB, which is below our current threshold for Level B harassment. Certain species may have a behavioral reaction to the sound emitted during the activities. Hearing impairment is not anticipated. Additionally, vessel strikes are not anticipated, especially because of the speed restriction measures that are required and were described earlier in this document.

The full suite of potential impacts to marine mammals was described in detail in the

"Potential Effects of the Specified Activity on Marine Mammals" section in the 2013 proposed IHA notice. The potential effects of sound from the proposed open water marine survey programs might include one or more of the following: masking of natural sounds; behavioral disturbance; non-auditory physical effects; and, at least in theory, temporary or permanent hearing impairment (Richardson et al. 1995). As discussed earlier in this document, the most common impact will likely be from behavioral disturbance, including avoidance of the ensonified area or changes in speed, direction, and/or diving profile of the animal. For reasons discussed previously in this document, temporary or permanent hearing impairment (TTS and PTS, respectively) is highly unlikely to occur based on the proposed mitigation and monitoring measures that would preclude marine mammals from being exposed to noise levels high enough to cause hearing impairment.

For non-pulse sounds, such as those produced by operating dynamic positioning (DP) thruster during vessel docking and supporting underwater construction and repair activities and the operations of various machineries that produces non-pulse noises, NMFS uses the 120 dB (rms) re 1 μPa isopleth to indicate the onset of Level B harassment.

NEG Port and Algonquin Pipeline Lateral Activities Acoustic Footprints

I. NEG Port Operations

For the purposes of understanding the noise footprint of operations at the NEG Port, measurements taken to capture operational noise (docking, undocking, regasification, and EBRV thruster use) during the 2006 Gulf of Mexico field event were taken at the source. Measurements taken during EBRV transit were normalized to a distance of 328 feet (100 meters) to serve as a basis for modeling sound propagation at the NEG Port site in Massachusetts Bay.

Sound propagation calculations for operational activities were then completed at two

positions in Massachusetts Bay to determine site-specific distances to the 120/160/180 dB isopleths:

- Operations Position 1 - Port (EBRV Operations): 70° 36.261'W and 42° 23.790' N
- Operations Position 2 – Boston TSS (EBRV Transit): 70° 17.621'W and 42° 17.539' N

At each of these locations sound propagation calculations were performed to determine the noise footprint of the operation activity at each of the specified locations. Calculations were performed in accordance with Marsh and Schulkin (1985) and Richardson et al. (1995) and took into consideration aspects of water depth, sea state, bathymetry, and seabed composition. In addition, the acoustic modeling performed specifically evaluated sound energy in 1/3-octave spectral bands covering frequencies from 12.5 Hz to 20 kHz. The resultant distances to the 120 dB isopleth are presented in Table 1.

Table 1. Radii of 120-dB SPL isopleths from NEG LNG operations

	Radius to 120-dB zone (m)
One EBRV docking procedure with support vessel	4,250
Two EBRV docking procedure with support vessel	5,500
EBRV regasification	<300
EBRV transiting the TSS (10 knot)	1,750

II. NEG Port Maintenance and Repair

Modeling analysis conducted for the construction of the NEG Port concluded that the only underwater noise of critical concern during NEG Port construction would be from vessel noises such as turning screws, engine noise, noise of operating machinery, and thruster use. To confirm these modeled results and better understand the noise footprint associated with

construction activities at the NEG Port, field measurements were taken of various construction activities during the 2007 NEG Port and Algonquin Pipeline Lateral Construction period. Measurements were taken and normalized as described to establish the "loudest" potential construction measurement event. One position within Massachusetts Bay was then used to determine site-specific distances to the 120/180 dB isopleths for NEG Port maintenance and repair activities:

- Construction Position 1. Port: 70° 36.261'W and 42° 23.790' N

Sound propagation calculations were performed to determine the noise footprint of the construction activity. The calculations took into consideration aspects of water depth, sea state, bathymetry, and seabed composition, and specifically evaluated sound energy in the range that encompasses the auditory frequencies of marine mammals and at which sound propagates beyond the immediate vicinity of the source. These results were then summed across frequencies to provide the broadband received levels at receptor locations. The results showed that the estimated distance from the loudest source involved in construction activities fell to 120 dB re 1 μPa at a distance of 3,600 m.

III. Algonquin Pipeline Lateral Maintenance and Repair Activities

Modeling analysis conducted during the NEG Port and Pipeline Lateral construction concluded that the only underwater noise of critical concern during such activities would be from vessel noises such as turning screws, engine noise, noise of operating machinery, and thruster use. As with construction noise at the NEG Port, to confirm modeled results and better understand the noise footprint associated with construction activities along the Algonquin Pipeline Lateral, field measurements were taken of various construction activities during the 2007 NEG Port and Algonquin Pipeline Lateral construction period. Measurements were taken

and normalized to establish the "loudest" potential construction measurement event. Two positions within Massachusetts Bay were then used to determine site-specific distances to the 120/160/180 dB isopleths:

- Construction Position 2. PLEM: 70° 46.755'W and 42° 28.764' N
- Construction Position 3. Mid-Pipeline: 70° 40.842'W and 42° 31.328' N

Sound propagation calculations were performed to determine the noise footprint of the construction activity. The calculations took into consideration aspects of water depth, sea state, bathymetry, and seabed composition, and specifically evaluated sound energy in the range that encompasses the auditory frequencies of marine mammals and at which sound propagates beyond the immediate vicinity of the source. These results were then summed across frequencies to provide the broadband received levels at receptor locations. The results of the distances to the 120-dB isopleths are shown in Table 2.

Table 2. Radii of 120-dB SPL isopleths from Algonquin Pipeline Lateral maintenance and repair

	Radius to 120-dB zone (m)
Barge / tug (pulling & pushing) / construction vessel / barge @ PLEM	3,600
Barge / tug (pulling & pushing) / construction vessel / barge @ mid-pipeline	2,831

The basis for Northeast Gateway and Algonquin's take estimate is the number of marine mammals that would be exposed to sound levels at or in excess of 120 dB, which is the threshold used by NMFS for harassment from non-pulse sounds. For the NEG LNG Port and Algonquin Pipeline Lateral operations and maintenance and repair activities, the take estimates are determined by multiplying the 120-dB ensonified area by local marine mammal density estimates, and then multiplying by the estimated number of days such activities would occur

during a year-long period. For the NEG Port operations, the 120-dB ensonfied area is 56.8 km^2 for a single visit during docking when running DP system. For NEG Port and Algonquin Pipeline Lateral maintenance and repair activities, modeling based on the empirical measurements showed that the distance of the 120-dB radius is expected to be 3.6 km, making a maximum 120-dB ZOI area of approximately 40.7 km^2.

Although there have been no LNG deliveries since February 2010 at the NEG LNG Port, under full operation, NEG expects it would receive up to 65 LNG shipments per year, and would require 14 days for NEG Port maintenance and up to 40 days for planned and unplanned Algonquin Pipeline Lateral maintenance and repair.

NMFS recognizes that baleen whale species other than North Atlantic right whales have been sighted in the project area from May to November. However, the occurrence and abundance of fin, humpback, and minke whales is not well documented within the project area. Nonetheless, NMFS uses the data on cetacean distribution within Massachusetts Bay, such as those published by the National Centers for Coastal Ocean Science (NCCOS 2006), to estimate potential takes of marine mammals species in the vicinity of project area.

The NCCOS study used cetacean sightings from two sources: (1) the North Atlantic Right Whale Consortium (NARWC) sightings database held at the University of Rhode Island (Kenney, 2001); and (2) the Manomet Bird Observatory (MBO) database, held at NMFS Northeast Fisheries Science Center (NEFSC). The NARWC data contained survey efforts and sightings data from ship and aerial surveys and opportunistic sources between 1970 and 2005. The main data contributors included: Cetacean and Turtles Assessment Program (CETAP), Canadian Department of Fisheries and Oceans, PCCS, International Fund for Animal Welfare, NOAA's NEFSC, New England Aquarium, Woods Hole Oceanographic Institution, and the

University of Rhode Island. A total of 653,725 km (406,293 mi) of survey track and 34,589 cetacean observations were provisionally selected for the NCCOS study in order to minimize bias from uneven allocation of survey effort in both time and space. The sightings-per-unit-effort (SPUE) was calculated for all cetacean species by month covering the southern Gulf of Maine study area, which also includes the project area (NCCOS, 2006).

The MBO's Cetacean and Seabird Assessment Program (CSAP) was contracted from 1980 to 1988 by NMFS NEFSC to provide an assessment of the relative abundance and distribution of cetaceans, seabirds, and marine turtles in the shelf waters of the northeastern United States (MBO, 1987). The CSAP program was designed to be completely compatible with NMFS NEFSC databases so that marine mammal data could be compared directly with fisheries data throughout the time series during which both types of information were gathered. A total of 5,210 km (8,383 mi) of survey distance and 636 cetacean observations from the MBO data were included in the NCCOS analysis. Combined valid survey effort for the NCCOS studies included 567,955 km (913,840 mi) of survey track for small cetaceans (dolphins and porpoises) and 658,935 km (1,060,226 mi) for large cetaceans (whales) in the southern Gulf of Maine. The NCCOS study then combined these two data sets by extracting cetacean sighting records, updating database field names to match the NARWC database, creating geometry to represent survey tracklines and applying a set of data selection criteria designed to minimize uncertainty and bias in the data used.

Owing to the comprehensiveness and total coverage of the NCCOS cetacean distribution and abundance study, NMFS calculated the estimated take number of marine mammals based on the most recent NCCOS report published in December 2006. A summary of seasonal cetacean distribution and abundance in the project area is provided above, in the "Description of Marine

Mammals in the Area of the Specified Activities" section. For a detailed description and calculation of the cetacean abundance data and SPUE, please refer to the NCCOS study (NCCOS, 2006). These data show that the relative abundance of North Atlantic right, fin, humpback, minke, sei, and pilot whales, and Atlantic white-sided dolphins for all seasons, as calculated by SPUE in number of animals per square kilometer, is 0.0082, 0.0097, 0.0118, 0.0059, 0.0084, 0.0407, and 0.1314 n/km, respectively.

In calculating the area density of these species from these linear density data, NMFS used 0.5 mi (0.825 km) as the hypothetical strip width (W). This strip width is based on the distance of visibility used in the NARWC data that was part of the NCCOS (2006) study. However, those surveys used a strip transect instead of a line transect methodology. Therefore, in order to obtain a strip width, one must divide the visibility or transect value in half. Since the visibility value used in the NARWC data was 2.3 mi (3.7 km), it thus gives a strip width of 1.15 mi (1.85 km). The hypothetical strip width used in the analysis is less than half of that derived from the NARWC data, therefore, the analysis provided here is more protective in calculating marine mammal densities in the area. Based on this information, the area density (D) of these species in the project area can be obtained by the following formula:

$$D = SPUE/2W$$

where D is marine mammal density in the area, and W is the strip width. Based on this calculation method, the estimated take numbers per year for North Atlantic right, fin, humpback, minke, sei, and pilot whales, and Atlantic white-sided dolphins by the NEG Port facility operations (maximum 65 visits per year), NEG Port maintenance and repair (up to 14 days per year), and Algonquin Pipeline Lateral operation and maintenance (up to 40 days per year), are 29, 35, 42, 21, 30, 145, and 469, respectively (Table 3). These numbers represent approximately

6.59%, 1%, 5.12%, 0.1%, 8.4%, 1.2%, and 1% of the populations for these species based on the latest NMFS Atlantic marine mammal stock assessment reports (Waring et al. 2013), respectively. Since it is very likely that individual animals could be "taken" by harassment multiple times, these percentages are the upper boundary of the animal population that could be affected. The actual number of individual animals being exposed or taken would likely be far less. There is no danger of injury, death, or hearing impairment from the exposure to these noise levels.

Table 3. Estimated annual takes, by Level B harassment, of marine mammals from the NEG Port and Algonquin Pipeline Lateral operations and maintenance and repair activities in Massachusetts Bay

Species	Population/stock	Number of takes
Right whale	Western Atlantic	29
Humpback whale	Gulf of Maine	42
Fin whale	Western North Atlantic	35
Sei whale	Nova Scotia	30
Minke whale	Canadian East Coast	21
Long-finned pilot whale	Western North Atlantic	145
Atlantic white-sided dolphin	Western North Atlantic	469
Bottlenose dolphin	Western North Atlantic Southern Migratory	20
Short-beaked common dolphin	Western North Atlantic	40
Risso's dolphin	Western North Atlantic	40
Killer whale	Western North Atlantic	10
Harbor porpoise	Gulf of Maine/Bay of Fundy	20
Harbor seal	Western North Atlantic	60
Gray seal	Western North Atlantic	30

In addition, bottlenose dolphins, common dolphins, killer whales, Risso's dolphins, harbor porpoises, harbor seals, and gray seals could also be taken by Level B harassment as a result of deepwater NEG Port and Algonquin Pipeline Lateral operations and maintenance and repair. Since these species are less likely to occur in the area, and there are no density estimates specific to this particular area, NMFS based the take estimates on typical group size. Therefore, NMFS estimates that up to approximately 20 bottlenose dolphins, 40 short-beaked common

dolphins, 40 Risso's dolphins, 10 killer whales, 20 harbor porpoises, 60 harbor seals, and 30 gray seals could be exposed to continuous noise at or above 120 dB re 1 μPa rms incidental to operations during the one year period of the IHA, respectively. These numbers represent 0.16%, 0.06%, 0.26%, and 0.03% of the bottlenose dolphin, short-beaked common dolphin, Risso's dolphin, and harbor porpoise populations/stocks. Since no population/stock estimates for killer whale, and harbor and gray seals is available, the percentage of estimated takes for these species is unknown. Nevertheless, since Massachusetts Bay represents only a small fraction of the western North Atlantic basin where these animals occur, NMFS has determined that the takes of 10 killer whales, 60 harbor seals, and 30 gray seals represent a relatively small number of marine mammals of the affected species or populations stocks (Table 3). The take estimates presented in this section of the document do not take into consideration the mitigation and monitoring measures that are required in the IHA.

Negligible Impact and Small Numbers Analysis and Determination

NMFS has defined "negligible impact" in 50 CFR 216.103 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." In making a negligible impact determination, NMFS considers a variety of factors, including but not limited to: (1) the number of anticipated mortalities; (2) the number and nature of anticipated injuries; (3) the number, nature, intensity, and duration of Level B harassment; and (4) the context in which the takes occur.

No injuries or mortalities are anticipated to occur as a result of Northeast Gateway LNG Port Algonquin Pipeline Lateral operations and maintenance and repair activities, and none are authorized by NMFS. Additionally, animals in the area are not anticipated to incur any hearing

impairment (i.e., TTS or PTS), as the modeling of source levels indicates that none of the source received levels exceed 180 dB (rms).

While some of the species occur in the proposed project area year-round, some species only occur in the area during certain seasons. Humpback and minke whales are not expected in the project area in the winter. During the winter, a large portion of the North Atlantic right whale population occurs in the southeastern U.S. calving grounds (i.e., South Carolina, Georgia, and northern Florida). The fact that certain activities will occur during times when certain species are not commonly found in the area will help reduce the amount of Level B harassment for these species.

Many animals perform vital functions, such as feeding, resting, traveling, and socializing, on a diel cycle (24-hr cycle). Behavioral reactions to noise exposure (such as disruption of critical life functions, displacement, or avoidance of important habitat) are more likely to be significant if they last more than one diel cycle or recur on subsequent days (Southall et al., 2007). Consequently, a behavioral response lasting less than one day and not recurring on subsequent days is not considered particularly severe unless it could directly affect reproduction or survival (Southall et al. 2007). Operational activities are not anticipated to occur at the Port on consecutive days. In addition, Northeast Gateway EBRVs are expected to make a maximum of 65 port calls throughout the year (and likely less), with thruster use needed for a couple of hours. Therefore, Northeast Gateway will not be creating increased sound levels in the marine environment for prolonged periods of time.

Of the 14 marine mammal species likely to occur in the area, four are listed as endangered under the ESA: North Atlantic right, humpback, and fin whales. All of these species are also considered depleted under the MMPA. There is currently no designated critical

habitat or known reproductive areas for any of these species in or near the proposed project area. However, there are several well-known North Atlantic right whale feeding grounds in the Cape Cod Bay and Great South Channel. No mortality or injury is expected to occur, and due to the nature, degree, and context of the Level B harassment anticipated, the activity is not expected to impact rates of recruitment or survival. There is no critical habitat or biologically important areas for marine mammals within the proposed project area.

The population estimates for the species that may be taken by Level B behavioral harassment contained in the most recent U.S. Atlantic Stock Assessment Reports were provided earlier in this document. From the most protective estimates of both marine mammal densities in the project area and the size of the 120-dB ZOI, the maximum calculated number of individual marine mammals for each species that could potentially be harassed annually is small relative to the overall population sizes.

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 mitigation and monitoring measures, NMFS finds that the proposed Northeast Gateway LNG Port and Algonquin Pipeline Lateral operations and maintenance and repair activities would result in the incidental take of small numbers of marine mammals, by Level B harassment only, and that the total taking from Northeast Gateway and Algonquin's proposed activities will have a negligible impact on the affected species or stocks.

Impact on Availability of Affected Species or Stock for Taking for Subsistence Uses

There are no relevant subsistence uses of marine mammals 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.

Endangered Species Act (ESA)

Our November 18, 2013, Federal Register notice of proposed IHA described the history and status of Endangered Species Act (ESA) compliance for the NE Gateway LNG facility. As explained in that notice, the biological opinions for construction and operation of the facility only analyzed impacts on ESA-listed species from activities under the initial construction period and during operations, and did not take into consideration potential impacts to marine mammals that could result from the subsequent LNG Port and Pipeline Lateral maintenance and repair activities. In addition, NEG also revealed that significantly more water usage and vessel operating air emissions are needed from what was originally evaluated for the LNG Port operation. NMFS PR1 initiated consultation with NMFS Greater Atlantic Region Fisheries Office under section 7 of the ESA on the proposed issuance of an IHA to NEG under section 101(a)(5)(D) of the MMPA for the proposed activities that include increased NEG Port and Algonquin Pipeline Lateral maintenance and repair and water usage for the LNG Port operations this activity. A Biological Opinion was issued on November 21, 2014, and concluded that the proposed action may adversely affect but is not likely to jeopardize the continued existence of ESA-listed right, humpback, fin, and sei whales.

National Environmental Policy Act

MARAD and the USCG released a Final EIS/Environmental Impact Report (EIR) for the proposed Northeast Gateway Port and Pipeline Lateral. A notice of availability was published by MARAD on October 26, 2006 (71 FR 62657). The Final EIS/EIR provides detailed information on the proposed project facilities, construction methods and analysis of potential impacts on marine mammals.

NMFS was a cooperating agency (as defined by the Council on Environmental Quality (40 CFR 1501.6)) in the preparation of the Draft and Final EISs. NMFS reviewed the Final EIS and adopted it on May 4, 2007. NMFS issued a separate Record of Decision for issuance of authorizations pursuant to section 101(a)(5) of the MMPA for the construction and operation of the Northeast Gateway's LNG Port Facility in Massachusetts Bay. A 2010 environmental assessment/environmental impact assessment conducted by TetraTech analyzed the increased water usage and other operational changes. We reviewed that document to determine whether there is a need for supplemental NEPA analysis based on any substantial changes between the current proposed action and the proposed action analyzed for the FEIS/EIR or any significant new circumstances or information relevant to environmental concerns and bearing on the proposed action or its impacts. Based on our review of that analysis, we have determined that supplementation was not required.

Authorization

NMFS has issued an IHA to Northeast Gateway for conducting LNG Port facility and Pipeline Lateral operations and maintenance and repair activities in Massachusetts Bay, provided the previously mentioned mitigation, monitoring, and reporting requirements are incorporated.

Dated: December 23, 2014.

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Donna S. Wieting
Director,
Office of Protected Resources,
National Marine Fisheries Service.

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