0-22-P

DEPARTMENT OF COMMERCE

National Oceanic and Atmospheric Administration

[RTID 0648-XD318]

Takes of Marine Mammals Incidental to Specified Activities; Taking Marine Mammals Incidental to a Marine Geophysical Survey in Coastal Waters off of Texas

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

ACTION: Notice; issuance of an incidental harassment authorization.

SUMMARY: In accordance with the regulations implementing the Marine Mammal Protection Act (MMPA) as amended, notification is hereby given that NMFS has issued an incidental harassment authorization (IHA) to the University of Texas at Austin (UT) to incidentally harass marine mammals during marine geophysical survey activities in coastal waters off of Texas.

DATES: This Authorization is effective from September 29, 2023 through September 28, 2024.

ADDRESSES: Electronic copies of the application and supporting documents, as well as a list of the references cited in this document, may be obtained online at: *https://www.fisheries.noaa.gov/national/marine-mammal-protection/incidental-take-authorizations-research-and-other-activities.* In case of problems accessing these documents, please call the contact listed below.

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

SUPPLEMENTARY INFORMATION:

Background

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

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

Summary of Request

On March 7, 2023, NMFS received a request from UT for an IHA to take marine mammals incidental to conducting a marine geophysical survey in coastal waters off of Texas. Following NMFS' review of the application, UT submitted a revised version on April 25, 2023. The application was deemed adequate and complete on April 27, 2023. UT's request is for take of bottlenose dolphins, Atlantic spotted dolphins, and rough-toothed dolphin by Level B harassment only. Neither UT nor NMFS expect serious injury

or mortality to result from this activity and, therefore, an IHA is appropriate. There are no changes from the proposed IHA to the final IHA.

Description of the Specified Activity

Overview

UT plans to conduct a marine geophysical survey, specifically a low energy seismic survey, in coastal waters off of Texas during a 10 day period in the fall of 2023. The survey will take place in water depths of less than 20 meters (m). To complete this survey the vessel will tow one to two Generator-Injector (GI) airguns, each with a volume of 105 cubic inch (in^3; 1,721 cubic cm (cm^3)), for a total volume of 210 in^3 (3,441 cm^3).

The purpose of the planned survey is to validate novel dynamic positioning technology for improving the accuracy in time and space of high resolution 3-dimensional (HR3D) seismic datasets, in particular as it pertains to field technology of offshore carbon capture systems.

Dates and Duration

The survey is planned to occur over a 10 day period during the fall of 2023 (the exact dates are uncertain). During that time, the airguns will operate continuously (*i.e.*, 24-hours per day).

Specific Geographic Region

The planned survey area is 222 square kilometers (km^2) and will occur within the approximate area of 28.9–29.1° N latitude, 94.9–95.2° W longitude in the coastal waters off of Texas. This location is offshore San Luis Pass, which defines the southern tip of Galveston Island, Texas. The closest point of approach of the planned survey area to the coast is approximately 3 km. The planned survey area is depicted in Figure 1, and the survey lines could occur anywhere within the survey area. The water depth of the planned survey area ranges from 10 to 20 m. The survey vessel (the R/V Brooks McCall (McCall)

or similar vessel operated by TDI-Brooks International) will likely depart and return to Freeport or Galveston, Texas.

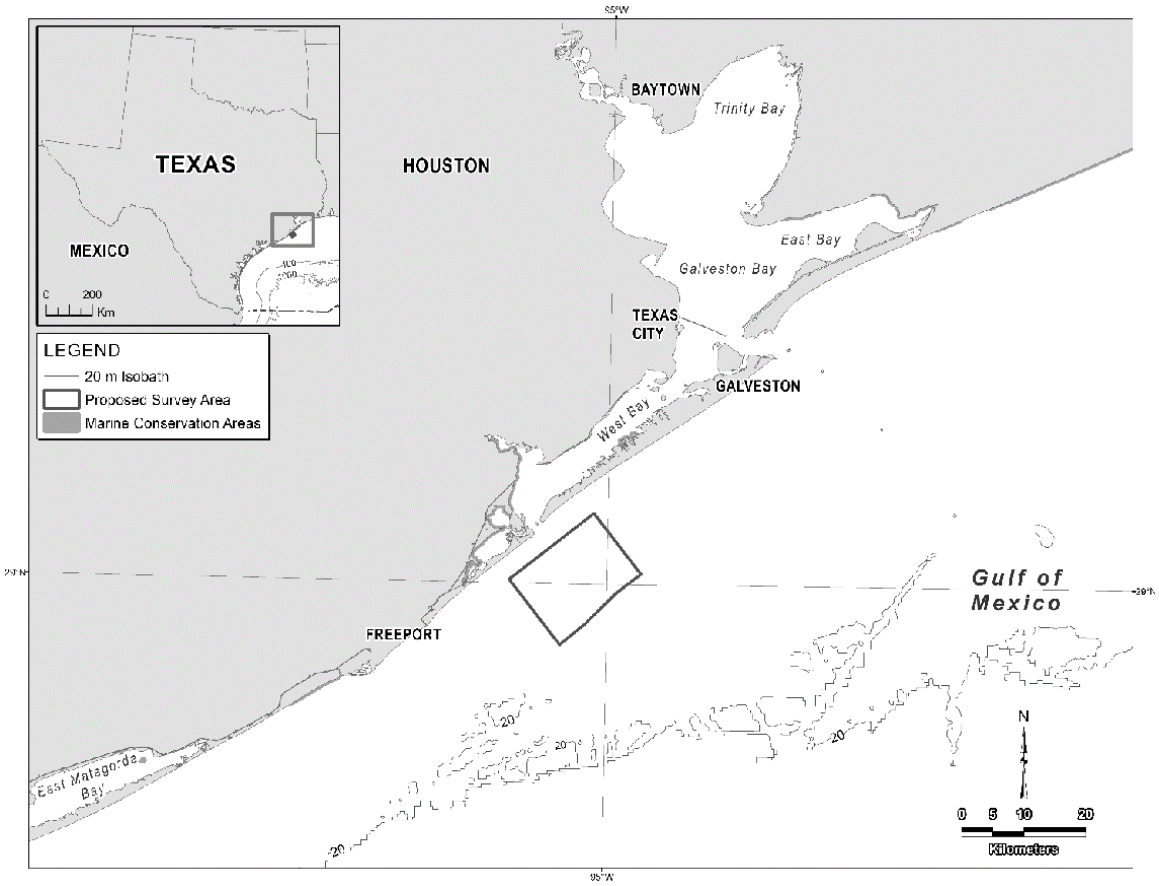

Figure 1-- Location of the Planned Northwest Gulf of Mexico Survey.
Note: Survey tracklines could occur anywhere within the planned survey area.

A detailed description of the planned geophysical survey was provided in the **Federal Register** notice of the proposed IHA (88 FR 53453, August 8, 2023). Since that time, no changes have been made to the planned survey activities. Therefore, a detailed description is not provided here. Please refer to that **Federal Register** notice for the description of the specified activity.

Comments and Responses

A notice of NMFS' proposal to issue an IHA to UT was published in the **Federal Register** on August 8, 2023 (88 FR 53453). That notice described, in detail, UT's activities, the marine mammal species that may be affected by the activities, and the

anticipated effects on marine mammals. In that notice, we requested public input on the request for authorization described therein, our analyses, the proposed authorization, and any other aspect of the notice of proposed IHA, and requested that interested persons submit relevant information, suggestions, and comments. This proposed notice was available for a 30-day public comment period. NMFS received no public comments.

Description of Marine Mammals in the Area of Specified Activities

Sections 3 and 4 of the application summarize available information regarding status and trends, distribution and habitat preferences, and behavior and life history of the potentially affected species. NMFS fully considered all of this information, and we refer the reader to these descriptions, instead of reprinting the information. Additional information regarding population trends and threats may be found in NMFS' Stock Assessment Reports (SARs; *https://www.fisheries.noaa.gov/national/marine-mammal-protection/marine-mammal-stock-assessments*) and more general information about these species (*e.g.*, physical and behavioral descriptions) may be found on NMFS' website (*https://www.fisheries.noaa.gov/find-species)*.

Table 1 lists all species or stocks for which take is expected and authorized for this activity and summarizes information related to the population or stock, including regulatory status under the MMPA and Endangered Species Act (ESA) and potential biological removal (PBR), where known. PBR is defined by the MMPA as the maximum number of animals, not including natural mortalities, that may be removed from a marine mammal stock while allowing that stock to reach or maintain its optimum sustainable population (as described in NMFS' SARs). While no serious injury or mortality is anticipated or authorized here, PBR and annual serious injury and mortality from anthropogenic sources are included here as gross indicators of the status of the species or stocks and other threats.

Marine mammal abundance estimates presented in this document represent the total number of individuals that make up a given stock or the total number estimated within a particular study or survey area. NMFS' stock abundance estimates for most species represent the total estimate of individuals within the geographic area, if known, that comprises that stock. For some species, this geographic area may extend beyond U.S. waters. All managed stocks in this region are assessed in NMFS' U.S. Atlantic and Gulf of Mexico SARs. All values presented in Table 1 are the most recent available at the time of publication and are available online at: *https://www.fisheries.noaa.gov/national/marine-mammal-protection/marine-mammal-stock-assessments*.

Table 1-- Species Likely Impacted by the Specified Activities[1]

Common name	Scientific name	Stock	ESA/MMPA status; Strategic (Y/N)[2]	Stock abundance (CV, N_{min}, most recent abundance survey)[3]	PBR	Annual M/SI[4]	Gulf of Mexico population abundance (Roberts *et al.* 2016)
Odontoceti (toothed whales, dolphins, and porpoises)							
Family Delphinidae							
Atlantic spotted dolphin	*Stenella frontalis*	Gulf of Mexico	-/-; N	21,506 (0.26; 17,339; 2018)	166	36	47,488
Rough-toothed dolphin	*Steno bredanensis*	Gulf of Mexico	-/-; N	unk (n/a; unk; 2018)	undetermined	39	4,853
Bottlenose dolphin	*Tursiops truncatus*	Gulf of Mexico Western Coastal	-/-; N	20,759 (0.13; 18,585; 2018)	167	36	138,602
		Northern Gulf of Mexico Continental Shelf	-/-; N	63,280 (0.11; 57,917; 2018)	556	65	138,602

[1] Information on the classification of marine mammal species can be found on the web page for The Society for Marine Mammalogy's Committee on Taxonomy *(https://marinemammalscience.org/science-and-publications/list-marine-mammal-species-subspecies/*; Committee on Taxonomy (2022)).

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

[3] NMFS marine mammal stock assessment reports online at: *https://www.fisheries.noaa.gov/national/marine-mammal-protection/marine-mammal-stock-assessments.* CV is coefficient of variation; Nmin is the minimum estimate of stock abundance.

[4] These values, found in NMFS's SARs, represent annual levels of human-caused mortality plus serious injury from all sources combined (*e.g.*, commercial fisheries, vessel strike). Annual M/SI (mortality/serious injury) often cannot be determined precisely and is in some cases presented as a minimum value or range.

As indicated above, all 3 species (with 4 managed stocks) in Table 1 temporally and spatially co-occur with the activity to the degree that take is reasonably likely to occur. All species that could potentially occur in the planned survey areas are included in Table 2 of the IHA application. While the additional 11 species listed in Table 2 of UT's application have been infrequently sighted in the survey area, the temporal and/or spatial occurrence of these species is such that take is not expected to occur, and they are not discussed further beyond the explanation provided here. Species or stocks that only occur in deep waters (>200 m) within the Gulf of Mexico are unlikely to be observed during this survey where the maximum water depth is 20 m, and thus, the following species or stocks will not be considered further: offshore stock of bottlenose dolphins, pantropical spotted dolphin, spinner dolphin, striped dolphin, Clymene dolphin, Fraser's dolphin, Risso's dolphin, melon-headed whale, pygmy killer whale, false killer whale, killer whale, and short-finned pilot whale.

A detailed description of the of the species likely to be affected by the geophysical survey, including brief introductions to the species and relevant stocks as well as available information regarding population trends and threats, and information regarding local occurrence, were provided in the **Federal Register** notice for the proposed IHA (88 FR 53453, August 8, 2023); since that time, we are not aware of any changes in the status of these species and stocks; therefore, detailed descriptions are not

provided here. Please refer to that **Federal Register** notice for these descriptions. Please also refer to NMFS' website (*https://www.fisheries.noaa.gov/find-species*) for generalized species accounts.

Marine Mammal Hearing

Hearing is the most important sensory modality for marine mammals underwater, and exposure to anthropogenic sound can have deleterious effects. To appropriately assess the potential effects of exposure to sound, it is necessary to understand the frequency ranges marine mammals are able to hear. Not all marine mammal species have equal hearing capabilities (*e.g.*, Richardson *et al.*, 1995; Wartzok and Ketten, 1999; Au and Hastings, 2008). To reflect this, Southall *et al.* (2007, 2019) recommended that marine mammals be divided into hearing groups based on directly measured (behavioral or auditory evoked potential techniques) or estimated hearing ranges (behavioral response data, anatomical modeling, *etc*.). Note that no direct measurements of hearing ability have been successfully completed for mysticetes (*i.e*., low-frequency cetaceans). Subsequently, NMFS (2018) described generalized hearing ranges for these marine mammal hearing groups. Generalized hearing ranges were chosen based on the approximately 65-decibel (dB) threshold from the normalized composite audiograms, with the exception for lower limits for low-frequency cetaceans where the lower bound was deemed to be biologically implausible and the lower bound from Southall *et al.* (2007) retained. Marine mammal hearing groups and their associated hearing ranges are provided in Table 2.

Table 2--Marine Mammal Hearing Groups (NMFS, 2018)

Hearing Group	Generalized Hearing Range*
Low-frequency (LF) cetaceans (baleen whales)	7 hertz (Hz) to 35 kilohertz (kHz)
Mid-frequency (MF) cetaceans (dolphins, toothed whales, beaked whales, bottlenose whales)	150 Hz to 160 kHz
High-frequency (HF) cetaceans (true porpoises, *Kogia*, river dolphins, Cephalorhynchid, *Lagenorhynchus cruciger* & *L. australis*)	275 Hz to 160 kHz
Phocid pinnipeds (PW) (underwater) (true seals)	50 Hz to 86 kHz
Otariid pinnipeds (OW) (underwater) (sea lions and fur seals)	60 Hz to 39 kHz

***** Represents the generalized hearing range for the entire group as a composite (*i.e.,* all species within the group), where individual species' hearing ranges are typically not as broad. Generalized hearing range chosen based on ~65 dB threshold from normalized composite audiogram, with the exception for lower limits for LF cetaceans (Southall *et al.* 2007) and PW pinniped (approximation).

The pinniped functional hearing group was modified from Southall *et al*. (2007) on the basis of data indicating that phocid species have consistently demonstrated an extended frequency range of hearing compared to otariids, especially in the higher frequency range (Hemilä *et al*., 2006; Kastelein *et al*., 2009; Reichmuth and Holt, 2013).

For more detail concerning these groups and associated frequency ranges, please see NMFS (2018) for a review of available information.

Potential Effects of Specified Activities on Marine Mammals and Their Habitat

The effects of underwater noise from UT's survey activities have the potential to result in behavioral harassment of marine mammals in the vicinity of the survey area. The notice of proposed IHA (88 FR 53453, August 8, 2023) included a discussion of the effects of anthropogenic noise on marine mammals and the potential effects of underwater noise from UT on marine mammals and their habitat. That information and analysis is incorporated by reference into this final IHA determination and is not repeated here; please refer to the notice of proposed IHA (88 FR 53453, August 8, 2023).

Estimated Take of Marine Mammals

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

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

Authorized takes will be by Level B harassment only, in the form of disruption of behavioral patterns for individual marine mammals resulting from exposure to sound from low energy seismic airguns. Based on the nature of the activity, Level A harassment is neither anticipated nor authorized. As described previously, no serious injury or mortality is anticipated or authorized for this activity. Below we describe how the authorized take numbers are estimated.

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

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

Acoustic Thresholds

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

Level B Harassment – Though significantly driven by received level, the onset of behavioral disturbance from anthropogenic noise exposure is also informed to varying degrees by other factors related to the source or exposure context (*e.g.*, frequency, predictability, duty cycle, duration of the exposure, signal-to-noise ratio, distance to the source), the environment (*e.g.*, bathymetry, other noises in the area, predators in the area), and the receiving animals (hearing, motivation, experience, demography, life stage, depth) and can be difficult to predict (*e.g.*, Southall *et al.*, 2007, 2021; Ellison *et al.*, 2012). Based on what the available science indicates and the practical need to use a threshold based on a metric that is both predictable and measurable for most activities, NMFS typically uses a generalized acoustic threshold based on received level to estimate the onset of behavioral harassment. NMFS generally predicts that marine mammals are likely to be behaviorally harassed in a manner considered to be Level B harassment when exposed to underwater anthropogenic noise above root-mean-squared pressure received levels (RMS SPL) of 120 dB (re 1 micropascal (µPa)) for continuous (*e.g.,* vibratory pile driving, drilling) and above RMS SPL 160 dB re 1 µPa for non-explosive impulsive (*e.g.*, seismic airguns) or intermittent (*e.g.*, scientific sonar) sources. Generally speaking, Level B harassment take estimates based on these behavioral harassment thresholds are expected to include any likely takes by temporary threshold shift (TTS) as, in most cases, the likelihood of TTS occurs at distances from the source less than those at which behavioral harassment is likely. TTS of a sufficient degree can manifest as behavioral

harassment, as reduced hearing sensitivity and the potential reduced opportunities to detect important signals (conspecific communication, predators, prey) may result in changes in behavior patterns that would not otherwise occur.

UT's planned survey includes the use of impulsive seismic sources (*e.g.*, GI-airgun) and therefore, the 160 dB re 1 μPa (rms) criterion is applicable for analysis of Level B harassment.

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

These thresholds are provided in the Table 3 and 4 below. The references, analysis, and methodology used in the development of the thresholds are described in NMFS' 2018 Technical Guidance, which may be accessed at: *https://www.fisheries.noaa.gov/national/marine-mammal-protection/marine-mammal-acoustic-technical-guidance*.

Ensonified Area

Here, we describe operational and environmental parameters of the activity that are used in estimating the area ensonified above the acoustic thresholds, including source levels and transmission loss coefficient.

The planned survey will entail the use of up to two 105 in^3 airguns with a maximum total discharge of 210 in^3 at a tow depth of 3-4 m. Lamont-Doherty Earth Observatory (L-DEO) model results were used to determine the 160 dB_{rms} radius for the two-airgun array in water depths >100 m. Received sound levels were predicted by L-DEO's model (Diebold *et al.*, 2010) as a function of distance from the airguns for the two

105 in^3 airguns with a maximum total discharge of 210 in^3. This modeling approach uses ray tracing for the direct wave traveling from the array to the receiver and its associated source ghost (reflection at the air-water interface in the vicinity of the array), in a constant-velocity half-space (infinite homogenous ocean layer, unbounded by a seafloor).

The planned surveys will acquire data with up to two 105-in^3 GI guns (separated by up to 2.4 m) at a tow depth of ~3–4 m. The shallow-water radii are obtained by scaling the empirically derived measurements from the Gulf of Mexico calibration survey to account for the differences in volume and tow depth between the calibration survey (6,600 in^3 at 6 m tow depth) and the planned survey (210 in^3 at 4 m tow depth). A simple scaling factor is calculated from the ratios of the isopleths calculated by the deep-water L-DEO model, which are essentially a measure of the energy radiated by the source array.

L-DEO's methodology is described in greater detail in UT's IHA application. The estimated distances to the Level B harassment isopleth for the planned airgun configuration are shown in Table 3.

Table 3--Predicted Radial Distances from the R/V Brooks McCall Seismic Source to Isopleths Corresponding to Level B Harassment Threshold

Airgun configuration	Water depth (m)	Predicted distances (m) to 160 dB received sound level
Two 105-in GI guns	<100	1,750[1]

[1] Distance is based on empirically derived measurements in the Gulf of Mexico with scaling applied to account for differences in tow depth.

The ensonified area associated with Level A harassment is more technically challenging to predict due to the need to account for a duration component. Therefore, NMFS developed an optional user spreadsheet tool to accompany the Technical Guidance (2018) that can be used to relatively simply predict an isopleth distance for use

in conjunction with marine mammal density or occurrence to help predict potential takes. We note that because of some of the assumptions included in the methods underlying this optional tool, we anticipate that the resulting isopleth estimates are typically going to be overestimates of some degree, which may result in an overestimate of potential take by Level A harassment. However, this optional tool offers the best way to estimate isopleth distances when more sophisticated modeling methods are not available or practical. Table 4 presents the modeled PTS isopleths for mid-frequency cetaceans, the only hearing group for which takes are expected, based on L-DEO modeling incorporated in the companion User Spreadsheet (NMFS 2018).

Table 4--Modeled Radial Distances to Isopleths Corresponding to Level A Harassment Thresholds

Hearing Group	MF
PTS Peak	1.5
PTS SEL_{cum}	0

Predicted distances to Level A harassment isopleths, which vary based on marine mammal hearing groups, were calculated based on modeling performed by L-DEO using the Nucleus software program and the NMFS User Spreadsheet, described below. The acoustic thresholds for impulsive sounds (*e.g.*, airguns) contained in the Technical Guidance (2018) were presented as dual metric acoustic thresholds using both cumulative sound energy (SEL_{cum}) and peak sound pressure metrics (NMFS 2016a). As dual metrics, NMFS considers onset of PTS (Level A harassment) to have occurred when either one of the two metrics is exceeded (*i.e.*, metric resulting in the largest isopleth). The SEL_{cum} metric considers both level and duration of exposure, as well as auditory weighting functions by marine mammal hearing group. In recognition of the fact that the requirement to calculate Level A harassment ensonified areas could be more technically challenging to predict due to the duration component and the use of weighting functions

in the new SEL_{cum} thresholds, NMFS developed an optional User Spreadsheet that includes tools to help predict a simple isopleth that can be used in conjunction with marine mammal density or occurrence to facilitate the estimation of take numbers.

The SEL_{cum} for the two-GI airgun array is derived from calculating the modified farfield signature. The farfield signature is often used as a theoretical representation of the source level. To compute the farfield signature, the source level is estimated at a large distance (right) below the array (*e.g.*, 9 km), and this level is back projected mathematically to a notional distance of 1 m from the array's geometrical center. However, it has been recognized that the source level from the theoretical farfield signature is never physically achieved at the source when the source is an array of multiple airguns separated in space (Tolstoy *et al.*, 2009). Near the source (at short ranges, distances <1 km), the pulses of sound pressure from each individual airgun in the source array do not stack constructively as they do for the theoretical farfield signature. The pulses from the different airguns spread out in time such that the source levels observed or modeled are the result of the summation of pulses from a few airguns, not the full array (Tolstoy *et al.*, 2009). At larger distances, away from the source array center, sound pressure of all the airguns in the array stack coherently, but not within one time sample, resulting in smaller source levels (a few dB) than the source level derived from the farfield signature. Because the farfield signature does not take into account the interactions of the two airguns that occur near the source center and is calculated as a point source (single airgun), the modified farfield signature is a more appropriate measure of the sound source level for large arrays. For this smaller array, the modified farfield changes will be correspondingly smaller as well, but this method is used for consistency across all array sizes.

Auditory injury for all species is unlikely to occur given the small modeled zones of injury (estimated zone less than 2 m for mid-frequency cetaceans). Additionally,

animals are expected to have aversive/compensatory behavior in response to the activity (Nachtigall *et al.*, 2018) further limiting the likelihood of auditory injury for all species. UT did not request authorization of take by Level A harassment, and no take by Level A harassment is authorized by NMFS.

Marine Mammal Occurrence

In this section we provide information about the occurrence of marine mammals, including density or other relevant information which will inform the take calculations.

For the planned survey area in the northwest Gulf of Mexico, UT determined that the best source of density data for marine mammal species that might be encountered in the project area was habitat-based density modeling conducted by Garrison *et al.* (2022). The Garrison *et al.* (2022) data provides abundance estimates for marine mammal species in the Gulf of Mexico within 40 km^2 hexagons (~3.9 km sides and ~7 km across from each side) on a monthly basis. To calculate expected densities specific to the survey area, UT created a 7 km perimeter around the survey area and used that perimeter to select the density hexagons for each species in each month. The 7 km distance was chosen for the perimeter to ensure that at least one full density hexagon outside the survey area in all directions was selected, providing a more robust sample for the calculations. They then calculated the mean of the predicted densities from the selected cells for each species and month. The highest mean monthly density was chosen for each species from the months of September to December (*i.e.*, the months within which the survey is expected to occur). NMFS concurred with this approach to calculate species density.

Rough-toothed dolphins were not modeled by Garrison *et al.* (2022) due to a lack of sightings, so habitat-based marine mammal density estimates from Roberts *et al.* (2016) were used. The Roberts *et al*. (2016) models consisted of 10 km x 10 km grid cells containing average annual densities for U.S. waters in the Gulf of Mexico. The same 7 km perimeter described above was used to select grid cells from the Roberts *et al*. (2016)

dataset, and the mean of the selected grid cells for rough-toothed dolphins was calculated to estimate the annual average density of the species in the survey area. Estimated densities used and Level B harassment ensonified areas to inform take estimates are presented in Table 5.

Table 5 -- Marine Mammal Densities and Total Ensonified Area of Activities in the Planned Survey Area

Species	Estimated density (#/km^2)	Level B Ensonified Area (km^2)
Atlantic spotted dolphin	0.00082[b]	7,866
Bottlenose dolphin [a]	0.34024[b]	7,866
Rough-toothed dolphin	0.00362[c]	7,866

[a] Bottlenose dolphin density estimate does not differentiate between coastal and shelf stocks.
[b] Density calculated from Garrison *et al.* (2022).
[c] Density calculated from Roberts *et al.* (2016).

Take Estimation

Here, we describe how the information provided above is synthesized to produce a quantitative estimate of the take that is reasonably likely to occur and authorized. In order to estimate the number of marine mammals predicted to be exposed to sound levels that would result in Level B harassment, radial distances from the airgun array to the predicted isopleth corresponding to the Level B harassment threshold was calculated, as described above. Those radial distances were then used to calculate the area(s) around the airgun array predicted to be ensonified to sound levels that exceed the harassment thresholds. The area expected to be ensonified on 1 day was determined by multiplying the number of line km possible in 1 day by two times the 160-dB radius plus adding endcaps to the start and beginning of the line. The daily ensonified area was then multiplied by the number of survey days (10 days). The highest mean monthly density for

each species was then multiplied by the total ensonified area to calculate the estimated takes of each species.

No takes by Level A harassment are expected or authorized. Estimated takes for the planned survey are shown in Table 6.

Table 6 -- Estimated Take for Authorization

Species	Stock	Estimated take	Authorized Take	Stock abundance[1]	Percent of stock
		Level B	Level B		
Atlantic spotted dolphin	Gulf of Mexico	6	26[2]	21,506	0.12
Bottlenose dolphin[3]	Gulf of Mexico Western Coastal	2,676	2,676	20,759	12.89
	Northern Gulf of Mexico Continental Shelf			63,280	4.23
Rough-toothed dolphin	Gulf of Mexico	28	28	[3]4,853	0.58

[1] Stock abundance for Atlantic spotted dolphins and bottlenose dolphins was taken from Garrison *et al*. (2022). Stock abundance for rough-toothed dolphins was taken from Roberts *et al*. (2016), as Garrison *et al*. (2022) did not create a model for this species.
[2] Estimated take increased to mean group size from Maze-Foley and Mullin (2006).
[3] Estimated take for bottlenose dolphins is not apportioned to stock, as density information does not differentiate between coastal and shelf dolphins. However, based on the planned survey depths, we expect that most of the takes would be from the coastal stock, but some takes could be from the shelf stock. Percent of stock was calculated as if all takes estimated for authorization accrued to the single stock with the lowest population abundance.

Mitigation

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

technological) of equipment, methods, and manner of conducting the activity or other means of effecting the least practicable adverse impact upon the affected species or stocks, and their habitat (50 CFR 216.104(a)(11)).

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

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

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

Mitigation measures that will be adopted during the planned survey include, but are not limited to: (1) vessel speed or course alteration, provided that doing so would not compromise operation safety requirements; (2) monitoring a pre-start clearance zone; and (3) ramp-up procedures.

Vessel-Visual Based Mitigation Monitoring

Visual monitoring requires the use of trained observers (herein referred to as visual protected species observers (PSOs)) to scan the ocean surface visually for the presence of marine mammals. PSOs shall establish and monitor a pre-start clearance zone and, to the extent practicable, a Level B harassment zone (Table 3). These zones shall be based upon the radial distance from the edges of the acoustic source (rather than being based on the center of the array or around the vessel itself). During pre-start clearance

(*i.e.*, before ramp-up begins), the pre-start clearance zone is the area in which observations of marine mammals within the zone would prevent airgun operations from beginning (*i.e.*, ramp-up). The pre-start clearance zone encompasses the area at and below the sea surface out to a radius of 200 meters from the edges of the airgun array.

During survey operations (*e.g.*, any day on which use of the acoustic source is planned to occur, and whenever the acoustic source is in the water, whether activated or not), a minimum of two PSOs must be on duty and conducting visual observations at all times during daylight hours (*i.e.*, from 30 minutes prior to sunrise through 30 minutes following sunset). Visual monitoring must begin no less than 30 minutes prior to ramp-up and must continue until 1 hour after use of the acoustic source ceases or until 30 minutes past sunset. Visual PSOs must coordinate to ensure 360 degree visual coverage around the vessel from the most appropriate observation posts, and must conduct visual observations using binoculars and the naked eye while free from distractions and in a consistent, systematic, and diligent manner.

PSOs shall establish and monitor a pre-start clearance zone and to the extent practicable, a Level B harassment zone. These zones shall be based upon the radial distance from the edges of the acoustic source (rather than being based on the center of the array or around the vessel itself).

Any observations of marine mammals by crew members shall be relayed to the PSO team. During good conditions (*e.g.*, daylight hours, Beaufort sea state (BSS) three or less), visual PSOs shall conduct observations when the acoustic source is not operating for comparison of sightings rates and behavior with and without use of the acoustic source and between acquisition periods, to the maximum extent practicable.

Visual PSOs may be on watch for a maximum of 4 consecutive hours followed by a break of at least 1 hour between watches and may conduct a maximum of 12 hours of observation per 24-hour period.

Pre-Start Clearance and Ramp-Up

Ramp-up is the gradual and systematic increase of emitted sound levels from an acoustic source. Ramp-up will begin with one GI airgun 105 in^3 first being activated, followed by the second after 5 minutes. The intent of pre-clearance observation (30 minutes) is to ensure no marine mammals are observed within the pre-start clearance zone prior to the beginning of ramp-up. The intent of ramp-up is to warn marine mammals in the vicinity of survey activities and to allow sufficient time for those animals to leave the immediate vicinity. A ramp-up procedure, involving a stepwise increase in the number of airguns are activated and the full volume is achieved, is required at all times as part of the activation of the acoustic source. All operators must adhere to the following pre-clearance and ramp-up requirements:

(1) The operator must notify a designated PSO of the planned start of ramp-up as agreed upon with the lead PSO; the notification time should not be less than 60 minutes prior to the planned ramp-up in order to allow PSOs time to monitor the pre-start clearance zone for 30 minutes prior to the initiation of ramp-up (pre-start clearance);

- Ramp-ups shall be scheduled so as to minimize the time spent with the source activated prior to reaching the designated run-in;
- One of the PSOs conducting pre-start clearance observations must be notified again immediately prior to initiating ramp-up procedures and the operator must receive confirmation from the PSO to proceed;
- Ramp-up may not be initiated if any marine mammal is within the pre-start clearance zone. If a marine mammal is observed within the pre-start clearance zone during the 30 minutes pre-clearance period, ramp-up may not begin until the animal(s) has been observed exiting the zone or until an additional time period has elapsed with no further sightings (15 minutes for small delphinids and 30 minutes for all other species);

- Ramp-up must begin by activating the first airgun for 5 minutes and then adding the second airgun; and
- PSOs must monitor the pre-start clearance zone during ramp-up, and ramp-up must cease and the source must be shut down upon detection of a marine mammal within the pre-start clearance zone. Once ramp-up has begun, observations of marine mammals for which take authorization is granted within the pre-start clearance zone does not require shutdown.

(2) If the acoustic source is shut down for brief periods (*i.e.*, less than 30 minutes) for reasons other than implementation of prescribed mitigation (*e.g.*, mechanical difficulty), it may be activated again without ramp-up if PSOs have maintained constant observation and no detections of marine mammals have occurred within the pre-start clearance zone. For any longer shutdown, pre-start clearance observation and ramp-up are required. Ramp-up may occur at times of poor visibility (*e.g.*, BSS 4 or greater), including nighttime, if appropriate visual monitoring has occurred with no detections of marine mammals in the 30 minutes prior to beginning ramp-up. Acoustic source activation may only occur at night where operational planning cannot reasonably avoid such circumstances.

- Testing of the acoustic source involving all elements requires ramp-up. Testing limited to individual source elements or strings does not require ramp-up but does require a 30 minute pre-start clearance period.

Shutdown Procedures

The shutdown requirement will be waived for small dolphins. As defined here, the small dolphin group is intended to encompass those members of the Family Delphinidae most likely to voluntarily approach the source vessel for purposes of interacting with the vessel and/or airgun array (*e.g.*, bow riding). This exception to the shutdown requirement

applies solely to specific genera of small dolphins- Steno, Stenella, and Tursiops. As Tursiops and Steno are the only species expected to potentially be encountered, there is no shutdown requirement included in the IHA for species for which take is authorized.

Vessel Strike Avoidance Measures

These measures apply to all vessels associated with the planned survey activity; however, we note that these requirements do not apply in any case where compliance would create an imminent and serious threat to a person or vessel or to the extent that a vessel is restricted in its ability to maneuver and, because of the restriction, cannot comply. These measures include the following:

(1) Vessel operators and crews must maintain a vigilant watch for all marine mammals and slow down, stop their vessel, or alter course, as appropriate and regardless of vessel size, to avoid striking any marine mammal. A single marine mammal at the surface may indicate the presence of submerged animals in the vicinity of the vessel; therefore, precautionary measures should be exercised when an animal is observed. A visual observer aboard the vessel must monitor a vessel strike avoidance zone around the vessel (specific distances detailed below), to ensure the potential for strike is minimized. Visual observers monitoring the vessel strike avoidance zone can be either third-party observers or crew members, but crew members responsible for these duties must be provided sufficient training to 1) distinguish marine mammals from other phenomena and 2) broadly to identify a marine mammal as a baleen whale, sperm whale, or other marine mammals;

(2) Vessel speeds must be reduced to 10 knots (kn) (18.5 km/h) or less when mother and calf pairs, pods, or large assemblages of cetaceans are observed near a vessel;

(3) All vessels must maintain a minimum separation distance of 100 m from sperm whales;

(4) All vessels must maintain a minimum separation distance of 500 m baleen whales. If a baleen whale is sighted within the relevant separation distance, the vessel must steer a course away at 10 kn or less until the 500 m separation distance has been established. If a whale is observed but cannot be confirmed as a species other than a baleen whale, the vessel operator must assume that it is a baleen whale and take appropriate action.

(5) All vessels must, to the maximum extent practicable, attempt to maintain a minimum separation distance of 50 m from all other marine mammals, with an understanding that at times this may not be possible (*e.g.*, for animals that approach the vessel); and

(6) When marine mammals are sighted while a vessel is underway, the vessel should take action as necessary to avoid violating the relevant separation distance (*e.g.*, attempt to remain parallel to the animal's course, avoid excessive speed or abrupt changes in direction until the animal has left the area). This does not apply to any vessel towing gear or any vessel that is navigationally constrained.

Based on our evaluation of the applicant's planned measures, NMFS has determined that the mitigation measures provide the means of effecting the least practicable impact on the affected species or stocks and their habitat, paying particular attention to rookeries, mating grounds, and areas of similar significance.

Monitoring and Reporting

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

to be present while conducting the activities. Effective reporting is critical both to compliance as well as ensuring that the most value is obtained from the required monitoring.

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

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

Vessel-Based Visual Monitoring

As described above, PSO observations will take place during daytime airgun operations. Two visual PSOs will be on duty at all time during daytime hours. Monitoring shall be conducted in accordance with the following requirements:

(1) UT must work with the selected third-party observer provider to ensure PSOs have all equipment (including backup equipment) needed to adequately perform necessary tasks, including accurate determination of distance and bearing to observed marine mammals, and to ensure that PSOs are capable of calibrating equipment as necessary for accurate distance estimates and species identification. See Condition 5(d) in the IHA for list of equipment.

PSOs must have the following requirements and qualifications:

(1) PSOs shall be independent, dedicated and trained and must be employed by a third-party observer provider;

(2) PSOs shall have no tasks other than to conduct visual observational effort, collect data, and communicate with and instruct relevant vessel crew with regard to the presence of protected species and mitigation requirements (including brief alerts regarding maritime hazards);

(3) PSOs shall have successfully completed an approved PSO training course appropriate for their designated task (visual);

(4) NMFS must review and approve PSO resumes accompanied by a relevant training course information packet that includes the name and qualifications (*i.e.*, experience, training completed, or educational background) of the instructor(s), the course outline or syllabus, and course reference material as well as a document stating successful completion of the course;

(5) PSOs must successfully complete relevant training, including completion of all required coursework and passing (80 percent or greater) a written and/or oral examination developed for the training program;

(6) PSOs must have successfully attained a bachelor's degree from an accredited college or university with a major in one of the natural sciences, a minimum of

30 semester hours or equivalent in the biological sciences, and at least 1 undergraduate course in math or statistics; and

(7) The educational requirements may be waived if the PSO has acquired the relevant skills through alternate experience. Requests for such a waiver shall be submitted to NMFS and must include written justification. Requests shall be granted or denied (with justification) by NMFS within one week of receipt of submitted information. Alternate experience that may be considered includes, but is not limited to:

- Secondary education and/or experience comparable to PSO duties;
- Previous work experience conducting academic, commercial, or government-sponsored protected species surveys; or
- Previous work experience as a PSO; the PSO should demonstrate good standing and consistently good performance of PSO duties.

At least one visual PSO must be unconditionally approved (*i.e.*, have a minimum of 90 days at-sea experience working in that role at the particular Tier level (1-3) with no more than 18 months elapsed since the conclusion of the at-sea experience). One PSO with such experience shall be designated as the lead for the entire PSO team. The lead PSO shall serve as primary point of contact for the vessel operator. To the maximum extent practicable, the duty schedule shall be planned such that unconditionally-approved PSOs are on duty with conditionally-approved PSOs.

PSOs must use standardized electronic data collection forms. At a minimum, the following information must be recorded:

- Vessel name, vessel size and type, maximum speed capability of vessel;
- Dates (MM/DD/YYYY format) of departures and returns to port with port name;
- PSO names and affiliations, PSO identification (ID; initials or other identifier);
- Date (MM/DD/YYYY) and participants of PSO briefings;

- Visual monitoring equipment used (description);
- PSO location on vessel and height (in meters) of observation location above water surface;
- Watch status (description);
- Dates (MM/DD/YYYY) and times (Greenwich mean time (GMT) or coordinated universal time (UTC)) of survey on/off effort and times (GMC/UTC) corresponding with PSO on/off effort;
- Vessel location (decimal degrees) when survey effort began and ended and vessel location at beginning and end of visual PSO duty shifts;
- Vessel location (decimal degrees) at 30-second intervals if obtainable from data collection software, otherwise at practical regular interval;
- Vessel heading (compass heading) and speed (in knots) at beginning and end of visual PSO duty shifts and upon any change;
- Water depth (in meters) (if obtainable from data collection software);
- Environmental conditions while on visual survey (at beginning and end of PSO shift and whenever conditions change significantly), including BSS and any other relevant weather conditions including cloud cover, fog, sun glare, and overall visibility to the horizon;
- Factors that may have contributed to impaired observations during each PSO shift change or as needed as environmental conditions changed (description) (*e.g.*, vessel traffic, equipment malfunctions); and
- Vessel/Survey activity information (and changes thereof) (description), such as acoustic source power output while in operation, number and volume of acoustic source operating in the array, tow depth of the acoustic source, and any other notes of significance *(i.e.*, pre-start clearance, ramp-up, shutdown, testing, shooting, ramp-up completion, end of operations, streamers, *etc.*).

The following information should be recorded upon visual observation of any marine mammal:

- Sighting ID (numeric);
- Watch status (sighting made by PSO on/off effort, opportunistic, crew, alternate vessel/platform);
- Location of PSO/observer (description);
- Vessel activity at the time of the sighting (*e.g.*, deploying, recovering, testing, shooting, data acquisition, other);
- PSO who sighted the animal/PSO ID;
- Time and date of sighting (GMT/UTC, MM/DD/YYYY);
- Initial detection method (description);
- Sighting cue (description);
- Vessel location at time of sighting (decimal degrees);
- Water depth (in meters);
- Direction of vessel's travel (compass direction);
- Speed (knots) of the vessel from which the observation was made;
- Direction of animal's travel relative to the vessel (description, compass heading);
- Bearing to sighting (degrees);
- Identification of the animal (*e.g.*, genus/species, lowest possible taxonomic level, or unidentified) and the composition of the group if there is a mix of species;
- Species reliability (an indicator of confidence in identification) (1 = unsure/possible, 2 = probable, 3 = definite/sure, 9 = unknown/not recorded);
- Estimated distance to the animal (meters) and method of estimating distance;
- Estimated number of animals (high, low, and best) (numeric);
- Estimated number of animals by cohort (adults, yearlings, juveniles, calves, group composition, *etc.*);

- Description (as many distinguishing features as possible of each individual seen, including length, shape, color, pattern, scars or markings, shape and size of dorsal fin, shape of head, and blow characteristics);
- Detailed behavior observations (*e.g.*, number of blows/breaths, number of surfaces, breaching, spyhopping, diving, feeding, traveling; as explicit and detailed as possible; note any observed changes in behavior);
- Animal's closest point of approach (in meters) and/or closest distance from any element of the acoustic source;
- Description of any actions implemented in response to the sighting (*e.g.*, delays, shutdown, ramp-up) and time and location of the action.
- Photos (Yes or No);
- Photo Frame Numbers (List of numbers); and
- Conditions at time of sighting (Visibility; BSS).

Reporting

UT must submit a draft comprehensive report to NMFS on all activities and monitoring results within 90 days of the completion of the survey or expiration of the IHA, whichever comes sooner. The report will describe the activities that were conducted and sightings of marine mammals. The report will provide full documentation of methods, results, and interpretation pertaining to all monitoring. The 90 day report will summarize the dates and locations of survey operations, and all marine mammal sightings (dates, times, locations, activities, associated seismic survey activities).

The draft report shall also include geo-referenced time-stamped vessel tracklines for all time periods during which airguns were operating. Tracklines should include points recording any change in airgun status (*e.g.*, when the airguns began operating, when they were turned off, or when they changed from full array to single gun or vice versa). Geographic information system (GIS) files shall be provided in Environmental

Systems Research Institute (ESRI) shapefile format and include the UTC date and time, latitude in decimal degrees, and longitude in decimal degrees. All coordinates shall be referenced to the WGS84 geographic coordinate system. In addition to the report, all raw observational data shall be made available to NMFS. A final report must be submitted within 30 days following resolution of any comments on the draft report.

Reporting Injured or Dead Marine Mammals

Sighting of injured or dead marine mammals—In the event that personnel involved in survey activities covered by the authorization discover an injured or dead marine mammal, UT shall report the incident to the OPR, NMFS, and the NMFS Southeast Regional Stranding Coordinator as soon as feasible. The report must include the following information:

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

Vessel strike—In the event of a vessel strike of a marine mammal by any vessel involved in the activities covered by the authorization, UT shall report the incident to OPR, NMFS and to the NMFS Southeast Regional Stranding Coordinator as soon as feasible. The report must include the following information:

- Time, date, and location (latitude/longitude) of the incident;
- Vessel's speed during and leading up to the incident;

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

Negligible Impact Analysis and Determination

NMFS has defined negligible impact as an impact resulting from the specified activity that cannot be reasonably expected to, and is not reasonably likely to, adversely affect the species or stock through effects on annual rates of recruitment or survival (50 CFR 216.103). A negligible impact finding is based on the lack of likely adverse effects on annual rates of recruitment or survival (*i.e.*, population-level effects). An estimate of the number of takes alone is not enough information on which to base an impact determination. In addition to considering estimates of the number of marine mammals that might be "taken" through harassment, NMFS considers other factors, such as the likely nature of any impacts or responses (*e.g.*, intensity, duration), the context of any

impacts or responses (*e.g.*, critical reproductive time or location, foraging impacts affecting energetics), as well as effects on habitat, and the likely effectiveness of the mitigation. We also assess the number, intensity, and context of estimated takes by evaluating this information relative to population status. Consistent with the 1989 preamble for NMFS' implementing regulations (54 FR 40338, September 29, 1989), the impacts from other past and ongoing anthropogenic activities are incorporated into this analysis via their impacts on the baseline (*e.g.*, as reflected in the regulatory status of the species, population size and growth rate where known, ongoing sources of human-caused mortality, or ambient noise levels).

To avoid repetition, the discussion of our analysis applies to all the species listed in Table 1, given that the anticipated effects of this activity on these different marine mammal stocks are expected to be similar. There is little information about the nature or severity of the impacts, or the size, status, or structure of any of these species or stocks that would lead to a different analysis for this activity.

NMFS does not anticipate that serious injury or mortality would occur as a result from low-energy survey, and no serious injury or mortality is proposed to be authorized. As discussed in the **Potential Effects of Specified Activities on Marine Mammals and Their Habitat** section, non-auditory physical effects and vessel strike are not expected to occur. NMFS expects that all potential take would be in the form of Level B behavioral harassment in the form of temporary avoidance of the area or decreased foraging (if such activity was occurring), responses that are considered to be of low severity and with no lasting biological consequences (*e.g.*, Southall *et al.,* 2007, 2021).

In addition to being temporary, the maximum expected Level B harassment zone around the survey vessel is 1,750 m. Therefore, the ensonified area surrounding the vessel is relatively small compared to the overall distribution of animals in the area and their use of the habitat. Feeding behavior is not likely to be significantly impacted as prey

species are mobile and are broadly distributed throughout the survey area; therefore, marine mammals that may be temporarily displaced during survey activities are expected to be able to resume foraging once they have moved away from areas with disturbing levels of underwater noise. Because of the short duration (10 days) of the disturbance and the availability of similar habitat and resources in the surrounding area, the impacts to marine mammals and the food sources that they utilize are not expected to cause significant or long-term consequences for individual marine mammals or their populations.

There are no rookeries, mating, or calving grounds known to be biologically important to marine mammals within the planned survey area and there are no feeding areas known to be biologically important to marine mammals within the survey area. There is no designated critical habitat for any ESA-listed marine mammals within the project area.

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

(1) No serious injury or mortality is anticipated or authorized;

(2) No Level A harassment is anticipated or authorized, even in the absence of mitigation measures;

(3) Take is anticipated to be by Level B harassment only consisting of temporary behavioral changes of small percentages of the affected species due to avoidance of the area around the survey vessel. The relatively short duration of the planned survey (10 days) will further limit the potential impacts of any temporary behavioral changes that would occur;

(4) The availability of alternate areas of similar habitat value for marine mammals to temporarily vacate the survey area during the planned survey to avoid exposure to sounds from the activity;

(5) Foraging success is not likely to be significantly impacted as effects on prey species for marine mammals would be temporary and spatially limited; and

(6) The mitigation measures, including visual monitoring, ramp-ups, and shutdowns are expected to minimize potential impacts to marine mammals.

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 monitoring and mitigation measures, NMFS finds that the total marine mammal take from the planned activity will have a negligible impact on all affected marine mammal species or stocks.

Small Numbers

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

NMFS is authorizing incidental take by Level B harassment of three marine mammal species with four managed stocks. The total amount of takes authorized relative to the best available population abundance is less than 5 percent for 3 managed stocks

and less than 13 percent for 1 managed stock (Gulf of Mexico Western Coastal stock of bottlenose dolphin assuming all takes by Level b harassment are of this stock; see Take Estimation subsection) (Table 6). The take numbers authorized are considered conservative estimates for purposes of the small numbers determination as they assume all takes represent different individual animals, which is unlikely to be the case.

Based on the analysis contained herein of the planned activity (including the mitigation and monitoring measures) and the anticipated take of marine mammals, NMFS finds that small numbers of marine mammals would be taken relative to the population size of the affected species or stocks.

Unmitigable Adverse Impact Analysis and Determination

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

Endangered Species Act

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

No incidental take of ESA-listed species is authorized or expected to result from this activity. Therefore, NMFS has determined that formal consultation under section 7 of the ESA is not required for this action.

National Environmental Policy Act

To comply with the National Environmental Policy Act of 1969 (NEPA; 42 U.S.C. 4321 *et seq.*) and NOAA Administrative Order (NAO) 216-6A, NMFS must review our action (*i.e.,* the issuance of an IHA) with respect to potential impacts on the human environment.

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

Authorization

NMFS has issued an IHA to UT for the potential harassment of small numbers of three marine mammal species incidental to the marine geophysical survey in coastal waters off of Texas that includes the previously explained mitigation, monitoring and reporting requirements.

Dated: September 22, 2023

Catherine Marzin,

Deputy Director, Office of Protected Resources,

National Marine Fisheries Service.

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